South Eastern European Journal of Public Health E-Collection 2014-2020

Genc Burazeri, Ulrich Laaser (Eds.)



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Foreword for the E-Collection 2014-2020

The South Eastern European Journal of Public Health (SEEJPH) is an open-access international peer-reviewed journal involving all areas of health sciences and public health. Devoted to the global health SEEJPH is predominantly interested in quantitative and qualitative research examining upstream determinants of population health and health services delivery. This implies an inter-disciplinary and inter-sectoral orientation involving multiple professions and people.

The Journal was established in 2014 and is published by Jacobs Company in Germany. The then incoming president of the Association of Schools of Public Health in the European Region (ASPHER), Prof. Vesna Bjegovic-Mikanovic MD MSc PhD hon.dr, welcomed the Journal as one of the few fora for Public Health research in Europe, now in 2020 more relevant than ever, confronted with the COVID-19 pandemic.

Since its establishment, the journal keeps the original format with two editions per year and builds upon the success of the Forum for Public Health in South Eastern Europe funded by the German Stability Pact over the first decade of this century. Ever since its foundation, the journal has continuously stimulated submissions pertinent to scientists and researchers from transitional and developing countries worldwide, especially researchers from former communist countries of Eastern Europe.

The current e-collection assembles the work published in SEEJPH over the seven years 2014-2020, categorized into several major themes including European health policy; public health professionalization; public health ethics; primary health care; children and youth health; women health; as well as global health.

The interested reader will find a broad spectrum of highly qualified papers remaining of actual interest throughout the years.

The founding editors Bielefeld and Maastricht, 31st of January 2021 Prof. Genc Burazeri MD, MPH, PhD Prof. Dr. med. Ulrich Laaser DTM&H, MPH



REVIEW ARTICLE

The health of the public: What has gone wrong?

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Abstract

COVID-19, a new pandemic, has swept the world. How could this have happened? In theory the world should have been prepared, armed as it has been since 2005 with a new set of International Health Regulations with universal commitment by WHO Member States. Yet disaster has struck. The authors of this paper consider that fundamental rethinking is needed, with a new review of the post-World War 2 international system for global governance for health. Whilst WHO and its present and future actions will be scrutinized, the organization is fundamentally made up of 194 Member States, which must share the responsibility for ensuring better global health protection in the future. It is clear the world needs a more effective WHO, but it also needs countries to support and develop their public health infrastructure to face today's more complex health challenges, which can only grow in scope and complexity over coming years. The paper proposes several key steps to achieve these goals.

Keywords: COVID-19, global health governance, International Health Regulations (2005), pandemic, public health strengthening, WHO strengthening.

Conflict of interest: None declared.



Introduction

A new pandemic - COVID 19 - has swept across the world. Globally as of 12 November 2020, there have been 51,547,733 million confirmed cases of COVID-19, and 1,275,979 deaths, reported to WHO (1). How did this happen? Could it have been prevented? We have all had to realize that the world is much more dangerous place than we thought. What lessons do we learn? What should we do in the future?

In theory the world should have been prepared. It has happened before, for example during the 1918-19 influenza pandemic which is estimated to have killed some 50 million people worldwide (2). After the SARS outbreak in 2003, which was globally contained, a new international legal instrument-the International Health Regulations (2005) (3) - was agreed, putting in place new legal obligations on countries, to be open and honest about any new outbreak of communicable disease, and the cooperate fully with WHO in terms of management and containment. Countries agreed to put in place a series of health system and laboratory "core capacities" to promote for preparedness and capacity, as well as outbreak surveillance and response.

The mild H1N1 influenza pandemic of 2009-10 was a first challenge to the IHRs (2005). Assessments suggest that country response was variable (4), whilst WHO was criticized for overestimating the threat (5). In the Ebola outbreak in West Africa in 2014 the criticism of WHO was the reverse, that is had not reacted with sufficient alacrity (6), and after internal and external review the Organization reformed and reinvigorated its emergency response capacity (7). It worked to help countries develop their own capacities and systems, and to provide immediate support and global oversight to countries in case of an outbreak and necessary global response.

Over the next years since 2005, in a world of nation states, it became clear that implementation of the IHRs (2005) was patchy and incomplete. Countries were not always open and immediate in the information they provided to WHO, and evaluations (8) revealed large gaps in core public health capacity and preparedness across a range of indicators.

Then, in late 2019, a new coronavirus mutation occurred, setting in train the worst human pandemic since the 1918 influenza pandemic. Since then we have thought that the development of virology, and the advent of antibiotics and vaccines, meant that such a devastating outbreak could not happen again. We know better now.

This paper will try to look behind what has gone wrong with our capacity to protect and secure the health of people-public health in our professional terminology- and to suggest what needs to be done now to safeguard the global population from such devastating events in the future.

The characteristics of the pandemic

Whilst the virus first emerged in China, it spread quickly to South East Asia, then to Europe, then to the USA and Canada, and later to South America. India and Russia have been severely affected. Until very recently the virus seemed better under control in most of Europe, although now flare ups are being observed and new control restrictions introduced. This picture reflects however a moment in time, and the pandemic continues to expand both globally, and in individual countries e.g. the United States and across Europe. Whilst the virus is highly infectious, its population burden is hard to estimate. Globally



there have been few population-based surveys of prevalence. Recent research suggests that prevalence and mortality are substantially underestimated, and that across countries where data is available estimated cumulative COVID cases may be underreported by several orders of magnitude. In addition, for every two COVID-19 deaths counted, a third may be misattributed to other causes (9).

The indications are that a significant proportion of those infected do not have symptoms yet can transmit the virus to others. It is also now clear that the virus seems largely transmitted through the airborne route, and transmission is much more likely in crowded places indoors than outdoors (10).

These two characteristics of the virus make global control difficult and challenging. In the absence of a vaccine or definitive treatment, control measures rely on social distancing, wearing masks or face coverings, and avoided crowded and poorly ventilated places indoors. If these measures fail, either generalized or localized lockdowns remain the only control mechanism available. There is increasing evidence (11) that such restrictions are associated with severe adverse economic consequences, particularly for poor and disadvantaged groups, are characterized by adverse health consequences, and interfere with normal health system functioning.

In response to the virus, there remain significant uncertainties. Previously assumed knowledge and experience may be overwritten by new observations. For example, the previous assumption that mostly old people were affected has been shaded by recent experience where a greater proportion of the younger and the chronically ill have been affected (12). It is not clear why the infection appears to have spread faster in some countries than others. Everywhere the return and maintenance of children at school is an urgent priority (13).

Also uncertain is the eventual effective management of the virus, through the development of a vaccine, the availability of effective antiviral treatments, and more widely available tests backed up by effective contact chasing and quarantine measures. There is a substantial global effort towards producing a safe and effective vaccine, with some concerns. Safety must be assured, using usual scientific methods and judgements. The early distribution of a vaccine which proved not to be safe could have devastating negative consequences, for the recipients, and globally for public acceptability and willingness to take the vaccine. Another concern is global production capacity, and the mechanism for global distribution. Hopefully disruptive "vaccine nationalism" will be avoided.

The global response

In responding to the pandemic as it evolved, a main question is why the world's previous arrangements with a focus on the International Health Regulations (2005) did not work as expected. At the World Health Assembly in May 2020 WHO Member States agreed (14) that an enquiry should take place in due course. For that reasons present day questions must be presumptive, and open to later refinement.

For WHO there are some compelling questions. Was there a delay in the Chinese Government alerting WHO to the new and threatening viral mutation? Did WHO respond appropriately and with alacrity? Was WHO too close to the Chinese Government and if so, did this interfere with necessary operational responses?

On the other hand, WHO clearly did engage in effective and high-quality public communication, issuing urgent warnings at an early



stage. Did countries take sufficient and urgent notice, and necessary action?

It must be said that throughout WHO acted as asked and authorized to do by its Member States. Yet should WHO have a stronger mandate and some capacity of enforcement when countries drag their heels. Why were some countries' reactions different to others? Why did some countries delay or implement only half-heartedly the WHO-advised regime of testing, contact tracing and isolation? Was the threatening nature of the disease misunderstood by some countries, basing judgements perhaps on the normal course of influenza outbreaks? What was the "herd immunity" model seemingly pursued by some countries, and not others? Why were movement and other restrictions imposed earlier by some countries than others?

COVID-19 also caused a health crisis that amplified existing global health inequalities and disruptions, and the resultant lockdown restrictions have resulted in both economic and employment crises. Different countries have pursued different paths in dealing with these consequences, opening many questions about the optimum way forward.

This paper does not attempt to answer these questions. Yet it does make the point that taken overall, and unlike the SARS epidemic, the world's arrangements failed in preventing a global pandemic. Some part of this failure may be due to the nature of the virus itself. However, it is very difficult at this stage to suggest that the world's arrangements worked well. This paper will attempt to get behind that conclusion, to explain, and to draw presumptive lessons for the future.

The challenge of the coronavirus?

COVID-19 is a harsh reminder of the need to anticipate, to mitigate and to respond effectively to unexpected and emerging threats and hazards that can affect and severely disrupt every aspect of human existence. The virus has demonstrated clearly how fragile is our inter-connected world. We can be certain that this virus will not be the last threatening our global health and well-being. In addition, we will certainly be threatened by environmental and man-made disasters, and wars and complex emergencies, with climate change looming as an existential pending catastrophe and a marker of a critically deteriorating and unstable planet.

Now, suddenly, usual geopolitical considerations are being overridden by an imperative of survival where transparency and international cooperation and solidarity are vital. So far, in dealing with this virus these requirements have not been in place. For example, better coordination between countries has certainly been needed (15).

This crisis demands a total rethinking of the way the world works together in response to such events, which have the potential to cost many lives and bring countries to their knees. Yet so far it is hard to be optimistic. The post-World War 2 era of international rule-based cooperation looked increasingly fragile, affected as it has been by nationalist and populist political and social influences, even prior to this coronavirus crisis. This has not been a good time for multilateralism.

In terms of global health protection and promotion since WW2 the world has been dependent on the work of the Geneva-based World Health Organization (WHO), which in addition to its many other global health activities acts as a prime-mover as well as Secretariat for the International Health Regulations (2005).

Now WHO must defend itself for its actions during the crisis in a climate of vocal criticism, easily transmitted as never before by technology in general, and social media in



particular. These media are filled with stories feeding into conspiracy theories which can divert attention from the political and technical determinants that influence WHO's interaction with countries, particularly at a time of crisis. WHO is not a well-known or understood organization, and this makes it particularly vulnerable to criticism and an easy target for being made a scapegoat.

An organization like WHO, at the heart of the global health architecture, can be analysed from several different perspectives: technical excellence and capacity; policies, strategies, plans and procedures; ability to support countries; resources and the ability to advocate and mobilize the international community and donors; access to and support of innovation; governance and leadership and communication.

Ultimately, however, WHO is an inter-governmental organization made up of 194 sovereign Member States that it cannot instruct or cajole, but must inspire and influence. WHO has little in the way of sanctions available if Member States fail to comply.

The decline of public health institutions and capacities

Public health services are an important component of Universal Health Coverage (UHC) (16). Yet globally public health services are low in priority for health investment. There is a clear need to close the clear gap between political commitments to public health and the increased resources needed for public health to be effective; to place more focus on development of the public health workforce; to better organize governance arrangements (including accountability mechanisms); to start the work on mitigating the environmental footprint of healthcare; and to assign stronger legislative mandates for public health and public health legislation that is properly enforced.

Concerns about present day public health governance reflect the difficulties of developing effective multisectoral thinking and practice across different levels of government. As said previously, financing for public health is inadequate, both in absolute terms, and in comparison, with the money allocated to health care. Public health infrastructure needs to be updated and upgraded to cope with today's new issues, to deliver effective legal regulatory frameworks and surveillance frameworks. Political and social legitimacy are both critical for success. Public health should have an independent authoritative voice and be able to effectively communicate and report independently. In addition, effective public health services require structures to create and sustain a workforce with appropriate skills and knowledge (17).

WHO - a future perspective

The nature of the challenges exposed by the coronavirus and the present crisis is such that the authors believe that future efforts to assess the role of WHO at this moment should extend much further than considering only its leverage and effectiveness in handling an emergency situation. The question rather is whether WHO as the lead United Nations technical agency can continue to be relevant in the face of tomorrow's demographic, environmental and technological challenges. How can it position itself to fulfil its public health mandate to full potential?

The authors of this paper believe that over the last 30 years or so WHO's governance and ways of working have become increasingly out of tune with its strategic objectives and newly available evidence about health and well-being. Today whilst inter-sectoral action; whole of government, whole of society



and health in all policies approaches should be at the core of the Organizations' strategies, the reality in countries is that WHO's governing bodies and working counterparts are predominantly health ministries, and for countries health continues to be mainly limited within the health sector. In most countries, ministries of health are preoccupied with diseases, and obtain little political engagement with the structural and non -health system determinants of disease. This is despite the vast literature on the determinants of health which calls for a much broader engagement of governmental and societal stakeholders.

This multiple determinant understanding of health and the role of health as an essential precondition for human social and economic development is now made even more imperative in the light of the UN 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs). Ultimately health must be seen as important to human development as economic progress.

In fact, we know that the two are intimately entwined. This is not a new idea. In 1946 John Maynard Keynes famously said:

"The day is not far off when the economic problem will take the back seat where it belongs, and the arena of the heart and the head will be occupied or reoccupied, by our real problems — the problems of life and of human relations, of creation and behaviour and religion (18)".

Equity is at the core of such consideration. It has been at the heart of WHO policies since the launch of Health for All in 1981. Here again the reality is that political, social, economic and health inequalities in the world are growing wider (19). Specifically, for health most countries do not measure health inequities, or at best address these only in terms of access to health services. More widely across the global society it is increasingly clear that negative effects on health and wellbeing and violation of human rights are the consequences of unprincipled globalization; exploitation and mistreatment e.g. of migrants and refugees; environmental degradation and pollution; and political, social, and economic conflicts and complex emergencies.

Politics and diplomacy are a big part of the way WHO as an inter-governmental organization works. Should not WHO be redesigned to be more vocal, assertive and effective in the face of crises and inequalities and also better configured to accommodate 21st century public health concepts and principles?

Yet at the same time WHO must preserve its scientific excellence and independence. Transparency, honesty, integrity, together with local preparedness, are essential prerequisites for a sound relationship between politics and science, which is vital if the world is to be able to deal effectively with emerging threats.

The role of countries

The importance of public health has been illustrated during the COVID-19 crisis through the performance of countries whose leaders relied upon professionalization, public health experts, and who provided accurate, timely and detailed information to the public. Countries such as Germany, Vietnam and New Zealand offer positive examples here. Much less successful have been those countries where populist and nationalist perspectives predominate.

Yet all too often public health institutions and capacities have been allowed to decline and become degraded in many, or most, countries. There is an urgent need for this trend to be reversed, with investments made in public



health organizations, institutions and capabilities at all levels of governance (20). Communities and multicultural societies need to be energized and empowered for public health. It also seems clear that public health staffing and skills need transformational changes in order to respond to the complexities of present-day and future health challenges, which will exhibit inevitable complexity, ambiguity and uncertainty in planning and implementing public health responses.

The way forward

Today as the world attempts to deal with the coronavirus crisis there exists perhaps, and hopefully, a momentum to improve the establishment and performance of global public health institutions. The authors suggest a further strengthening and re-design of WHO to protect and promote global public health, particularly through the prevention, detection and response of future outbreaks. Also, to be considered is the possible creation of new International Health Regulations, with a more pronounced accountability system.

The authors suggest several key developments and changes to achieve these goals, focusing on:

- Ensuring health and equity are and remain high on the world agenda.
- WHO being protected, resourced, and given space by global leaders in becoming an advocate for fairness, equity, universal coverage and well-being.
- WHO becoming more present in global politics, for example in trade agreements.
- Changing the composition of WHO's governing bodies, to ensure representation from different sectors and levels of government, including mayors.

- Stepping up leadership by the Director General and Regional Directors, expressing clear expectations that countries comply with the IHRs or face consequences in the case of noncompliance.
- Building on inter-country agreements such as the recent European Parliament resolution on the EU's post COVID public health strategy: the EU's public health strategy post COVID-19.
- Helping countries invigorate and reform public health institutions, capacities and staffing.
- Following up aggressively preparedness and response activities in all countries to deal with communicable disease, climate change and other emerging threats.
- Developing platforms and supporting dialogue with different sectors and civil society.

Conclusion

This is a formidable and ambitious list. It foretells a place for WHO within a new world order where health, health security, health equity and sustainable development are central on the world political agendas.

Accordingly, and ideally, WHO should have more leverage, be a stronger and courageous advocate, actively engage other sectors and civil society, and have a strong leadership role in world human, social and economic development.

It is also clear that the world and the international global order does not look like this today. Yet changes are essential if the world is not to repeat this recent coronavirus experience and is to ensure human survival during the coming period of dramatic, and likely existential, global health challenges and crises.



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Foreword by Ulrich Laaser

Dr. Hans Stein has been on the European Union (EU)-Health stage for more than 25 years, starting with the very first Health Council in 1977. As an official of the German Health Ministry (Head of the EU Health Policy Unit) he represented Germany in countless EU (Council and Commission) committees and working groups concerning health policy and public health research. He not only organised the Health Council of four German EU presidencies, but also published a large number of articles mainly in international journals and books. After his retirement in 2002, Dr. Stein continued as a free lance consultant to a number of EU institutions and a lecturer in German, Dutch, Austrian, and English Schools of Public Health.

Personally, I probably met Hans Stein the first time in 1977 when in West Germany a discussion started about a "big" population study on cardiovascular health. He worked already for several years in the Ministry of Health (the name of the ministry at that time may have been more complex and I forgot it) but, different from many political administrators, he was fascinated by contents and not by formalities. He paved the way for the German Cardiovascular Prevention Study (GCP) targeting five regions with together around one million population for more than a decade (1979-1994). Hans Stein started his long chain of contributions to population health and health policy with a presentation in my then High Blood Pressure Department in Heidelberg and I remember how difficult it was to convince him to speak in public about prevention. That changed later completely when he became a European figure representing the German Government in the endless and tiring deliberations foregoing the milestone treaty of Maastricht. I shall never forget how Dr. Stein presented a historical dialogue with his former Dutch colleague Jos Draijer at the 25th anniversary of the Treaty at a celebration in the very city of Maastricht. Hans Stein remained an engaged sceptic with an insurmountable enthusiasm, truly a rare mélange, obvious also from his review below of the European health policy development since Maastricht.

The Maastricht Treaty 1992: Taking stock of the past and looking at future perspectives

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Abstract

Aim: The article contains a personal view of the history as well as the future of the European Union's (EU) health policy. Describing and evaluating the developments on the road from the Treaty of Maastricht to a new Europe it asks and tries to answer the question if we – especially the EU Member States – really know where we want to go to and how to get there. **Method:** Based on personal experiences, countless EU documents, as well as scientific publications the paper shows the impact EU Health policy has had in the Member States in the past.

Historical development: Considering that the legal basis for health has been and remains to be very weak limiting EU action to support, coordinate, and supplement actions of Member States – which, as a rule, still consider health to be first and foremost a national responsibility and therefore do not want interference from international institutions – the amount and content of EU health activities in the past years has been quite remarkable. Health policy may not be an EU priority and as a crosscutting policy sector it is dominated by many other EU policies. However, especially the "hard law" regulations and directives of the Internal Market give EU the power and competence to achieve health objectives. The size of this growing influence is shown by direct interventions, made possible by the legal acts to improve economic policy coordination. Health and health care in this context are considered as a key policy area for economic growth and EU macroeconomic policy. On the other hand, there is a risk that such regulations affecting health policy and population health may be dominated too much by economic institutions and their interests, whereas health authorities play only a minor role to date.

Conclusion: For the future of EU health policy it is essential that its position is considerably strengthened, in order to assure that health interests of the EU population are sufficiently safeguarded.

Keywords: European Union, future perspectives, health policy, Maastricht Treaty.

Conflict of interest: None.

Introduction

As a rule, a 20^{th} anniversary, especially when it concerns an event considered to be a historical landmark, is a cause for celebration. The Treaty of Maastricht was finally negotiated in an intergovernmental conference by the Member States of the European Union (EU) and signed on the 7th of February 1992 in Maastricht, The Netherlands (1). It came into force on the 1st of November 1993 after it had been ratified in all Member States by national parliaments, in some cases adopted even by a population referendum.

It is not only a cornerstone in the general development of the European Union, comparable to the establishment of an economic and monetary union with a common currency, but it also contains for the first time a specific legal basis for health as a European issue. It is worthwhile noting that, this process was dominated by the governments of the Member States. Commission and European Parliament participated on the side lines with very limited power to influence content and process. Nevertheless, this event certainly would have deserves to be celebrated. But, surprisingly, except for some small meetings in Maastricht, initiated by local institutions, there were no celebrations by the European Union in Brussels, or in national capitals.

This situation should be a cause for concern. Is it considered to be so critical that nobody wants to be reminded of how, when and where European integration started? Were the experiences during the last 20 years in general, as well as with the implementation of the health mandate specifically that bad and negative? Has the European vision got lost or was it just forgotten? Has The European dream ended? Or, is it that the EU has too big difficulties occupying the minds in adapting itself to the present situation characterized by the economic crisis and globalisation?

Looking back as a base for future developments

It is the purpose of this article not only to describe how the EU health policy has developed in the 20 years since the Maastricht treaty was signed, but also to develop concepts for the future.

Whether and how much it was a success story and what future perspectives are needed and realistic, cannot be judged only by looking at health issues. No EU policy field develops in isolation. Especially in health with its horizontal character progress depends to a great deal on the overall EU development, its problems, and how these are solved. The present EU crisis, in many ways related to the economic situation, was not caused by health issues but health problems and even national health policies are affected by the crisis and the measures taken to improve the situation. "Health in all policies" (2) is not only a mandate, but also a description of the situation.

It will be shown how the newly created instruments to establish a "European Economic Governance" such as the European Semester (3), the Stability Pact (4) and others not only go far beyond the existing legal base, but will influence national health systems and policies by increasing the Commission's power to intervene at a national level.

Lack of interest in the past

The existing lack of interest in the historic development of the European integration in general, and especially in the EU health policies may be regretted, but it can be explained by two interrelated developments:

- Lack of positive commitment of EU citizens to European unification, and;
- EU enlargement implies growing economic gap between Member States.

Lack of commitment by the citizens

The project of European unification faces presently the biggest existential crisis of its history. Nobody really knows when and how the crisis can be overcome or, at least, be mitigated. Timothy Garton Ash (5) in an essay "The Crisis of Europe" describes in great detail how the Union came together and why right now it seems to be falling apart. In his view "The project of European unification for about 40 years could rely on at least a passive consensus among most of Europe's national publics", today there is a lack of commitment to European integration nearly everywhere. It is obvious that a growing number of citizens in many countries do not believe anymore that the EU can at least contribute to solving their problems. Even worse, they consider the EU itself to be the problem. These sceptical and critical views about the EU have existed in many countries for quite a number of years. But, Eurobarometer (6) as well as national polls, especially the results of the elections 2014 for the European Parliament, show that a growing number of citizens in many countries have lost confidence in the EU. Surprisingly, this feeling exists even in Germany or the Netherlands, two signatory nations of the Maastricht Treaty, for a long time firm believers in European integration, including even a Political Union, countries that are not suffering from the present economic crisis.

European integration has been rightly described as a project of elites with little even indirect participation of the citizens. They were seldom asked if they agreed to European solutions. And they were certainly never asked, if they wanted European solutions in health matters. Had this been the case, a clear "No" would have been the answer, even if they could not have imagined how these solutions would look like.

EU enlargement and the economic gap

In 1993, only 12 Member States negotiated and signed the Maastricht Treaty. Since then, we have had three new treaties – of Amsterdam, Nice and the still valid one of Lisbon (7) – as well as a failed attempt to establish a European Constitution. More importantly, the EU has increased tremendously in size. From 1993 to 2014, altogether 16 new states have joined the EU and even more association negotiations are going on and will soon lead to even more Member States (MS). At the same time some MS – especially the United Kingdom – consider to leave the EU unless their special interests are taken care of. For the new MS, the date of their own accession as well as a solution of their present day problems are more important than a Treaty which was signed 20 years ago.

The astonishing and unexpected enlargement and expansion of the EU from original six to now 29 and possibly soon 35 Member States in a few years is not a question of numbers alone. Whereas EU structures and mechanisms, originally designed for only six MS have largely remained unchanged, this enormous growth combined with a financial and economic crisis has created big, yet unsolved problems. On the one hand, there is a growing small vs. big MS situation. Whereas eight MS have a population of five million or less (Luxemburg, Malta, and Cyprus being the smallest with only 0.5 million inhabitants), seven MS have a population between 6-10 million, and only 12 have more than 10 million. Small size populations lead to small size economies. There are enormous differences in the present economic situation of some, often new MS. In health, this means that not all MS have sufficient financial and personal resources to offer their population all health services that are needed. This has already led to a growing 'health gap' (8). Reducing these health inequalities is essential in that it will contribute to social cohesion, i.e. reducing poverty and social exclusion. It requires a new dimension of EU solidarity including support and assistance. The classical EU instruments of cooperation and coordination are not sufficient any more to cope with the present situation.

Weaknesses and shortcomings of EU health policy

Health – an EU priority?

Health has never been a priority of European integration and it is highly improbable that it will ever become so in the future. Despite a number of positive achievements in the past, health has not become a central objective of EU policy making. Contrary to environmental policy or research – to name just two health-related similar policy areas – health has not been named in any of the various EU treaties as an EU objective. In Article 3 of the Treaty of Maastricht, where the purpose of the various EU policy areas has been described, it states about health as follows: "A contribution to the attainment of a high level of health protection", which is not exactly a very ambitious objective.

On the contrary, whenever in the past years a reduction of EU activities and competence has been demanded by MS, health always has been a strong candidate, offered even by the Commission. With this background, it is not surprising that the power and influence of the Health Commissioner and his General Directorate has never been high. His responsibilities were always limited, and the financial and personal resources are small, especially when compared with areas like agriculture or research. It is not surprising that big Member States in the usual battle to get an influential Commissioner have never shown any interest to get this office. In the past twenty, years Health Commissioners have therefore come from smaller countries like Greece, Ireland, Cyprus, and Malta.

The same applies to the new Commission coming into power in September 2014. The new Commissioner for Health and Food Safety, Vytenis Andriukaitis, comes from Lithuania, also a small country. But, differing from all his predecessors, he has experience in EU matters as well as a very convincing health background: he is a surgeon and was Lithuanian Minister of Health and, as such, responsible for an impressive health agenda during the Lithuanian EU Presidency in 2013. As health remains an independent EU policy area – combined with food safety, for a long time a major EU priority – the expectation can be justified that health might become more powerful in the future.

The Commission has always been called the 'Guardian of the Treaty' (9), from whom it was expected to work for more integration. However, as far as health is concerned, it has shown only little interest in the past to improve the status of health as a European topic. It appears that most if not all successful proposals have come from others; in 1977, for example, a Belgian initiative to establish a Health Council and in 1985 a French proposal in the Rome Summit to establish 'Europe against Cancer' as a European responsibility (both, by the way, many years before health was established formally as a European task in the Maastricht Treaty). Furthermore, in 1995, the initiative of the European Parliament to strengthen the EU health Mandate and legal competence resulted in the Amsterdam Treaty 1997; and, finally, the many decisions of the European Court of Justice, beginning 1998 with the famous "Kohll and Decker" cases about patient mobility. The last phase started in 2012 with various summit decisions to establish a 'European Economic Governance' with new instruments including *"Health care as an answer to the economic and financial crisis, going far beyond the existing EU legal base"* (10).

It seems that others discovered much earlier than the Commission the health potential of the main EU objective, namely the Internal Market.

Health and the internal market

It is often overlooked that national health systems, however differently they are organised and financed, are strongly related to and have been integrated into the Internal Market with its

four freedoms (11) embracing the free movement of goods (pharmaceuticals and health technology), free services (physicians, nurses), cross-border capital (e.g. investing in rehabilitation clinics), and people, i.e. patients looking for treatment outside their home country.

Right from the beginning, health systems have been influenced and even regulated to some extent by regulations and directives of the EU market and the competition therein. Health care is, and it has always been, a central element of European and national economies. It is a big, possibly the biggest part of the Internal Market and it is permanently growing. About 8.5% of the national gross domestic product is, on average, spent for health. In Germany, this means every year more than 250 billion Euro. Millions of people – especially doctors and nurses – work in the health care systems. In Germany, about 12% of the working population is employed in the health sector (12). Many of them, especially in the new MS, make increasingly use of their right of free movement and work in other EU countries. In the receiving countries this contributes to solving the existing shortage problems, whereas at the same time it leads to growing difficulties in their home countries.

The main objective of the regulations and directives, the most effective EU tools, is to establish a functional internal market (13). They apply fully to the health systems and influence the development and content of national health policy. In addition, they are a powerful treaty base for influencing and even removing those MS policies such as health that might interfere with the aims of the Internal Market.

Scott Greer (14) describes the results and consequences of the Maastricht Treaty in his essay 'Glass half empty': "The Euro zone and the Internal Market overshadow the health effects of Maastricht: It is comparatively easy to find the treaty authority for legislation promoting the internal market and EU law and courts are sceptical of public health or other rationales for legislation impeding the markets development". He names as prominent examples the patient mobility decisions of the European Court of Justice, which culminated in the Directive on Patients' Rights in Cross Border Mobility (15). Furthermore, the application of competition and the state law for health care providers, and the integration of pharmaceuticals' regulation around the European Medicines Agency. Finally, he summarises his considerations about the effects of the Maastricht Treaty on health as follows: "The first mention of health was the harbinger of more effective promotion of health issues within EU policy making. In time, however, the Internal Market and the single currency have had the biggest health consequences". This was not really what the MS had in mind when in 1992 they established a specific EU Public Health Mandate.

Position and interests of Member States

Health has always been considered to be first and foremost a national responsibility. States all over the world with hardly any exception want to keep their complete and undiminished integrity and full autonomy to organize and run their health systems the way they want it. Health systems, different as they are, often are considered as a part of the national heritage and culture. Countries do not want any interference from outside, be it by the EU, or be it by the WHO, which by the way is more accepted than EU institutions, but not more effective. For many years national governments – in full agreement with their citizens and the medical professions – have jealously and on the whole successfully prevented the transfer of any substantial health policy issues to a supra-national level, except for the indirect effects of the Internal Market as discussed above. They, therefore, still have a great difficulty in accepting health policy as a matter of the EU concern. It seems that health policy is one of the last realms and retreats of national policy competence which had to be defended.

It seems also that health policy is a political sector which more than others absorbs and reflects national developments, traditions, and cultures. Health systems are seen as the result of decades of development and the individual response to a country's social situation and profile. The answers given a long time ago by Bismarck and later by Beveridge regarding health seem to be sacrosanct even if a lot has changed since their time. Safeguarding the pluralism of national health systems is considered to be a value by itself which has to be kept safeguarded at all costs against influence from outside even if the problems faced everywhere are quite identical and the solutions are at least similar. It seems to be overlooked that the EU might be a supporting strategic partner to overcome vested stakeholder interests that at the national level would not be possible.

These popular but nevertheless antiquated views neglect a number of essential facts important for health. Individual MS alone cannot cope sufficiently with outbreaks of infectious diseases like H1N1, food safety issues, biological or chemical terrorism and health threats from climate change. Growing new health dangers and threats which 'don't respect borders' is a common saying, presently Ebola being an example (16). The development and evaluation of new technologies and pharmaceuticals especially combating rare diseases and the establishment of whole new areas such as e-health and telemedicine expand beyond the national level. Therefore, possibly the best argument for the need of an EU health policy is the undisputed fact that health is influenced and determined to a great extent by factors and policies far outside national health care systems namely environment, work, transport, education, research and, most importantly, the economic situation of society and the individual. As all these policy areas are shaped more and more at the EU or even global level in different ways by binding regulations or international treaties. Health interests have a chance of success against powerful industrial lobbies only at this international level.

The essential instrument for achieving this is "Health in all policies". It is not only named in the Article 35 of the EU Charter of Fundamental Rights (17), but it is also the most important part of the EU legal base for health. Even if today it is still more a vision and not a reality, there is hope that at the EU level it can become true. Commissioner David Byrne (18) expressed this as follows: "The future of health is not characterized by national isolation but by international cooperation, governance, and partnership. A more cooperative, integrative and proactive health policy will lead to a more healthy society characterized by enhanced economic output and reduced strain on national health care systems".

To make this hope come true, it not only needs political will, but also sufficient instruments. Does the EU have them? Can they be developed? The biggest obstacle is the MS' attitude as described below.

Development of health competence from Maastricht 1992 to Lisbon 2010

Article 129, Treaty of Maastricht, 1992

The EU "Public health" competence as laid down for the first time in Article 129 of the Treaty of Maastricht, often but never substantially changed in the subsequent treaties, fully reflects the defensive and negative position of MS. As only a 'supportive competence' it always was and still is the weakest legal base possible – in great contrast to the other strong categories such as exclusive or shared competences. It gives the EU no power to establish binding legal regulations or directives. Its competence is limited to "carry out actions to support, coordinate or supplement the actions of the Member States" according to Article 6 of the Treaty on the functioning of the EU (Treaty of Lisbon). The "protection and improvement of human health" is on the same unsatisfactory level such as culture or tourism.

The establishment of a legal base for EU health policy has never been the object of an overall plan or strategy of any EU institution. Right from the beginning, there have been permanent

conflicts between European activities and differing national positions on the one hand, and economic interests versus health needs on the other. In these conflicts, health interests find only little support.

The Europeanization of health policy and the implementation of EU Health competence were "A dynamic but still rather unplanned process of policy harmonization and policy adaption. It offers an example of effective and inspired muddling through, rather than of a consistent and clear cut European concerted strategy" (19). It is worthwhile to take a look at the evolution of the legal base of the EU Public Health mandate, especially as today treaty changes are being discussed to reduce EU power in favour of increased national responsibility.

Before the Treaty of Maastricht in 1992, there was no specific legal base for public health activities. The first EU action program 'Europe against cancer' 1985 initiated by a Summit in Rome and, therefore, had to be based on a catch of legal base, in that a Commission proposal could be agreed unanimously if the Treaties did not provide the necessary power. This legal base still exists today in the Article 352 of the Lisbon Treaty, but it cannot be applied to health any more, as there is a specific legal base for public health, established in the Article 129 of the Treaty of Maastricht in 1992.

The main components of Article 129 were slightly reworded in the following treaties, but essentially are still valid:

- Community action should encourage and support MS' cooperation in order to achieve a high level of health protection, and;
- Community action should be directed towards preventing human illnesses, especially by promoting research into their causes, their transmission, as well as health information and education.

The only instrument to achieve this, were supportive activities. Consequently the only activities that took place were 'Action programmes' and 'Recommendations'. Any binding legal measures such as regulations or directives are impossible. Health Care was not even mentioned and MS, especially the new ones, watched very carefully that EU action did not go an inch beyond these agreements.

Quite soon, it became obvious that this very limited and weak mandate and its legal base were not sufficient to enable the EU to react appropriately to new challenges or at least to contribute sufficiently to their solution. Examples for these new problems, which most MS were unable to cope with alone, included new health threats such as AIDS, SARS or Ebola, the economic crisis and its effects on health systems, as well as bio-terrorism, to name just a few. Regarding one threat, the BSE crisis and the Jacob-Creutzfeld Disease, the Commission handling it was paying more attention to the commercial interests of farmers than to health risks for humans, which led the European Parliament to demand a strengthening of the public health legal base, which took place in a new strengthened formulation in the Article 152 of the Treaty of Amsterdam (20), which was not only upheld, but even strengthened in all further Treaty changes (Nice 2003, Lisbon 2010).

The Lisbon Treaty 2010

Many years later, in 2010, the Lisbon Treaty was agreed to and ratified. Its ratification was relatively easy because it was not a completely new text but just modified the pre-existing Treaty of Nice. It consists of two parts (Treaty of the EU containing common provisions and principals and Treaty on the EU functioning) containing the strengthened competences of the Commission as proposed in the failed attempt to agree on a European constitution in 2004. Despite the permanently ongoing discussion about increasing or decreasing EU competences, the necessary changes of the Lisbon Treaty seem highly improbable because the needed unanimous agreement and ratification by 28 MS and even more in the future. As the Lisbon

Treaty will be the legal base of all EU action for a long time, it is appropriate to look at the changes in the health provisions to see how far future challenges could be met by EU activities.

The provisions in the Treaty on the functioning of the EU are peculiar, difficult to understand, and even contradictory. Whereas Article 4 mentions health aspects as an area of shared competence: "*Common safety concerns in public health matters for the aspects defined in this Treaty*" [2k], the Article 6 also names it as the first area for supportive, coordinative and supplementary competence : (a) "protection and improvement of human health".

Health is the only policy area mentioned in two different competence categories. Is there a difference between public health and human health? Is there a difference between common safety and protection? Most likely this is a badly formulated remnant of the foregoing discussion around a constitution, where health as a whole was originally planned to be a 'shared competence', which many MS did not want. The background for a potential shared competence was the threat of 'Bio-terrorism', which was considered to be a common safety concern to society and not just a health threat.

Whatever the explanation may be, as the EU-related contents of Public Health are described in great detail in the Title XIV of Article 168, it is obvious that with few exceptions Public Health continues to be only a supportive competence, which aims at encouraging and supporting MS cooperation. In spite of the detailed description in the Article 168, this leads to less and not more clarity. In comparison to the lengthy elaboration of one page in Article 168, the really important area Internal Market consists of involves only some lines in Article 26.

The well-known MS position to keep the EU as far away as possible from influencing their health policy is fully upheld. There is no harmonization of systems in any way. There still is hardly any possibility for binding hard law legislation (exceptions: Article 168 No. 4 dealing with quality and safety of organs and blood, veterinary and phytosanitary fields with direct relation to public health, and quality and safety of medicinal products as well as devices).

However, there are at least some small improvements. The scope and content of the Commission support of cooperation, i.e. financing, is increased by naming concrete possibilities such as establishment of guidelines and indicators – both basic for the establishment of a permanent EU health information system – as well as the organisation of the exchange of best practices, periodic monitoring and evaluation. Furthermore, the door for the first time is slightly opened for health care as there are positive words about improving the complementarities of health services in cross-border areas, something that has been happening for a long time in many 'EUREGIOS' without Commission participation or support.

Health in all Policies (HiaP)

The most important change, however, is the new first sentence introducing Article 168, also contained in Article 35 of the EU Charter of Fundamental Rights:

"A high level of human health protection shall be insured in the definition and implementation of all the Unions policies and activities".

This very clear statement, which gives the EU an undisputable legal right und political mandate, is quite unique as it is not contained in any national constitution or bill of human rights. It not only means that all other policies have to avoid or at least limit negative health effects, but it also provides a legal base to use all policies directly or at least indirectly for binding and obligatory "health legislation". It gives the EU the power and the competence to establish 'hard law', to achieve health aims and targets.

The EU fight against tobacco was the biggest EU health policy success story; it was made possible because 'hard law', based on Internal Market competences, was used to establish the

needed binding directives. They were disputed and fought bitterly by the active and powerful tobacco lobby, but despite of all their attempts expressively legally confirmed and even promoted by a number of European Court decisions.

Despite of this encouraging example, Health in all Policies today is mainly a vision and far away from being an overall reality. It is tremendously difficult to apply and implement it, as other policies which want to achieve their own aims and health impacts, as a rule, are of little concern to them. Last but not least, powerful stakeholders – not only industry but also social partners – have foremost economic and not health interests and, at a political level, it is the economy that counts.

As an example, the EU strategy to 'Reduce alcohol-related harm' failed to a great extent because of the negative consequences for various other EU policies and regulations (agricultural subsidies, harmonisation of taxation and the removal of trade barriers in the Internal Market). It is the most prominent example of failure of the HiaP principle. Despite the undisputable fact that alcohol is a main cause for diseases and health, the economic interests were stronger and prevailed. The EU is worldwide the biggest alcohol producer in a growing and very profitable market which had to be safeguarded. Thus, the EU market laws weakened the restrictive alcohol policy in the Nordic countries with the result that drinking alcohol already in adolescence became their biggest health problem.

To transform the Health in all Policies principle from vision to reality it is essential to be able to compete with and to influence countervailing economic and industrial powers. This requires adequate organisational structures as well as institutional mechanisms for resolving conflicts and the development and permanent use of support tools such as health impact assessment. Above all, it is essential that those who are responsible for health in the Commission (Health Commissioner and Health Directorate) and in the MS (Health Ministries and stakeholders) have the political will, as well as the power to do it. All of that is missing nowadays in the EU.

Achievements and impact of EU Health Policy

After more than 20 years, it is justified to ask two simple questions:

- i. Have EU activities led to better health in the EU?
- ii. Have EU health actions and health-related legal regulations had a noticeable impact in the MS and on the national health policies?

Both questions may be simple, but are difficult to answer. A short, but honest, answer would be: We just do not know! As, up to now, no overall evaluation (Health Impact Assessment) of EU activities has been made in the EU or in any MS, we can only give some general indications based on EU/WHO/OECD health information systems and health monitoring, mostly created by EU funding and networks. This enormous increase of knowledge about the health situation and health systems and their development, easily available to everyone, is possible the biggest achievement of EU health policy, to date. We know today more than ever before, but the central question remains: are EU and national policies based on this knowledge?

Health Status

European countries have achieved major gains in population health in recent decades. The situation in the EU is better than in most of the other parts of the world. "Life expectancy at birth in the EU has increased by more than six years than 1980 to reach 79 years in 2010, while premature mortality has reduced dramatically. Over three quarters of these years can be expected to be lived free of activity limitation" (21). On average, across the EU, life expectancy at birth for the three-year period 2008-10 was 75. 3 years for men and 81.7 years

for women. The report explains this situation by "Improved living and working conditions and some health-related behaviours, but better access to care and quality of care also deserves much credit".

The question is, if and how much these factors have been influenced by EU policies. A scientific evaluation in 2003 of the EU "Europe against Cancer Program" (22) comes to the conclusion, that this programme appears to have been associated with the avoidance of 92,573 cancer deaths in the year 2000, or a reduction of about 10% of the EU overall. These exact figures might be questioned, but the phrase 'appears to have been associated' is applicable also to the positive EU influence on the overall improvement of the health status of EU citizens. There can be little doubt that many EU activities that have been directed at reducing risk factors to health, be it tobacco smoking, alcohol consumption or overweight, have contributed at least to some extent to their reduction. The reduction of tobacco consumption by adults in most EU Member States (examples: 15% in Sweden and Iceland from 30% in 1980, but still over 30% in Greece, Bulgaria, Ireland and others) would not have happened without the EU activities such as public awareness campaigns, advertising bans, and increased taxation. Indeed, the reduction of smoking is the biggest EU Health success story until now.

By influencing mainly non-medical factors, the EU has contributed quite substantially to the present positive health status, whereas 'governance of health care' factors such as proper access to health care, number of doctors and nurses, health care spending and the like have hardly been effected by the EU.

Even if the health status within the EU can be considered to have improved overall, there still is the unsolved problem of large and still growing inequalities between different countries. The gap between EU-MS with the highest and lowest life expectancy at birth is around eight years for women and 12 years for men. But, there is also a large gap within countries mainly between socio-economic groups. However, the EU has tried to reduce these gaps, where it was not successful.

Impact in Member States

The process of transforming visions into reality, of developing EU health policy and implementing it in the MS had to overcome countless barriers, was not very transparent and still is very slow. It has been described by Lamping (19), a German political scientist as "Discontinuing, incoherent sometimes fairly accidental and even undemocratic with little logic and rationality, self dynamic, not political but technocratic, determined by interest groups, based mainly on voluntary cooperation with little room for binding legal acts".

On the same lines, Hervey and Vanhercke (22) describe EU health policy as "A patch work of actors and institutions which decide and implement law, policy, and governance". They name five different domains as components of EU health policy that MS have to improve: Public Health, Research (both are soft law areas with no binding obligations to MS), Internal Market, Competition, and Social laws. There is no overall leadership and more competition than cooperation. Whereas national health policy as a rule is the domain of one political administration (the Health Ministry), supported by health experts, the EU health patch work consists of institutional structures and procedures that often were developed for domains that have no health interest at all. As a consequence, EU health is not only not an EU priority but also a highly contested area with a permanent conflict between health and economic interests. Also, there is only little transparency. EU Health policy is mainly a field for experts with little citizens' participation. Scott Greer (15) called it a 'secret garden' which should be turned into a 'public park'.

Considering the weak legal base, the lack of political commitment and interest of the MS but also within the Commission, and the limited financial and personal resources available, the amount of health and health-related activities that have been developed and undertaken by this 'patch work' is quite astonishing. Starting with its first programme "Europe against Cancer" in 1985, a countless number of soft law activities (strategies, recommendations, programmes, projects, studies, networks, frameworks, concerted actions, establishment of agencies, platforms, and committees etc.) have taken place. The amount of binding legislations (hard law) is of course much smaller, the most important being those on tobacco issues including advertising, blood safety, pharmaceuticals, medical devices, professional qualifications, food safety and – the first small step into health care – the "Patient's Rights" directive on cross-border health care. The latter was enforced by a number of decisions of the European Court of Justice. There is hardly any health problem or major disease that has not been the object of EU activities.

The most comprehensive overview is contained in a "Welcome Package Public Health", prepared in 2009 by the Policy Department "Economic and Scientific Policy" (23) of the European Parliament, to serve as a reference tool for incoming Members of the European Parliament. A similar document seemingly was not produced for the new European Parliament 2014. In more than 120 pages, this document, available on the Internet, names and describes all past, ongoing and planned EU activities. The integration of health into other policies, however, is described on just one page and these other policies are not even named.

Furthermore, the document says nothing about the impact on the MS. This is to some degree understandable because there is hardly any knowledge about the actual impact of EU healthrelated activities on the MS. There is no overall evaluation, no general Health Impact Assessment. Of course the many different activities, strategies, programs, and projects, as a rule are evaluated, but these evaluations say nothing about their impact. Health impact assessments of Health in All Policies are conducted in a small number when new policies and regulations are being prepared, not when they have been implemented.

There is hope for at least a partial improvement in the future. The "Patient Mobility Directive 2011" not only had to be implemented by the MS until the end of 2013; they also have to report to the Commission about what they have done. These reports have to include detailed information about patient movements and the cooperation between MS in border regions, European reference networks, rare diseases, e-health, and health-technology assessment. As of 2015 the Commission has to give an overall report to the Council and the European Parliament, we will then know a little more about national impact, at least in some areas. Today, we still know only little, actually too little, about the impact of EU Health policy. Only a few documents contain information about success or failure:

i. The most negative report is an evaluation conducted by the European Court of Auditors in 2009 of the 3rd EU Public Health Programme 2007-2013 (24). This report considered it a waste of money, because it contained no strategy, was badly implemented, the projects funded had little policy connection, and there was no follow up. The Commission accepted this harsh criticism and promised positive changes in its future programmes, especially in the following next 4th programme. Also, from author's experience as a project evaluator it seems justified to say that since 1978 the many hundreds, even thousands of projects funded in the various Public Health as well as Research Programmes very rarely had relations to political activities, be it in the EU, be it in the individual MS. Although it was the expressive aim of all these programmes that the funded projects should contribute to the improvement of health of the European citizens, it was never really evaluated if and how they achieved this. Many of the projects improved knowledge, but only a few led to political action.

- ii. Surprisingly the most positive document is the "Review of the balance of competences between the United Kingdom and the European Union in Health", published 2013 by the UK Government (25). It is part of a comprehensive examination of the balance of competences between the UK and the EU to analyse what UK membership means to national interest. These documents were prepared for all EU policies to serve as a base for negotiations with the EU about a reduction of EU competences, which - if not successful - might even lead to the UK to leave the EU. This health review is quite remarkable for a number of reasons. It is the only document prepared by any MS government describing and evaluating the national impact of EU health activities. It not only contains the view of the UK government, but also - this is really unique - the views of UK citizens, industry and stakeholders, who were asked to give their opinion. Altogether, it was recognized that with very few exceptions the EU in health matters had a positive impact especially in Public Health (tobacco use, tackling obesity, alcohol abuse), as well as health security (where even more efforts were welcomed), sharing of information and data, as well as research funding. Benefits were also seen in Internal Market health care measures including the free movement of patients and of health professionals, to reduce shortages. Only in a few areas adverse consequences of cross sector EU legislation were noted: The directives on clinical trials, data protection, and working time. The current balance of competences between EU and UK were considered appropriate, but should not be extended further. Considering these positive views in a country where generally the EU is looked at in a negative and critical way, it may be good to have similar surveys in other countries.
- iii. A midterm evaluation about the implementation and impact of the EU Health Strategy 2008-2013 (26) contains some key conclusions that could be applied to the EU Health policy as a whole. It acknowledges that there is a high level of activities at EU and Member State level, but it is uncertain if the outputs at MS level can be attributed directly or exclusively to the EU Health Strategy. Thematic or structural similarities between EU and MS activities were identified but considered to be a reflection of similar priorities, a discernable direct of EU measures was not found, its influence an national strategies was considered limited. The main value of the EU Health Strategy was described as follows: *"It acts as a guiding framework and to some extent as a catalyst for action"*.

These findings coincide with the results of a conference on "European Public Health, 20 years of Maastricht Treaty", 2013 in Maastricht (27). It names a number of positive developments as the result of EU health policies:

- Building of a public health infrastructure (agencies & permanent networks);
- Establishment of the EU as a reference point for policy makers/professionals, i.e. the establishment of a change agent for innovation;
- Demand for capacity building initiating a boom of new education;
- Development of European-oriented knowledge and skills.

It seems that the highly fragmented EU health policy as it is gradually taking shape has up to now only limited, indirect, and even unintended affects often on national health systems and policies. It has, however, contributed considerably to the development of Public Health, an area which in many MS is underdeveloped and needs this support.

Health and the EU Crisis

The present EU crisis was not caused by health, but it influences EU health policy and the national health systems. The crisis started as a financial and economic one, but it has led to a general EU crisis. It still is uncertain, when and how it will be solved, but very likely the measures taken to control it will change EU objectives, structures, competences and instruments. The future EU will be quite different to the one existing in 2014.

As early as in April 2012, the former EU Health Commissioner John Dalli, who later was forced to retire under still not clarified circumstances, said at a COCIR conference in Brussels (28): "A key challenge we are facing today is to prevent the economic crisis from triggering a health crisis. This may sound dramatic but the risk of this should not be underestimated". Largely unnoticed by the media, the public opinion, and by the Public Health Community as well, a health crisis soon became a reality in many EU-MS, especially in those which because of their critical economic situation received financial aid through the "Economic Adjustment Programmes". Examples of impact and extent of the health crisis are shown by the following figures in the "Briefing notes" of the European Public Health Alliance (29):

- Rise in unemployment in the EU-28 from 7.2% in 2007 to 9.7% in 2010 and 11.0% in 2013 (Greece 27.5%, Spain 26.2%, and Croatia 17.6%), especially the deterioration of youth employment which in 19 of the 28 MS stood at over 20% in 2013.
- Mental health and suicides rates, which until 2007 had been consistently decreasing rose in the EU from 11.4 % in 2007 to 11.8% in 2012, alarming in some MS such as Greece, Spain, Ireland and Italy.
- Cutting health budgets as well as other resources and frequent measures to reduce costs in nearly all MS have reduced the availability of frontline services and institutions.
- Austerity measures concerning health professionals such as reducing salaries (pay cuts between 10-40%) have led to a growing migration which endangered health services in some countries.

All these measures concerning the organisation and delivery of health services belong fully to the responsibility of MS, which the European Commission has to respect. Although the Treaty and therefore the limited EU health competence – excluding most aspects of health care – remain unchanged, the balance of power between the EU and MS in health care is changing in favour of the EU as a number of new instruments were created since 2011. They are intended to strengthen the EU governance of economic policy but have of course an impact also in the health sector. The new instruments should enable the Commission to intervene directly in national health care policies from a financial perspective and force national health systems to contribute to the achievement of the economic EU goals. These interventions concern not only "crisis states" receiving financial aid from EU, the International Monetary Fund, and the European Central Bank, but all MS in the context of a common macroeconomic policy.

Direct interventions by international into national health systems are not within the EU competences. In the past, this kind of interventions has been restricted to developing countries receiving financial aid. However, those countries receiving financial aid from the EU "Economic Adjustment Programmes" are in a quite similar situation. They have been obliged to undertake a wide range of austerity health actions demanded by the so-called TROIKA. These austerity measures are not always fully in line with widely accepted health values such as full access for everyone and good quality of medical services.

There are, on the other hand, also EU initiatives that address health care reforms in all MS in the context of a common economic policy. These direct interventions are slowly turning into a systematic EU surveillance, backed by the power to issue early warnings and to apply even sanctions. The most important new legal act that makes this possible is the so-called Fiscal
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Pact ("Treaty on Stability, Coordination and Governance in the Economic and Monetary Union"), agreed by only 25 EU-MS as an intergovernmental agreement which does not replace the EU Treaty, but is nevertheless enforced by the Commission.

The most important tool to improve policy coordination of macro-economic structural issues in key policy areas is the "European Semester for economic policy coordination" that was launched in 2011. At that time, health was not considered to be a key policy area that had to be included. But, this changed in the same year when the Ecofin Council demanded the Commission to include health. Since 2012, Health Care is included and considered to be a key policy area for economic growth and a permanent part of its five components. Since then, it is described in the Annual Growth Survey (AGS), presented every year by the Commission, a part of Strategic Advice & Orientations, contained in the "National Reform & Stability Convergence Programmes of the Member States", and the object of Country Specific Recommendations given by the Commission and the Ecofin Council (30-33).

Although the EU Health Competence as laid down in the Treaty is and will remain weak and limited mainly to Public Health, denying any EU actions in health care and health systems, it is firmly established as a key policy area of EU macroeconomic policy. All decisions are dominated and made by economic actors and structures in all of the European institutions with mainly economic interests in mind. Those responsible for health play a minor role in the decision making process.

Future perspectives

An article about the past developments in the EU would not be complete without taking a look at future options and perspectives. There is a large number of publications describing and criticising EU health policy, but there are hardly any books or scenarios about its possible future. Scenarios of the future are manifold. As far as health is concerned, three factors have to be taken into account:

- i. The future EU
- ii. New challenges and new solutions
- iii. The role of health in a future EU

The future EU

The EU is here to stay. There will be changes. The number of its members will continue to grow – there seems to be almost no limit. Industrial ties and economic interests will guarantee its pertaining future existence. Some countries may leave the EU, the main candidate at the moment being the United Kingdom. This for many reasons would have negative effects on both sides, especially in Public Health, as the English Public Health Community appears to be the strongest one. Growth, however, will also continue to increase problems in two ways. On the on hand, the differences between MS such as size, population, economic situation, resources and the like, will lead to more inequality, for many aspects including health. On the other hand, the EU will have to cope with its growth with structures and instruments that were designed for a small community of six countries, all of which similar regarding their economic situation.

In order to adapt the EU to be able to better master new challenges and tasks, it is essential to change not only its objectives and priorities but also its competences, structures and instruments, including a new balance of power between the three institutions - the Council, the Commission, and the European Parliament. This normally could only be done by a fundamental change of the Lisbon Treaty, however, that is almost impossible, not only right now, but also in a foreseeable future. It needs unanimity by all MS and ratification – partly by a national referendum – again by all MS. Because of this, the debate about a new treaty,

including the establishment of a Political Union, has stopped. We will have to live with the Treaty of Lisbon for a long time.

The answer possible at the moment – and for some time – can only be a Europe of two speeds, in no way a new development. We already have an EU of at least two speeds in areas in which not all MS could agree on a common way forward. The Schengen agreement on border regulations and the creation of a Monetary Union, establishing the new currency EURO in most but not all countries, are the most prominent examples. Lately, and more relevant for the health, is the creation of the Fiscal Union (Treaty on Stability, Coordination and Governance) agreed up to 2012 by only 25 MS as an intergovernmental agreement, part of a new economic governance framework. In the future, supranational and intergovernmental agreements of this kind outside the EU "Acquis communautaire" and its legal base will partly replace the existing EU instruments and influence national policies more than ever before in many areas including health.

The impact of this new situation on national welfare, social as well as health systems, has not been considered sufficiently yet. To date, EU and national health authorities play only a minor role in this process dominated by economic interests. There is a danger that health values and interests could be neglected, especially when they clash directly with economic interests. For the future of health it is essential, even vital, to ensure that those responsible and accountable for health policy at the EU as well as national level take part in this process with sufficient power to safeguard health interests.

New challenges and new solutions

Presently, EU Health policy is faced with two main, totally different challenges:

- The overall EU crisis mainly caused by economic and financial problems;
- The outbreak of Ebola, one of the biggest health threats ever.

In both cases, the EU has done too little and too late. Especially in the case of Ebola, the EU was badly prepared and, so far, is largely invisible (16). Even the new European Centre for Disease Control, founded in 2005, was much too weak to create a common anti-Ebola policy of the European Institutions and the MS. As difficult as it may be to master these problems, they are at the same time an opportunity to move forward. The development of the EU health policy has often been crisis driven. There is justified hope that the new situation will lead to new solutions, only possible in a time of crisis.

In the past, the progress of EU health policy was triggered by new challenges and dangers which could not be tackled sufficiently on the grounds of the existing legal base, structures and instruments. Communicable disease outbreaks (AIDS and HIV-blood contamination, CJD, SARS, and especially BSE posed severe threats to health, similar to bio-terrorism) are prominent examples enabling progress that otherwise would not had taken place:

- ° Treaty changes strengthening the EU legal base for Public Health;
- ° The EU Health strategy with strategic objectives and principles;
- ° New organisational structures within the EU;
- ° Shift of competences (food, pharmaceuticals) to health institutions;
- [°] Intensification & institutionalisation of new cooperation capacities;
- [°] Creation of comprehensive databases & information systems;
- [°] Establishment of agencies in health-related areas (altogether nine);
- [°] The new instrument of "Open method of Coordination (OMC)", applied to health;
- ° Closer cooperation of the EU with WHO and OECD.

Most importantly, they brought about changes in the attitude of MS. These were influenced to some extent by the needs and expectations of new MS which considered it essential to add

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health care and finance issues to the EU health agenda. MS still consider health to be, first and foremost, national responsibility but there is a slowly growing feeling "...*that health policy should no longer be discussed exclusively in terms of national autonomy and sovereignty*" (19). EU power and influence related to "All Other Policies" has already changed the environment in which national health policy takes place. As there is also a feeling that many problems, be it in health care or fighting new health threats cannot be solved effectively at the national level, it is increasingly recognized that the EU health policy is not simply a continuation of national health policies, but it is in many ways different.

The legal basis

A new and more precise formulation of the EU health competence (Article 168) is needed, but obviously not possible as it would require a change of the Treaty. However, a new consensus could and should be achieved as to how the Article 168 should be interpreted and implemented. The EU should not continue to be active in every possible health arena, many of which are already sufficiently covered by national health policies. It should concentrate and limit itself to those issues, where MS need EU support, because the objectives of the action cannot be sufficiently achieved by the MS. This is not new, but simply the subsidiarity principle as laid down in the Article 5 of the Treaty, which in the past has been neglected too often. If this is done, there is no need to continue the permanent debate about giving EU health competences back to the MS. A renationalisation desired by many would take place automatically.

Internal structural reforms

To be better prepared for facing future challenges, structural reforms are essential, which include but go far beyond 'Complementing national policies' and 'Encouraging cooperation between MS', without intending a harmonisation of national health systems.

These should include:

- i. The internal reorganisation of the Commission which should increase and not decrease the areas for which the Health Commissioner is responsible, including all those with a priority health interest.
- ii. Increasing, stabilizing, and institutionalising the EU problem-solving capacities by establishing new health agencies (examples: health technology assessment, rare diseases, E-health, or health information systems), strengthening the administrative power of the existing ones, and creating new observatories and permanent networks in order to improve the diffusion of best practices.
- iii. Advance, even institutionalise, a closer cooperation with WHO and OECD making use of their reputation, knowledge, experiences, manpower, worldwide resources and avoid double work. In the long run, this should result in a common institutionalised Global Health Policy with many partners.

The role of health in a future European Union

Again, EU health policy is here to stay. It is no longer questioned any more that Public Health should remain to be an EU policy of its own. Nobody is demanding any more a total renationalisation. Nevertheless, the EU Public Health Policy as such is far away from being or becoming a European priority. It is, at best, only a side issue on the European stage with little power and low resources.

But, this is not even half of the story. Health as an issue, not as a policy, has been transformed during the past years from a non-topic to one of the most important EU fields. In the main stream of EU politics, i.e. policy coordination on macro-economic issues, health has become

and will remain a key policy area. This elevation is fully justified considering its economic implications and its position in the four freedoms of the Internal Market.

Nevertheless, the EU Health Policy is and will remain a patch work consisting of many different parts and partners. It is a complex cross-cutting policy sector and is part of and regulated in a multitude of other policy sectors like environment, consumer protection, industry, research, transport, agriculture, competition, information and – most importantly – the EU Internal Market policy. Health policy and especially health care are an intrinsic and relevant part of the European Market of goods and services, which are affected and partly even harmonized via simple market compatibility. The decisions are taken issue-specific, fragmented, not very transparent, and mostly guided by economic interests. The EU is foremost an economic union and partly even a political one, but not a social union. Health, contrary to social progress or environment, is not mentioned as an EU objective in the Lisbon Treaty. Health, as a key policy area, is only of interest as long as it is part of another policy and has positive or negative economic implications.

Health authorities within the EU-Commission, the European Parliament, and the Council of MS, at best, play only a minor role in the economy dominated decision making process. It is obvious that health values and interests could easily be neglected, especially when there is a clash with economic interests. It is essential and vital for the role of health in a future EU to ensure that those accountable and responsible for health at the EU and national levels take an active part in this decision making process with sufficient power to safeguard health interests. In the past, this was partly achieved by shifting more competences within the Commission from agriculture (food), or the Internal Market (free movement of patients and professionals, pharmaceuticals) to the Health Directorate. This was much more than just an internal organisational act by the Commission because it had consequences for the decision-making process in other EU institutions. Whatever belonged to the tasks of the Health Directorate was automatically decided by the Health Council and the Health Committee of the European Parliament.

Conclusion

EU health policy as a whole has not been an unequivocal success story: there are weaknesses but also strengths. Its main strength is that it has become a permanent part of the European integration process. Hardly anyone is demanding its renationalisation anymore. Considering its weak legal base, the restrictive position of the MS, and the activities of recognised international organisations such as WHO or OECD, it is astonishing to observe what has been achieved. A 'non-topic' has developed into a key policy area of the EU economic policy. This is not due to a sudden discovery of the value of Public Health - the esteem for EU action in this area is still low - but relies entirely on its economic consequences. However, there is also the danger and even to some degree a tendency that the EU health policy might be reduced to narrow Public Health issues alone. Therefore, public health activities should not only be continued but, in due time, considerably broadened and strengthened. In the future, the main task will be to safeguard health interests in 'All Areas' including economy, to ensure that economic interests do not precede health. This task should not be left to Non-Governmental Groups, as valuable as their contributions will continue to be, but should be the task of health authorities within the Commission and in the MS. To be successful, this requires political power as well as adequate organisational structures, giving health authorities more power instead of taking it away from them. In addition, it needs scientific evidence that could be provided by the EU-funded public health actions and research. If this happens, there is no reason to have doubts about a positive future of the EU health policy.

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COMMENTARY

A growing competence: The unfinished story of the European Union health policy

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A few months ago, the South Eastern European Journal of Public Health (SEEJPH) published a lengthy article by Hans Stein on the importance of the Maastricht Treaty of 1992 and how the European Union (EU) health policy has developed since then (1). Undoubtedly, Dr. Stein made a major contribution to this story himself and in his paper he sets out his own viewpoint on key events and trends, offering us a wealth of historical detail and many real insights. But, like all good commentators who try to condense and make sense of a tortuous and convoluted sequence of events spanning more than two decades and involving very many players, he inevitably omits parts of the story, and his interpretations can sometimes give rise to more questions than answers.

In this review, I will entirely leave aside his general discussion of the overall evolution of the EU and its future prospects, and instead concentrate on a few specific points about the development of EU health policy to date.

It is a truism, and the beginning of perceived wisdom on the history of EU Health policy, that the Maastricht Treaty introduced the first explicit EC (European Community) legal competence for public health, devoting an Article to it (Article 129). It is also true, as Dr. Stein mentions, that there was much health-related activity in the EC well before the advent of the Maastricht Treaty. Such actions, in fact, go back many years. For instance, there was an EC Directive on pharmaceuticals in 1971 and in the same year a Regulation on coordination of social security systems providing rights to health care to workers in other EC countries. Moreover, various public health programmes on cancer, AIDS and drugs also predate Maastricht. Yet, Article 129 represented the first explicit framework for public health.

However, Dr Stein makes the more interesting point that this competence was "often but never substantially changed in the subsequent treaties". And, again, "The main components of Article 129 were slightly reworded in the following treaties, but essentially are still valid". In saying this he is implying that it was and remains after several treaty changes, a very weak competence which results from the "defensive and negative position of MS" (EU Member States) and reflects their position "to keep the EU as far away as possible from influencing their health policy".

There is no doubt that the health ministries of the older MS, and most, if not all, of the newer ones, have never wanted the EU to tell them how to run their healthcare systems, or to subsume their health policies into an EU-wide policy as has been done in areas such as trade or agriculture. And it is certainly the case, as Dr. Stein emphasizes, that the Article 129 competence is a weak one – as well as being very ill-defined.

But, this raises some further issues.

As he says, it was MS, not the Commission or the European Parliament, that dominated the process of negotiating and agreeing the Maastricht Treaty. The question then must arise of why did these very MS decide to put into the Treaty a new competence in public health at all if they did not want the EC (EU as it has become) to do anything of significance in this field? Later in his paper, Dr. Stein quotes approvingly from an article by Scott Greer who says that Article 129 "was the harbinger of more effective promotion of health issues within EU policy-making. In time, however, the Internal Market and the single currency have had the biggest health consequences". And then, Dr. Stein adds the interesting comment that: "This was not really what the MS had in mind when they established a specific EU Public Health Mandate". Of course, in 1992, the MS could not really have been thinking about the impact of the single currency which was not introduced until 1999! It is true that the Treaty did set out some clear steps towards achieving an economic and monetary union. But, it seems far-

fetched, to say the least, to suppose that those involved in designing a new public health competence would have given any thought to the potential impact on health of such a theoretical eventuality.

Similarly, how likely is it that many of them were envisaging the creation of some kind of protective instrument to counter the single market's potential impact on public health? This may have been on the mind of one influential player: Hans Stein, at least according to what he wrote in an article some years later (2). In this he states that: *"Single market regulations are sure to have an impact on health and health policy.....The full consequences of the internal market in the field of health and health care are as yet unknown. To analyse, to support or to counteract them can be done effectively only on an EU scale".*

But, it is doubtful that others were so far-sighted. Moreover, if MS had really wanted to establish a health competence that could act as a bastion to promote and defend the interests of public health against the possible negative consequences of the single market, why did they make the public health competence so feeble that it 'is the weakest legal base possible'? What seems more plausible is that MS (most of them in any case) saw some advantages in European cooperation in some health areas either where they faced common health problems such as AIDS, and tobacco, and on some apparently non-contentious topics, such as improving health information, and health education, where they could exchange experience and expertise. In doing so it is arguable that they were trying to achieve two objectives: first to show that the EC was not just about markets and economics but could play a valuable role in other policy spheres. This indeed was a general underlying thread of the Maastricht Treaty. It is noteworthy in this context that Article 129 is sandwiched by two rather similar Articles, 128 on Culture, and 129a on Consumer Protection. The second aim could be seen as being perhaps a more cynical one: it was to give the EC a formal competence to take some actions in health, which they had in any case been doing for some time in fields such as cancer, AIDS and drugs, while reducing the potential for any future action in areas where MS did not wish to see EC involvement by defining the scope of the EC's public health activities and explicitly limiting its competence in this field. This view was common among Commission officials involved in health policy, including this reviewer, who expressed it in an article in 1995 (3).

A second contestable point is the claim that the treaty competence on public health has remained essentially the same over the last two decades. On the face of it, this cannot really be the case. Indeed what is particularly striking about this competence is how greatly the legal provisions have changed from treaty to treaty. Unlike many other policy areas where the treaty provisions have remained largely unchanged, the wording about health has been greatly amended and the provisions have become more and more detailed.

In the Treaty of Amsterdam of 1997, for example, the public health article (Article 129 of the Maastricht Treaty) was significantly lengthened and the new article (Article 152), among other things, included for the first time the power to make binding EU legislation in a few specific areas, in relation to blood and organs, and in some veterinary and phytosanitary areas.

A quick look at the current health article, (Article 168 of the Lisbon Treaty) will show that it is again substantially different from the ones agreed in previous treaties, as well as being very much longer. The areas of binding legislative powers introduced in 1997 are retained and there is a further one: medicinal products and medical devices, Additionally, the scope for taking legal measures is increased, and now also includes cross-border threats to health,

tobacco and alcohol; and the article includes soft law provisions similar to those of the socalled 'open method of coordination' used in social and employment policy.

The Article also concedes for the first time that the EU in the framework of its public health competence may have a role in relation to health services, saying that the EU: "shall in particular encourage co-operation between the MS to improve the complementarity of their health services in cross-border areas".

Finally, of course, in addition to Article 168, the Treaty of Lisbon also incorporates the Charter of Fundamental Rights of the EU. Article 35 of this promulgates a right in respect of Health care: "Everyone has the right of access to preventive health care and the right to benefit from medical treatment under the conditions established by national laws and practices. A high level of human health protection shall be ensured in the definition and implementation of all the Union's policies and activities".

Hence, clearly, the EU's legal competence has considerably evolved since the Maastricht Treaty. But perhaps Dr. Stein is making a deeper point, that regardless of the specific textual amendments in successive treaties, the underlying scope of and limitations on the EU's public health competence have not fundamentally changed. There is some strength in this argument. But the position is not as clear-cut as he maintains.

The first point to be considered is similar to the one we have made in connection with the Article 129 of the Maastricht Treaty. If MS wanted to preserve the EU's public health power weak and nebulous, why did they not simply keep it as it was? Why did they keep changing it (and adding to it!) in each Treaty revision? We can advance several reasons. First, there was never unanimity among the MS about the extent of the EU's role in public health, and in fact a diminishing degree of consensus as more MS joined the EU. Some of them, notably the newer MS, actively welcomed a greater EU involvement not only in developing national public health policies but even in respect of the functioning of their health systems.

Second, the Treaty reformulations represent (to some extent) responses to developments in Europe and beyond. Gradually, even against their basic instincts, most, if not all, MS came to appreciate that the EU could be of use in helping tackle some health problems that would be difficult to deal with by individual countries acting separately. These include for example

- responding effectively to health threats from communicable diseases and man-made and natural disasters,
- tackling various health determinants,
- developing a framework for regulating health goods and related items that circulate in Europe, and
- responding to global health problems.

Thirdly, the MS were not negotiating in a vacuum; they had to take into account public opinion and, in particular, the views of the other EU Institutions, notably the European Parliament (EP) and the Commission which both pressed at various points for the EU to be given additional powers in particular health fields. In relation to the Maastricht Treaty, for example, the Commission may have had a limited role in the actual negotiations, but it made proposals for what it wanted to see, it liaised with MS about how texts were worded and certainly followed the negotiations extremely closely. The final draft of the new public health article therefore came as no surprise to the Commission. And directly after the Treaty had been ratified on 1 November 1993, it published a detailed communication setting out how it intended to implement the new provisions (4). Similarly the EP played a very forceful role in the BSE crisis which led both to a substantial shake–up in the organization of the Commission services to separate agriculture from food safety and also to pressure

strengthen the Treaty provisions on the protection of public health. This resulted in the inclusion in Article 152 of the Amsterdam Treaty of provisions allowing for binding measures to be taken in the veterinary and phytosanitary fields in relation to public health, and the extension of the overall scope of EC public health action to "preventing human illness and diseases, and obviating sources of danger to human health".

Certainly, Dr. Stein is right in his contention that the health ministries of many MS have never been the warmest advocates of increasing EU competence in health. Yet despite this the fact remains that it has increased, is increasing and seems likely to continue to increase. Paradoxically, it is arguable that the prime movers of this growth in EU power have not generally been those in the health field, but rather those in charge of other policy areas who have never been so zealous about national prerogatives in relation to health. Decades ago it was heads of government who pushed for action on the single market which led ultimately led to EU action on pharmaceuticals, mutual recognition of health professionals and reciprocity of health insurance coverage. Later those same heads of government called for EU action on cancer and AIDS. In the last few years it has again been heads of government and finance ministers who have set up a new EU system of economic governance which has led to direct interventions in MS's budgetary and economic policies and through those means intrusion into their national health care policies. Today, as part of this system, we have an EU instrument, the semester, which enables the EU to give every MS specific (non-binding but very influential) recommendations on the main issues confronting their healthcare systems, their health spending and the reforms they should make.

We have obviously travelled a very long way indeed from the arguments about whether the EU had a significant role in public health policy, let alone that it could have anything to do with the functioning of national health systems. Dr. Stein has written a thought-provoking article which helps us to trace the path that has been followed and offers us some pointers to what may come in the future for European Health Policy. As he wrote in 1995: "It may take some time, but I have little doubt that when the range of possibilities inherent in the new treaty provisions are really used, their impact on public health will be greater than anybody expects today" (5). Now, twenty years and several treaties later, we can see just how prescient he was.

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ORIGINAL RESEARCH

Migrant Health Policy in European Union (EU) and a non EU country: Current situation and future challenges for improvement

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Abstract

Aim: The influx of refugees, asylum seekers and migrants in Europe is an ongoing reality and migrant health has become very important public health problem. The aim of this paper is to analyze and compare the health profile, migrant situation and migration integration health policy in Spain as a European Union (EU) country and Republic of North Macedonia as a country in process of European Union accession.

Methods: Migration Integration Policy Index (MIPEX) Health strand questionnaire (2015) was applied to compare health policies for migrant integration in both countries.

Results: There are differences between Spain and Macedonia in health care coverage and access to health services for migrants. Spain has health strand total score of 52 and is in the same group with Austria, Ireland, Belgium, Netherlands, Denmark and Sweden. Macedonia has lower health strand total score 38 and is in the same group with Turkey, Cyprus, Slovakia. Targeted migrant health policies are stronger and services more responsive in Spain compared to Macedonia which offers migrants legal entitlements to healthcare, but health services should be more culturally responsive to migrant health needs.

Conclusion: Health migration policy in both countries is closely tied to the general immigration policy.

Keywords: health, integration policy, migrant, MIPEX.

Conflicts of interest: None declared.



Introduction

The influx of refugees, asylum seekers and migrants into the European Region is an ongoing reality that will affect European countries, with security, economic and health implication. The number of refugees and migrants entering European states is increasing, driven by the wars in Syria, Iraq, Afghanistan, Eritrea and elsewhere. It is estimated that 75 million international migrants live in the European Region, which is 8.4% of the total European population and one third of all international migrants worldwide. Over 1 million refugees and migrants entered the European Region in 2015. Since 2013, the numbers of refugees

and migrants crossing the Mediterranean has increased significantly. More than 3,700 refugees drowned in the Mediterranean Sea (1). Increases in arrivals have also been recorded in Greece and Spain. UNHCR data shows that 63,311 migrants have risked their lives reaching Europe by sea in 2019 (1,028 drowned in the sea). There are 5,690 sea arrivals registered so far in 2020, including refugees and migrants arriving by sea to Italy. Greece, Spain, Cyprus and Malta and 1,152 land arrivals including refugees and migrants arriving by land to Greece and Spain (2). EU states without external borders need to accept far larger numbers of refugees who landed in the southern European member states (3).







The integration of the Schengen area and the recent conflicts in the Middle East increased the concentration of immigrants and refugees seeking better life chances in the European Union (EU), due to the ease movement between the countries. The European Union is home to around 1 million recognized refugees. The most attractive EU countries for asylum seekers that are hosting the most refugees are France, Germany, United Kingdom, Sweden and Italy. In 2008 EU member states signed the European Pact on Immigration and Asylum (4), which was intended to be the basis for European Union immigration and asylum policies in a spirit of responsibility mutual and solidarity between Member States and a renewed partnership with non-EU countries. Many asylum-seekers and refugees move and face difficulties in applying for asylum at borders, inadequate or insufficient reception conditions, or a lack of local integration prospects (1). Underlying causes of refugee movements need to be tackled and EU states need to implement their Global Health Strategies (5).

Spain, due to its geographical position, between the Atlantic Ocean, the Mediterranean Sea and its proximity to Africa, is a destination point for immigrants and refugees from Africa, to reach other countries in the northern part of Europe, mainly Germany. Since 2000 Spain has had one of the highest rates of immigration in the world, coinciding with a period of remarkable economic expansion. This influx began to decline rapidly after 2007 as the economy began to slow down. In 2015, 291,387 people immigrated to Spain, thus increasing foreign population to 4,454,353, coming mainly from Romania, Morocco, Italy, the United Kingdom and Venezuela

(6). According to UNHCR, in 2016, 59.5% of immigrants and refugees arrived by sea (2).

In Spain, the concentration of the immigrant population is in the Autonomous Communities of Madrid, Catalonia and Valencia. In Catalonia, 15.3% of the total population in 2016 was foreigners, mostly immigrants from Morocco, Romania and Ecuador, with a mean age of 32.2 years and 111 men per 100 women. In Catalonia there are 21% of the total number of foreigners in Spain and 27% of the total non-EU population in Spain (7).

The immigration process in the Republic of North Macedonia (Macedonia further in the text) is quite different than in Spain. Macedonia, largely a country of emigration, has become a country of transit and permanent immigration, experiencing several refugee crises. Migrant health became serious public health problem in Macedonia, as in other European countries with the migrant influx in 2015. There has been a notable growth of transit and illegal migration in Macedonia from Greece in 2015 mainly from Syria, Afghanistan, Pakistan and Iraq, and given the geographic position of the country, there is a high likelihood of further growth of such migratory developments. According to UNHCR 747,240 refugees left the country from July 1st 2015 (up to 10,000 refugees daily). Since September 2015, the proportion of women and children transiting the western Balkans route has progressively increased to more than 50% (2).

The aim of this paper is to analyze and compare the health profile, migrant situation and migration integration health policy in Spain as a European Union (EU) country and Republic of North Macedonia as a country in process of European Union accession.



Methods

Migration integration health policy was compared in EU and non EU country, applying Migration Integration Policy Index (MIPEX) health strand as the most comprehensive and reliable tool. MIPEX was first published in 2004 as the European Civic Citizenship and Inclusion Index. There are 167 policy indicators on migrant integration in the MIPEX designed to benchmark current laws and policies against the highest standards in 8 policy areas, with 4 dimension scores for each area per country (8).

Health strand is a questionnaire designed to supplement the existing seven strands of MIPEX, which in its edition (2015) (9) monitors policies affecting migrant integration in 38 different countries. The Health strand questionnaire is based on the Recommendations on Mobility, migration and access to health care adopted by the Council of Europe in 2011, which were based on a consultation process that lasted two involved years and researchers. intergovernmental organizations, nongovernmental organizations and a wide range of specialists in health care for migrants. The questionnaire measures the equitability of policies relating to four issues: migrants' entitlements to health services: accessibility of health services for migrants; responsiveness to migrants' needs; and measures to achieve change. MIPEX health strand survey was part of the EQUI-HEALTH project carried out by the International Organization for Migration (IOM) from 2013 to 2016, in collaboration with the Migration Policy Group (MPG) and COST Action IS1103, Adapting European Health Services to Diversity (ADAPT).

MIPEX Health strand study was conducted in all 38 countries, as well as Bosnia and Herzegovina and Macedonia. Data collection was organized by the IOM, while experts and peer reviewers responsible for completing the Health strand questionnaire were members of ADAPT. Results from MIPEX 2015 Health strand were analyzed. Desk review was done on strategic documents, legislation, reports and studies for both countries.

Results

Health profiles

The political and economic processes have brought new lifestyles to the society influencing the health of the population as well; new disease patterns emerged, with the non-communicable and chronic diseases taking over the lead in morbidity and mortality trends. When compared the basic health indicators for both countries it is obvious that the health of population in Spain is much better than in Macedonia, with 6 years longer life expectancy, lower rate of infant mortality, lower SDR of diseases of circulatory system, lower rate of TB incidence etc (10). This is directly correlated with the economic situation in the countries, Spain is high income country with more than twice higher gross national income per capita (11) than Macedonia an upper middle income country and higher total health expenditure 9% of GDP in Spain compared to 6.5% in Macedonia, despite the impact of the 2008 crisis. In economic Macedonia noncommunicable diseases and injuries are generally on the rise, while communicable, maternal, neonatal, and nutritional causes of DALYs are generally on the decline. Cerebrovascular disease, ischemic heart disease and lung cancer were the three leading causes of premature death in 2015, followed by cardiomyopathy and diabetes (12).

Migration Integration Health Policy

Migration in Spain is regulated by the Organic Law 4/2000 on the Rights and Freedoms of Foreigners in Spain and its



Social Integration (13). Royal Decree 240/2007 (14) makes the Schengen Treaty effective by containing freedom of movement for community citizens. In order to respond to the Common European Asylum System, Law 12/2009 on the Right of Asylum and Subsidiarity is created (15).

Spain is a member of the European Union, so the right to health is protected with the Charter of Fundamental Rights of the EU (16) and the Universal Declaration of Human Rights (1948) (17). At the national level, the right to health is regulated by Act 14/1986 (18), with which all Spanish and foreign citizens in the Spanish territory have the right to health with the following characteristics: universal coverage, free services, public financing, high quality and comprehensive care.

The reforms of the Spanish Constitution gave the Autonomous Communities some competences such as health planning, public health and health care. Autonomous Communities have the ability to manage public services and special programs for asylum seekers and foreigners (reform of the Organic Law of 2/2009) (19). Since 2000, Catalonia has been supporting and formalizing its migration competencies with creation of the Secretariat for the The Immigration. National Pact for Immigration integrated the efforts of the different Catalan sectors that work on public policies of social integration (20). Law 10/2010 (21) stipulates an annual report on the state of integration of immigration while the Citizenship and Migration Plan 2016, considers the implementation of programs (22). From its establishment in 1981, the pillars of the Catalan health system have been universal coverage, comprehensive health service basket and gate keeping model. It is funded by taxes and offers almost universal access to health services, free at the point of delivery, based on Act 15/1990 or Health Ordinance of Catalonia (23).

Macedonia has ratified the main United Nations conventions, contributed to establishing integration policies with respect for cultural and social differences, human rights and dignity. With the overall MIPEX score of 44/100 (8) the country's policies for societal integration is just below the European average and slightly better than other countries in the region, such as Serbia, Bosnia and Herzegovina, Croatia and Bulgaria (24). The Macedonian Government adopted the first National strategy on integration of refugees and foreigners 2008-2015 (25) and the National Plan of Action (26), providing a national policy framework across sectors relevant to support the refugee integration.

Health care is a guaranteed universal right for citizens in Macedonia (27, 28), and is financed by the compulsory health insurance and from the central budget through the Ministry of Health vertical programs. Compulsory health insurance is based on solidarity, equity and equality providing universal coverage with basic benefit package to all insured persons and is defined by the Health Insurance Law (29). Foreigners (or legal migrants) in Macedonia are covered by the same risk-sharing system for health subject to care. but are additional requirements such as permission to stay and paid employment. Entitlement to health services including right to health insurance is regulated with Law on Foreigners (30) and with the Health Insurance Law (29). Migrants with access to compulsory health insurance are obliged to pay co-payments at the same level as nationals.

Asylum seekers are covered by the same system as nationals, with no additional requirements and no forms of care excluded. Health care of asylum seekers is regulated



with Law on Asylum and Temporary Protection (31), Law on international and temporary protection (32) and Health Insurance Law, and costs for the health insurance are covered by the Ministry of Labour and Social Policy. Undocumented migrants have no access to the same system as nationals: private insurance or payment of full costs of the services is required. Emergency care in life threatening situations should be delivered (documentation should be provided later). Migrants that entered the country illegally are transferred to the Transition Centre of the Ministry of Interior and the costs for health services are paid by the Government. If they seek asylum they become asylum seekers and are being transferred to asylum Reception Centre and

have the same entitlements to health care as asylum seekers. Although the law may grant migrants certain entitlements to healthcare coverage, administrative procedures often prevent them from exercising this right in Macedonia.

There are differences in migration integration policy between countries in Europe in health as in other strands (9). The lowest total MIPEX health strand score in Europe is in Latvia 17, while the highest is in Switzerland 70. Spain has health strand total score of 52 and is in the same group with Austria, Ireland, Belgium, Netherlands, Denmark and Sweden. Macedonia has lower health strand total score 38 and is in the same group with Turkey, Cyprus, Slovakia (Figure 2) (33).

Figure 2. MIPEX 2015 Health strand total scores in Europe (Source: Summary Report on the MIPEX Health Strand and Country Reports) (33)





In Spain there are Immigrant Shelter Centres responsible for providing social services and temporary shelter to immigrants and asylum seekers. The beneficiaries have access to health services, psychological support, legal services, training and recreation activities. However, they are only found in the two most important entry points, Ceuta and Melilla. In Spain, Act 16/2012 (34) denies the right to health of irregular migrants. Irregular immigrants are only entitled to receive emergency health care, assistance in pregnancy and childbirth, health care for children under 18 years.

The Government of Macedonia as a response to the migrant crisis in 2015 changed the legislation on June 19th 2015 providing free health services for all registered migrants, National Coordination Body was formed, technical expert group established, Migrant Action Plan adopted and two Transit Centers opened at the borders with Greece and Serbia. The following problems were faced in Macedonia during migrant crisis: huge undocumented number of migrants particularly upon arrival at entry points, no resources such as interpreters, intercultural communication problems mediators. between migrants and health care personnel and administrative staff (24).

Discussion

Migration exposes people to vulnerable situations and their health is related to different determinants: individual (behaviour, genetic factors, age, and gender), environmental factors (physical, economical, social and cultural) and health services (availability, accessibility and quality). Migrant children and mothers are the most vulnerable and they require access to special protection and care (24).

Migrant health is very important and longoverdue issue in EU member states and of special concern is potential widening of the health gap between migrant and host populations. Variation of national migration integration policies for entitlements to health services in European countries is a barrier to health care for refugees, asylum seekers and especially for un-documented migrants (35). Health systems need to be responsive to the migrant health needs and cultural differences such as concept of health and disease, felt and expressed health needs, language barriers, etc. Migrants arriving on European Union territory should be treated in a responsible and dignified manner and the need for accessible health services is more than obvious (36).

There are differences between Spain and Macedonia in health care coverage and access to health services for migrants. Spain has relevant regulations for immigrants, refugees and international protection, but also regulations that guarantee basic human rights, such as the right to health. Targeted migrant health policies are stronger and services more responsive in Spain as a with country greater wealth (GDP), compared to Macedonia which offers migrants legal entitlements to healthcare, but still more efforts should be undertaken to adapt services to their needs.

Effective health care delivery to migrant and minority groups is compromised by the absence of culturally sensitive health services in Macedonia. No resources such as interpreters, cultural mediators (there are only Roma mediators), health and social care professionals trained on multicultural approaches are available in Macedonia.

Strategies and policies are relatively new in Macedonia, along with the fact that such strategies are also subject to constant upgrade to the level of EU requirements (1) due to their wide socioeconomic impact and replaced migration developments. Although Government has taken commendable action to establish the necessary services, the



country has limited resources and requires support. There is a need to invest more, and sooner, in the health care to address migrants' specific health needs.

The integration of migrants into their host societies promotes equal opportunities for migrants and nationals (37), thereby fostering economic development in countries of origin and destination (38).

Limitations

Migrant integration health policy has been analyzed only in two countries, Spain member of the European Union and accession country Republic of North Macedonia, both facing with the migrant influx and responding to the needs of the migrants.

Conclusions

The Government of Macedonia adopted national legal framework and strategic documents on integration and established institutional framework and measures regarding immigrants' healthcare and broader welfare issues remain closely tied to the general framework of immigration policy. There is a need to create appropriate structures in health system accessible to refugees, responsive to different cultures, based on universal human rights. Meanwhile, the Government of Spain has responded to international and European Union conventions regarding the elaboration of regulatory mechanisms on international protection, immigration and health.

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ORIGINAL RESEARCH

Introduction of the European Union case definitions to primary care physicians has improved the quality of communicable diseases notification in Tuzla, Bosnia and Herzegovina

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Abstract

Aim: The Public Health Reform II project was implemented in Bosnia and Herzegovina from December 2011 to December 2013 and was funded by the European Union Aid schema. The principal aim of the project was to strengthen public health services in the country through improved control of public health threats. Workshops for primary care physicians were provided to improve the situation and increase communicable diseases notification rates in eight selected primary care centres. They were followed with visits from the project's implementing team to verify the effects of trainings.

Methods: The quality of notifications from physicians in Tuzla region was compared before and after the workshop. The timeliness was used as an indicator of quality. Medians of timeliness before and after the training were compared by use of Wilcoxon test, whereas the averages of timeliness were compared by use of the t-test.

Results: There were 980 reported cases, 80% before the training and 20% after the training. A lower median of timeliness for all the reported cases after the training was statistically significant compared to the median value before the training. A similar picture was revealed for specific diseases i.e. tuberculosis and enteritis, not so for scarlet fever and scabies.

Conclusion: The significant reduction in time response between the first symptoms and disease diagnosis indicates the positive impact of the training program in Tuzla. Hence, primary care physicians provided better quality of reported data after the training course.

Keywords: Bosnia and Herzegovina, communicable diseases notification, surveillance, timeliness, Tuzla.

Conflicts of interest: None.

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Introduction

Surveillance on communicable diseases is defined as an ongoing, systematic collection, analysis, interpretation and dissemination of infectious disease data for public health action (1,2). Effective surveillance provides information on infections that are the most important causes of illness, disability and death, populations at risk, outbreaks, demands on health care services and effectiveness of control programs so priorities for prevention activities can be determined (3,4).

The primary aim of infectious diseases surveillance is to eliminate and eradicate disease incidence with two core functions: early warning system for outbreaks and early response to disease occurrence, known also as epidemiological intelligence. An early warning and response system for the prevention and control of communicable diseases is essential for ensuring public health at the regional, national and global levels. Recent cases of severe acute respiratory syndrome, avian influenza, haemorrhagic fevers and especially the threats arising from the possibility of misuse of biological and chemical agents demonstrate the need for an effective system of surveillance and early warning at national level providing a higher data structure (5-7).

The structure of surveillance system is based on the existing legislation, goals and priorities, implementation strategies, identification of stakeholders and their mutual connections, networks and partnerships and also capacity for disease diagnosis. Primary care physicians or general practitioners who provide the first contact with a patient play a crucial role in the system. The surveillance system relies on the detection of communicable disease in the patients and disease notification (8-10).

The project Public Health Reform II (Europe Aid/128400/C/SER/BA)was implemented in Bosnia and Herzegovina from December 2011 till December 2013 and was funded by the European Union Aid schema. Its principal aim was to strengthen public health services in the country through improved control of public health threats. One of the three components of the project dealt with enhancing and improving assessment of global public health and the system of communicable diseases notification.

Based on an interest from regional public health authorities, eight of them were selected to participate in some workshops. Interviews with general practitioners in each region were taken during the initial phase of the activities. Professionals who were interviewed indicated the following challenges for the surveillance system they contribute to: the list of mandatory notified diseases too long, clear case definitions and rationale for surveillance missing, mixture of case-based (11) and syndromic surveillance (12), lack of capacity for cases confirmation and a low level of communication among all surveillance stakeholders.

The interview findings led to organization of workshops for primary care physicians in eight primary health care centres during March 2013. The aim was to improve the situation and increase notification rates. It was expected that acquiring deeper insights into the role of disease notification would lead to an increased effectiveness of the surveillance system. Outcomes from the effort to improve the quality of notifications in the region of Tuzla are reported in this paper. Physicians from the county were invited in cooperation with the local public health office and notifications were stored in electronic format. This set-up of the endeavour was uniformly repeated across all the eight regions of Bosnia and Herzegovina.

Methods

Study design

The study was designed with the aim of revealing potential effects of updating primary care physicians with details of surveillance. Thus, a cohort of primary care physicians was used to follow the effects. Selection of participants was on the basis of interest. No attempts to randomize were undertaken. The project collected baseline data on notification from the database maintained by the Tuzla epidemiologists for year 2012 up to February 2013. The workshop was carried in March 2013. The project attempted to keep contact with participants by email and by personal visits. Data from the same source were collected until October 2013. There were 20 participants at the first workshop. Estimating the proportion from the total of those who serve the region was not possible because of the lack of data. However, the total number of general practitioners listed in 2014 was 378 physicians (13) as our participants were mostly from offices within the city of Tuzla. Our estimate is based on the average number of citizens per general practitioners (GPs) in the region which is 1263 inhabitants per GP. Tuzla has 120441 inhabitants according to the census from 2013, which results in about 95 general practitioners in the city. Hence, participation in the workshop represents approximately 21% of all primary care physicians in Tuzla.

Workshop

The workshop started with an introduction of aims and expected outcomes. Assessment of knowledge on surveillance, disease reporting and attitudes to disease notification followed. Principles of communicable disease surveillance and use of case definitions with emphasis on importance of surveillance, techniques, categories and use of the EU case definitions were presented by the project. Following discussion dealt with everyday problems and opinions on the system of surveillance as well as the use of the EU case definitions. At the end of the workshop each participant received a copy of the EU case definitions, translated into the local language. Local management of primary health care centres and people from epidemiology department were also invited to participate as observers.

All data were anonymised and no ethical considerations were identified.

Data processing

The timeliness for notifications obtained from primary care physicians in the town of Tuzla was compared before and after the workshop. The timeliness was used as an indicator of quality, as it reflects the speed between steps in a public health surveillance system (14).

We chose the following definition of timeliness out of several options: "Average time interval between date of onset and date of notification by general practitioners/hospital (by disease, region and surveillance unit). It means time interval between the first symptoms of diseases and reporting", as defined by the ECDC (15). Timeliness was computed from dates stated in individual notifications separately for those noted before and after the workshop.

The file was sorted based on the ICD-10 diagnosis stated by the physician notifying the case and laboratory confirmation. Timeliness was computed for all the diagnoses as well as selected ICDs for tuberculosis (A15), scarlet fever (A38), enteritis (A09) and scabies (B86).

Differences in medians before and after the workshop were compared by use of the two-sample Wilcoxon Rank Sum Test and Signed Rank Tests and the average values were compared by the two-sample independent t-test from the R project (16), with a level of statistical significance set at $P \le 0.05$.

Results

As Table 1 illustrates, the sample comprised 980 reported cases, 784 (80%) were before the training and 196 (20%) were reported after the workshop.

In total, 147 primary care physicians reported syndromic diagnosis of a communicable disease case (140 before the workshop and 69 after the workshop).

Total sample				
Sample	Total	Before	After	P-value
Total Cases	980	784	196	
Median	1	6	1	0.030^{*}
Average	12	20.2	9.2	0.039*
Maximum	152	152	133	
Minimum	0	0	0	
Tuberculosis				
Sample	Total	Before	After	P-value
Total Cases	159	99	60	
Median	58	60	13	0.014^{*}
Average	57.1	57.6	27	0.019*
Maximum	152	152	133	
Minimum	0	0	0	
Enteritis (A09)				
Sample	Total	Before	After	P-value
Total Cases	132	86	46	
Median	2	3	2	0.035*
Average	3.7	3.2	2.7	0.065^{+}
Maximum	41	41	23	
Minimum	0	0	0	
Scarlet fever (A38)				
Sample	Total	Before	After	P-value
Total Cases	33	17	16	
Median	0	1	0	0.487^{*}
Average	1.8	1.6	1.5	0.611^{+}
Maximum	13	13	13	
Minimum	0	0	0	
Scabies (B86)				
Sample	Total	Before	After	P-value
Total Cases	98	71	27	
Median	0	1	0	0.512*
Average	1.7	3.9	2.7	0.481†
Maximum	37	37	13	
Minimum	0	0	0	

Table 1. Timeliness for notified cases before and after the workshop

*P-values from Wilcoxon test.

[†]P-values from t-test.

The difference in medians of timeliness for the total sample (Table 1) indicates a reduction from 6 days to 1 day following the workshop; the average of the indicator was reduced to one half. The difference was statistically significant for both the median value (p=0.03) and the mean value (p=0.04). The reduction for notified cases of tuberculosis was more pronounced. It

went down from a median of 60 days to 13 days (p=0.01), whereas the mean from 57.6 days to 27.0 days and this difference was statistically significant too (p=0.02).

The median of timeliness notification for enteritis cases was significantly lowered after the workshop from 3 days to 2 days and this difference was statistically significant (p=0.03). Furthermore, this difference was also evident in the comparison of mean values.

There were no significant differences in both median and mean values in the timeliness for scarlet fever and scabies before and after the workshop (Table 1).

Discussion

The surveillance system in Bosnia and Herzegovina suffered after the war. It is not stabilized yet, experiencing lack of funds, and it is both organizationally as well as politically divided. It is run on a regional basis, where all primary care physicians are legally required to notify cases based on syndromic diagnosis. Such a system is characterized by underreporting due to lack of responsibility and weak supervision from authorities. Nevertheless, some authors have demonstrated positive effects of an information campaign on improved notifications in a province of Vojvodina, Serbia (17) where public health services operate in a similar environment to Bosnia and Herzegovina.

This project in Bosnia and Herzegovina aimed to increase syndromic notification rates through focused workshops as an example for regional epidemiologists how to continue with improving quality of the surveillance. However, we are aware that the quality consists of a multidimensional character and the timeliness is only one of them. Thus, using it for a proxy of quality has its limitations. Timeliness of a surveillance system depends on a number of factors and its assessment should include a consideration of how the data will be used and is specific for individual diseases under surveillance (3,18). Other indicators of timeliness are also available, such as the average time interval between the date of outbreak notification and the date of the first investigation or proportion of outbreaks notified within 48 hours of detection and the like. Obtaining a comprehensive assessment of surveillance quality requires considering more attributes, such as sensitivity, representativeness, usefulness, simplicity, acceptability and flexibility (15,19). Therefore, even so, this report demonstrates a significant reduction in notification time between syndromic diagnosis and notifications, and the quality improvement was achieved incompletely. Another opened question is whether or not achievements are to be sustained. Nevertheless, the changes in notifications were observed after the workshops, based on a follow-up evaluation.

Our findings are congruent with similar studies where timeliness of disease notification was also followed and reported, before and after some type of intervention with a main aim to reduce time response between two steps in the process of reporting. Implementation of electronic laboratory reporting resulted in reducing the median of timeliness to 20 days versus 25 days for non-electronic laboratory reporting (20). Another study has demonstrated reduced median of timeliness for notifications by 17 days from the year 2000 to 2006 with a higher rate of notification completeness (21).

The importance of increased interaction between primary care physicians and surveillance professionals in notifying communicable diseases was demonstrated in our study, as well. Providing case definitions from the EU and along with the local ones was appreciated and probably contributed to improved notification rates. The fact that standard case definition is a premise for data quality and validity (22) was reconfirmed with similar studies reported (23,24), where increased dedication to reporting with data quality- timeliness and completeness was observed. There are factors which are beyond the influence of physicians, such as patient's awareness of symptoms, patient's search for medical care, capacity for case confirmation,

reporting of laboratory test results back to the physician and to other surveillance stakeholders and public health agencies, which limit the validity of interpretation of the findings, too. Another limitation stems from the limited time of the study, where 80% of cases were reported before the workshop and 20% of cases were notified after the workshop. Another serious limitation of this study stems from the design used. Given the specific audience we worked with, namely general practitioners from various parts of the administrative area, the selection of the study participants was "on the basis of interest". As an EUROPEAID project we had no other choice. Therefore, the results based on such constrained participation should not be utilized with valid statistical inference on the level of population. The sample representativeness may seriously affect the generalizability (external validity) of the findings. Nevertheless, the study was intended to be more of a pilot nature, demonstrating the feasibility of monitoring the quality of the surveillance system.

Communicable disease surveillance is the first step towards prevention and it is one of the most important tools used in public health. The surveillance system should be regularly evaluated in terms of usefulness and quality by defined standards and recommendations. In this report, we shared results of the surveillance system evaluation in Tuzla, Bosnia and Herzegovina by using one of quality standards- timeliness of disease notification before the training and after the training. This study underlined the importance and effectiveness of increased communication and feedback procedures between primary care physicians and surveillance professionals, use of standard case definition and surveillance evaluation. The identified outcomes of evaluation should be the basis for setting priorities and activities to improve the quality and effectiveness of the surveillance system.

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REVIEW ARTICLE

What we need to improve the Public Health Workforce in Europe?

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Abstract

With the growth and complexity of current challenges such as globalization, health threats, and ageing society, financial constraints, and social and health inequalities, a multidisciplinary public health workforce is needed, supported by new skills and expertise. It has been demonstrated that public health education needs to include a wider range of health related professionals including: managers, health promotion specialists, health economists, lawyers and pharmacists. In the future, public health professionals will increasingly require enhanced communication and leadership skills, as well as a broad, interdisciplinary focus, if they are to truly impact upon the health of the population and compete successfully in today's job market. New developments comprise flexible academic programmes, lifelong learning, employability, and accreditation.

In Europe's current climate of extreme funding constraints, the need for upgrading public health training and education is more important than ever. The broad supportive environment and context for change are in place. By focusing on assessment and evaluation of the current context, coordination and joint efforts to promote competency-based education, and support and growth of new developments, a stronger, more versatile and much needed workforce will be developed.

Keywords: public health competences, public health education, public health workforce.

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Introduction

The Bologna process and the WHO Regional Office for Europe's New European policy for health – Health 2020 – support the apparent move from interest in the traditional public health worker, a specialist physician, to a more generic worker who will be expected to work across organizational boundaries with a vast array of professionals to promote the public health agenda. New emphasis has been put on further developing public health systems, capacities and functions and promoting public health as a key function in society (1). To do this, public health education needs to include a wider range of health related professionals, including managers, health promotion specialists, health economists, lawyers, pharmacists etc. (2). In the future, public health professionals will increasingly require interdisciplinary and interagency team working and communication skills if they are to truly impact upon the health of the population.

But how do we get there? How can this need and the favourable supportive context actually be translated into a better equipped public health workforce? First we need to work together to better understand the current situation. Next we need to develop and agree upon core and emerging competences for a well-equipped work force. Following this, we need to translate those competences into competency based training education. Finally, we need to assess public health performance to determine how we are doing. The steps in Figure 1 summarise this process.

Figure 1. From core public health functions to core competences, teaching curricula and public health performance



Competence based education and training

Public health competences may be defined as a "...unique set of applied knowledge, skills, and other attributes, grounded in theory and evidence for the broad practice of public health" (3). WHO defines competence even more precisely as the combination of technical knowledge, skills and behaviours (4).

There is growing recognition that to adequately prepare public health students to meet the challenges of today, the schools must go beyond training in the traditional areas of biostatistics, epidemiology, environmental health sciences, health policy and management,

and the social and behavioural sciences. These areas provide the student with a specific set of knowledge and and/or skills in a particular content area. While necessary, they are not sufficient for effective public health practice because they do not equip students with the contextual and integrative competences required to adapt to the new challenges that they will face in practice.

Thus, in recent years, growing interest can be observed in competence-based medical education due to its focus on outcomes, an emphasis on abilities, a de-emphasis of time-based training, and the promotion of learner-centeredness (5). This method trains graduates in problem solving skills applied to reality-based situations or real time problems in cooperation with institutions in the field (6). Competency-based education (CBE) is organized around competences, or predefined abilities, as outcomes of the curriculum. "Competences" have become the units of medical educational planning (2). CBE has also been introduced in public health training and education to close the bridge between teaching methods and the competences required in practice. In an era of insecurity, educators should make sure that every graduate is prepared for practice in every domain of their future practice. A first step in CBE is the identification of key competences that graduates need in order to perform adequately when entering the public health labour market. Box 1 below provides recommendations on developing competences.

The professional development of public health leaders requires competence based instruction to increase their ability to address complex and changing demands for critical services (7). Determining necessary competences provides a foundation for standards development that can be used to operationalise teaching objectives and design impact and outcome evaluation methods. Measuring programme outcome and impact satisfies all stakeholders: providers, practitioners, consumers, and other relevant bodies. Clusters of competences, aptitudes, or ability achieved may be indicative of the potential for future achievement. Public health workforce development has resulted in pressure for competence-based programming and performance measurement to demonstrate quality and accountability.

To support competence-based medical education, many frameworks have been developed: CanMEDS (8), and the Outcome Project of the (US) Accreditation Council for Graduate Medical Education (9). These frameworks form the basis of training for the majority of medical learners in the Western world (5). However, based on the results of a systematic literature review, Frank et al. observe that competence-based medical education still needs to identify and clarify controversies, proposing definitions and concepts that could be useful to educators across various educational systems (10). Still little is known about approaches to CBE in public health, its effectiveness and efforts made for educational quality assurance. Therefore, it is important to explore future directions for this approach to prepare health professionals. Among the current challenges facing schools of public health is how best to translate these competences into specific learning objectives with measurable outcomes.

The role of employers in determining competences

In order to assure that the Schools of Public Health adequately address the skill needs of the employment market, close partnerships are needed between employers and educators, both of which are essential components of a 'knowledge triangle' based around the interaction of education, research and innovation (11). Many of the competences valued by employers are really enduring qualities, and the need is to find new and better ways for educators to develop them in students, so that they can then be applied in modern workplaces. In fact, the most important skill that Europe's workers will need in order to adapt to the demands of the future is the ability to be lifelong learners irrespective of the discipline.

To determine competences, it is of utmost importance to ask public health employers. Specifying competences needed by the public health labour market can result in a benchmark approach to competence-based education. The selected competences serving as benchmarks would standardize the criteria for change in education of public health professionals. The benchmarks are relevant, because there is a need for a rapid reform of the educational system as a result of economic and political changes or previous failures to meet employment market needs. Moreover, the benchmarks will provide a framework for evaluating the effects of various educational strategies on competence-based education. Therefore, there is a need to specify competence requirements for different types and levels of Public Health employers. Thus, the question arises: what do employers consider as most important? Some studies suggest that employers value tacit knowledge, generic skills and work-based attitudes more than academic or technical knowledge which they take for granted employing graduates holding an MPH degree (12). They look for employees who are motivated, take responsibility and are willing to learn. In view of the contemporary public health employment market worldwide, it is important to acquire the right mix of general and specific skills that fits a certain job. Further distinction between skills can be made between "hard skills" and "soft skills". The former refers to rather technical, knowledge-related skills, while the latter includes competences such as communication and team work (13). These "people skills" are essential in order to make the workforce more adaptable. The reason for this might be that these set of competences will not only prepare people for change emotionally and mentally, but they will also have an easier time adapting to a new environment. "People skills" seem to matter in both daily private life and at work. For example, it was found that nurses have higher level of patient satisfaction than doctors because of their better interpersonal skills

Identification of competences in the US and Europe

There is growing consensus in the U.S. and Europe on the key competence areas in academic public health curricula. Influential documents have been produced by the Public Health Foundation, i.e. the Tier 1, Tier 2 and Tier 3 Core Competences for Public Health Professionals (Adopted May 3, 2010) (14). The following key public health competences are stated: epidemiology and biostatistics; environmental health sciences; health policy, management of health services and health economics; health promotion and education; and orientation to public health. Additionally, generic competences, like analytical skills, communication skills, financial planning and management skills, and cultural skills are recognized as important for every academic public health professional. In the United Kingdom, a Public Health Skills and Career Framework (15) was developed, which is an attempt to define competences for seven levels of public health employment.

In addition, through a year-long process, the Association of Schools of Public Health in the European Region (ASPHER) developed six main domains of public health competences (16, 17). There are also many other projects worldwide which aim at the development of more specific lists of competences e.g.: Core Competences Framework for Health Promotion (18), Core Competences for Public Health Epidemiologists (19) or competences in the area of public health leadership. The latter are especially of pivotal importance given the repeatedly stated need to develop strong leadership skills in public health professionals (1).
Box 1. Recommendations on competence development

- 1. Agree on common definitions, concepts and approaches related to competences, competence standards and CBE.
- 2. Review the existing lists of public health competences with the aim of finding synergies, common understanding, universality or individual health care system specificity as well as selecting best practice examples.
- 3. Agree on the underpinning quality criteria.
- 4. Develop Public Health Educational Competence Framework comprising core and emerging defined competences (which could be accepted by educators and public health professionals worldwide irrespective of the system they work in), values and convictions.
- 5. Ensure that adequate training is provided and help to develop the workforce in terms of career progression and staff recruitment and retention through such a framework. This should include quality assurance and solid accreditation mechanisms (16).
- 6. Carry out studies on CBE (a limitation of these studies thus far is that they mainly use qualitative approaches, like Delphi group rounds, panel studies and focus groups. While these approaches are very useful in identifying the perceptions of key competences, they preclude firm conclusions and have limited representativeness) (12). Based on the developed lists of competences, surveys should be given to public health employers, graduates and educators to prioritize key competences and their level of importance.
- 7. Use simple and comprehensive language and define competences as measurable units.
- 8. Make training and research relevant to practice and community service to revitalize the key role of schools of public health in this endeavour (16).
- 9. Study the effects of CBE on public health practice to make it evidence-based and see whether it makes a difference.

Table 1 illustrates the main emerging competences identified by the European Commission for 19 economic sectors. As can be seen, these represent skills related to innovations (e-skills, green skills), "people skills" (intercultural skills and team work) and management (entrepreneurship, intercultural management). Moreover, it is emphasized that multi skilling and skill-mix of these factors will be common and necessary.

Social/cultural	Technical	Managerial
Intercultural skills	• ICT and e-skills (both at user	 Intercultural management
• Team work	and expert level)	 International value chain
• Self management	 Skills/knowledge related to 	management
• Entrepreneurship and	new materials and new	 International financial
innovativeness	processes	management
	 Health and green skills 	• Green management
	(related to health and	(implementing and managing
	climiate and environmental	climate and environmental
	solutions)	friendly policies and
		solutions).

Table 1. Emerging competences

Adapted from: European Commission. (2010). Transversal Analysis on the Evolution of Skills Needs in 19 Economic Sectors (13)

In addition, a set of "cross-cutting" competences has been developed by the Association of Schools of Public Health (ASPH) in the U.S. These include: 1) Communication and Informatics; 2) Diversity and Culture; 3) Leadership; 4) Professionalism; 5) Programme Planning; and 6) Systems Thinking (20).

In regard to *Communication and Informatics*, it is important that graduates have an understanding of and ability to use the newly emerging information technologies and social media tools (e.g. I-pads, I-phones, Facebook, Twitter, etc.) in designing and implementing health interventions and in communicating messages. These tools will become even more important in developing greater public health preparedness to deal with natural disasters, continuing infectious disease outbreaks, and the ongoing threat of bioterrorism. On a different but related note, they are also central to reaching new groups of potential public health professionals through online and distance learning technologies.

Providing training in the competences associated with *diversity and culture* is particularly germane to addressing the continued inequalities in health by socioeconomic status and race/ethnicity both within and across countries, and for addressing the health issues associated with increased migration. Such skills are essential to understanding and empowering communities to improve health and to adapting public health interventions to local cultures and contexts.

It is becoming increasingly evident that in public health, as in other areas of public service and in the private sector, leadership matters (see case study 1 annexed). Little is accomplished without it. The fundamental understanding is that no public health problem in history has been successfully met with technical skills alone. While many public health students may not think of themselves as leaders and may not aspire to leadership positions, they should be exposed to different approaches and skills associated with exerting leadership whenever and wherever their careers may take them. Investment should be made in the development of innovative and creative management and leadership programmes informed by systems thinking, information science and transformational change principles to strengthen public health leadership. Moreover, the particular type of leadership required is not of a traditional command and control variety, but rather akin to what has been termed "adaptive" leadership: leading in contexts where there is considerable uncertainty and ambiguity. These environments often contain imperfect evidence and an absence of agreement about both the precise nature of the problem and the solutions to it. In the future, much of the authority of public health leaders will not come from their position in the health system but rather from their ability to win over and convince others through influence rather than control (21). More schools of public health are placing increased emphasis on the development of leadership competences.

In sum, the importance of cross-cutting core and emerging competences for adapting and adequately equipping academic programmes in schools of public health in Europe merits further exploration. Clearly, these competences will need to be adapted to local contexts associated with different historical, cultural, political and economic circumstances. Understanding the different settings involved is of great importance for accountable performance in public health. Public health practitioners are expected to be effective in different environments. Effective public health practitioners have to work with many different partners and paradigms.

Along with determining core and emerging competences to in order to develop competence based education in public health, it is important to make an overall strategic plan for public health training and education.

Box 2 below outlines a strategic framework for capacity building in public health training and education that should be articulated. This should be based on needs, with concrete objectives and targets.

Box 2. Strategic framework for capacity building in public health education and training

- 1. A strategic plan for capacity building in public health education and training in Europe should start from a SWOT analysis and should define specific capacity building objectives and targets (with minimum set of indicators for monitoring and evaluation), which will be linked to European public health needs as well as to the new European policy for health "Health 2020" and European Public Health Operations as a public health framework for action;
- 2. The targets for a strategy to strengthen public health education and training should cover all areas of current conceptual models of public health capacity building within the Bologna Process as follows: organizational development and resource allocation; degree and curriculum reforms; quality assurance; qualification frameworks; international recognition of degrees and mobility within the European Higher Education Area (EHEA) and the rest of the world; policies on widening access to and increasing participation in higher education; attractiveness of European higher education and the global dimension of the Bologna Process;
- 3. Workforce development in public health should be considered among the highest priorities at national and European level;
- 4. Perspectives on public health and expectations in public health from representatives of other sectors and policy areas should be included to enrich capacity building and lay out a basis for health in all policies;
- 5. "Public Health Identity" needs to be strong, reflecting the diversification of professional functions in public health and reconciling them with a shared identity:
- 6. both public health generalists and specialists are needed, as well as "horizontal" public health workers who consider health issues in other key sectors policy areas;
- education and training of public health professionals focuses on health incorporated into development policies and tackling the socioeconomic determinants of health;
- public health education and training requests to be recognized and developed in other key sectors. Public health topics, views and experiences should be included in medical studies and spread through curriculum from the very beginning, as an example: 10-15% proportion of overall medical teaching should become a target.
- 7. The strategy for capacity building in public health education and training needs to consider horizontal and vertical aspects: it must address all levels of government and administration (supranational to local), as well as in other domains (private, civil society, public, etc).
- 8. The pace of strategy development for capacity building in public health education and training must fit with the national and international context. One should proceed in a measurable way.

New developments in public health education and training

As we have seen, the articulation of and consensus on core and emerging competences can inform competency based education and training, leading to a better equipped public health workforce.

At the same time, several areas are emerging in the field of public health in Europe:

- Development of broader, more flexible academic public health programmes, based on mobility of students and professionals in the EHEA;
- Expansion of Lifelong Learning (LLL), which involves extending knowledge and gaining skills –acquisition of competences in the SPHs, and application of innovation in training, particularly with regard to information technology (*Internet and Mobile technologies, OpenCourseWare* on selected topics, and supportive elements of *Distance Learning* in general); and
- Increased potential of higher education programmes, based at all levels on state of the art research fostering changes by innovation and creativity.

Regarding the first area, in this section we discuss the move towards joint degrees and collaborative approaches with other schools. With respect to the second, we describe the importance of lifelong learning for growth and especially, increased employability, a new

development of its own. Finally, we explain the new accreditation agency in Europe, supporting and bringing about increased possibilities, improved accountability and better performance for public health education.

Broader, more flexible academic public health programmes

Although public health has always been "global", under the rubric of "international health", recent efforts have been underway to redefine "international" health as "global health" and think of it as a new and somewhat different field. This movement is being led primarily by medical schools, arguing that the new global health challenges require skills and approaches not typically found in "traditional" schools of public health (22), pointing to the need for greater problem solving based field work, leadership development, and exposure to other disciplines such as engineering, business, law, and public policy. While many schools of public health have provided such training for years (23), there is no doubt that more could be done. The challenges of global health concerns could provide an opportunity for closer relationships between schools of public health and schools of medicine in addition to the other health science professional schools.

As we have illustrated, public health is interdisciplinary, drawing on many fields, including biology, mathematics and statistics, law, business, economics and numerous other social science disciplines. However, there is only limited inter-professional education in public health. Despite recent renewed interest in inter-professional training - among medicine, dentistry, pharmacy and public health - relatively little is occurring (2). Among the reasons are protection of professional turf; the lack of top academic leadership and resources; lack of time and alignment of academic calendars; lack of faculty training and incentives; and lack of recognition by accrediting bodies that inter-professional competences are important (24). However, the most limiting factor in the current conception of inter-professional training is the relative exclusion of the major focus of public health; namely, the health of populations and communities. When most people refer to inter-professional education, they are primarily talking about creating effective patient care centered teams. For example, a recent influential report defines "inter-professionality" as involving "... continuous interaction and knowledge sharing between professionals, organized to solve or explore a variety of education and care issues all which seek to obtain the patient's participation." (25). Thus, to the extent that inter-professional education gains traction, one of the challenges for schools of public health is to define its role within this area.

Three possible approaches to inter-professional education include concurrent degrees, joint degrees, and "embedded" degrees that could be given by schools of public health and other health science professional schools, such as medicine, nursing, dentistry, and pharmacy. A concurrent degree involves the admission of students to two schools (e.g. medicine and public health) from the start of the programme with a defined sequencing and pathway of interrelated courses. Upon successful completion of requirements, students are simultaneously awarded both degrees.

For example, at the University of California at Berkeley (USA) such programmes exist between public health and business, public policy, social welfare, city and regional planning, and journalism. However, this is not yet offered with the health science professional schools perhaps because they are not located on the Berkeley campus.

A joint degree, on the other hand, consists of students receiving two degrees, but typically not at the same time and with relatively little overlapping course work. Usually the medical or nursing degree is completed first and then students enrol for their MPH degree. In most cases,

the MPH degree is considered "secondary" to the students' primary clinical degree. Many schools of public health in the United States offer such joint degrees.

Finally, a new and different approach exists which is called an embedded degree. This is offered as an arrangement between The University of California at Berkeley School of Public Health and Stanford University's School of Medicine. In this arrangement, up to five Stanford medical students interrupt their medical school education during the second year to participate in an intensive one year 42 credit hour set of courses at Berkeley's School of Public Health. The Stanford students then complete their medical training. Upon completion of a jointly overseen Berkeley-Stanford thesis project, students are awarded both their MD and MPH degrees.

The embedded approach is perhaps the most innovative of the three approaches in that it involves placement of a medical degree programme *inside* a School of Public Health while still in collaboration with a medical school. In addition to the Stanford arrangement UC-Berkeley School of Public Health and UC - San Francisco School of Medicine offer a combined "joint medical programme", in which students spend their first three years on the Berkeley campus. Instruction focuses on case-based individual and team-based problem solving, assessing patients and their illness within the larger context of the community and the social environment in which patients live. Upon completion of the three years, students complete their medical training and board exams at the UC San Francisco Medical School campus. The extent to which these, and possibly other examples of inter-professional training, might be relevant to Europe and other parts of the world is a topic worthy of further discussion.

Lifelong learning and the importance of employability

We live in the era of learning, witnessing new educational policy discourse with neo-liberal tenets (26). Policies of the EU support the "learning drive". It can be stated that we are observing a shift from competitiveness, growth and employment to employability – the ability to become employed. Currently, 21st century competences are on the front page of educational reforms in Europe and worldwide. A Green Paper from the EU Commission calls for greater investment in workforce planning, while the EU Council has called for greater priority to be given to Lifelong Learning as 'a basic component of the European social model' (27). In line with the establishment of Lifelong Learning Programme (LLP) (Decision No 1720/2006/EC amended by 1357/2008 Decision), and the "New Skills for New Jobs" communication, the need to anticipate and match future skills has been developed.

With regards to knowledge and skills, there are several systems and frameworks set up on the EU level, especially the European Reference Framework that defines the eight main competences needed for any person to be able to function successfully in their job and in society. The advantage of using this reference tool is that it actually reflects on the learning outcome of a person instead of only using length of time in the educational system². A classification structure called 'European Skills, Competences and Occupations' (ESCO) is another example of ongoing work from the EU. This system is planning to bring together the most relevant skills and qualifications for numerous jobs into one network³.

The European Commission supports the development of lifelong skills and competences both formally and informally and opens many financial instruments aiming to promote the development of European educational know how, including the use of modern technology to

² Information retrieved 16/08/2011 from http://ec.europa.eu/education/lifelong-learning-policy/doc44_en.htm.

³ Information retrieved 16/08/2011 from http://www.cedefop.europa.eu/EN/news/16575.aspx.

support learning.

It has to be noted that effective use of the EC financial instruments contributes to the development of collaborative learning, exchange of good practices and rise of new forms of teaching and learning, ranging from problem-based, active, self-directed, student-centred approaches to blended or hybrid learning, which is a combination of face to face and online learning. A broad range of options exist, such as the principle of mutual recognition of programmes and diplomas through the Erasmus Mundus grant or simply individual mobility throughout Europe. These programmes are not only restricted to European countries, but allow for wider global participation, an important factor to be considered by public health educators. Moreover, programmes offered by the European Commission support the learning of foreign languages, increasing intercultural understanding, raising awareness of the potential of languages, and calling on decision makers to ensure efficient language education. It should be recognized that public health does not have specific a continuing professional development programme, unlike other health professions, and uses courses from other health care fields. However, as has been illustrated, many possibilities exist that can support the development of continuing education in public health and can help give rise to the still underdeveloped area of lifelong learning in the field.

European accreditation

Accreditation is an important step to help ensure or enhance the level and quality of public health curricula and improve the standardization of a core curriculum in public health education. Recently, along with developing lists of competences for public health professionals and for Master education, ASPHER has taken the initiative, together with partners – EUPHA, the European Public Health Alliance (EPHA), the European Health Management Association (EHMA), and EuroHealthNet – and in consultation with WHO Europe and the EU Commission, to establish a European Agency for Accreditation of public health educational programmes and schools of public health.

The accreditation agency has become an independent body, the *Agency for Public Health Education Accreditation (APHEA)*, assuring its credibility and gaining approval by international agencies in charge of accrediting bodies and entry into international quality assurance registers.

The European accreditation process for Master of Public Health (MPH) programmes is now under way. All participant organizations and individuals who contributed to this process are confident that this process will set new and improved standards for MPH training in Europe. This will ultimately help to improve the competences and employability of those graduating from public health programmes and entering the workforce, thereby contributing to the advancement of the field of public health across the vast European region.

Membership in the APHEA Board of Directors includes representatives from all five partner organizations, while guidelines require that the chair of the Board of Accreditation is an individual highly distinguished in the field, but not directly associated with any of the organizations in the consortium.

The curriculum required by APHEA is based on the core subject domains from the list developed in the European Public Health Core Competences Programme, although slightly regrouped (Table 2). The agency adopted a "fitness for purpose" approach to assess an academic institution based on the premise that an academic institution will set its mission for education and research within the context of a specific regional or national environment. This approach requires institutions to be orderly in developing programme aims, in carrying out ongoing assessments, and in using this information to direct and revise final qualifications,

curriculum modules, strategies and operations. Ongoing assessment is intended to lead to programme improvement as part of this approach. For purposes of determining conformity with APHEA accreditation criteria, the Board of Accreditation will consider current developments and planned changes as they relate to the "fitness for purpose" process. This approach takes into account the diversity of the European schools of public health, but simultaneously sets certain curriculum standards for high quality education and training in public health in Europe.

The Call for Commitment circulated to ASPHER members in October of 2010 indicates that there is great interest among ASPHER member institutions to undergo accreditation of their public health or equivalent programmes at the European level. The agency started with three accreditations in 2011 and hopes to reach a capacity of ten per year by 2015.

Core subject areas	Curriculum content	ECTS *
Credit ranges** Introduction	Introduction to public health	2
Methods in public health	Epidemiological methods, biostatistical methods, qualitative research methods, survey methods	18-20
Population health and its determinants	Environmental sciences (including physical, chemical and biological factors), communicable and noncommunicable disease, occupational health, social and behavioural sciences, health risk assessment, health inequalities along social gradient	18-20
Health policy, economics, and management	Economics, healthcare systems planning, organization and management, health policy, financing health services, health programme evaluation, health targets	16-18
Health education and Promotion	Health promotion, health education, health protection and regulation, disease prevention	16-18
Cross-disciplinary themes (mandatory and/or elective courses)	Biology for public health, law, ethics, ageing, nutrition, maternal and child health, mental health, demography, IT use, health informatics, leadership and decision-making, social psychology, global public health, marketing, communication and advocacy, health anthropology, human rights, programme planning and development, public health genomics, technology assessment	21-23
Internship/final project resulting in thesis/ dissertation/memoire	Supervised by faculty (full time and/or adjunct)	24-26
 * European Credit Transfer and Accumulation System (or equivalent). ** The subject areas and credit ranges above are recommended; the accreditation process will assess the credit division among subject areas for a given programme. 		
APHEA – http://www.aphea.net		

Table 2. APHEA core subject domains for MPH curricula

APHEA – http://www.aphea.net CEPH - http://ceph.org/pg_about.htm

Conclusions

Public health is rapidly gaining prominence in the various public policy domains in Europe. The increasing importance of preparedness towards major health threats, the growing recognition of the fact that health is an important resource for economic growth and sustainability, and the heightened awareness of important health inequalities in Europe are powerful driving forces in this regard. However, many EU Member States and Candidate Countries have insufficient institutional and professional capacity for public health and the process of reforming the relevant services is slow. Compared to the United States and other industrialized countries, as well as some emerging economies (e.g., Brazil), the relative lack of public health capacity in the EU is striking (28). In addition, the situations within countries differ a great deal.

As stated in the European Action Plan:

Current public health capacities and arrangements of public health services vary considerably across the WHO European Region. These differences reflect variations in political prioritization and organizational models of public health services, as well as the distribution of functions and responsibilities across different administrative levels. However, there are many similarities across the European Region, mainly in basic needs for public health information, knowledge and competences. There are often continuing problems of under-resourcing, skill shortages, insufficient capacity, poor morale and low pay. Competency frameworks for a public health workforce, as well as career pathways, remain under-developed. Public health functions are fragmented and sections of the workforce may work in an isolated way. While research capacity is well established in some countries, effective facilitation of research capacities to support policy development and programmes still lags behind (21).

As an essential element of good governance, the European Ministers of Health in the Council of Europe request that a competent post-graduate training institution is available at national level, as well as in large regions, with links to both academic and health administrations (29).

The Schools and Departments of Public Health are the main structure to provide education and training for public health professionals, as well as consultation and applied research for health administrations. The public health services, comprised of qualified and certified public health professionals, have to address the four main deficits of information, prevention, social equity and a weak regulatory framework. It is estimated that an additional 22,000 public health professionals are required per year for the European Union alone to maintain an appropriate level of services. Almost three times the present educational capacity is needed to provide these numbers.

However, in order to meet population health needs, significant efforts are required not only to increase the number of public health professionals, but also their quality and relevance to public health (21). Traditional disciplinary, sectoral approaches are no longer sufficient to resolve complex health problems and provide different perspectives (30). Investing in a multidisciplinary public health workforce is a prerequisite for current challenges. In fact, as stated in the European Action Plan for Strengthening Public Health Capacities and Services "a sufficient and competent public health workforce constitutes the most important resource in delivering public health services." (21).

The European Schools and Departments of Public Health have widely adopted the Bologna format of teaching, as 47 countries are committed to joint action for strengthening a European Higher Education Area (EHEA). In spite of this, and as we have indicated, inequalities and the need for harmonization still exist. Therefore, agreement is sought especially on

standardized lists of competences required in order to perform specified service functions. The education and training of public health professionals in Europe has to be interdisciplinary and multi-professional, comprising the medical as well as the social sciences. In addition to core competences, cross-cutting competences are important to consider, including broader, multidimensional areas, such as leadership and diversity and culture. These competences should inform and shape public health education and training programmes, leading to competence-based education. This approach closes the bridge between traditional teaching methods and the competences actually required in practice. Moreover, it is recognized that education and training for public health should be continuously evaluated and updated by use of performance measurement in everyday public health practice.

Employability is one of the key criteria for successful training of public health professionals. Therefore, two key questions have to be answered: 1) Who employs the public health professionals and what are their agendas? 2) What is the performance of public health professionals? It is of utmost importance to measure preferences of public health employers with respect to the competences required by graduates of public health studies at Bachelor and Master degree levels. Specifying competences required by the public health labour market can result in a benchmark approach to competence-based education. The selected competences serving as benchmarks would standardize the criteria for change in education of public health professionals (31).

The European Union has recognized the importance of developing the field of public health with its ET2020 strategy and both the EU and WHO (Health 2020) are cooperating. However, each country should develop a strategic plan for capacity building in public health education and training, starting from a SWOT analysis and defining specific capacity building objectives and targets with a minimum set of indicators for monitoring and evaluation (see case study 2 annexed).

New developments are heading in the direction of broader approaches to training, employability, and better performance of public health professionals. The focus is on defining the underlying competences needed for students to become effective global health professionals and leaders. In the age of innovation, the most valuable knowledge will be tacit, and universities and business must create environments that promote imagination, inspiration, intuition, ingenuity, initiative, a sense-of-self, self-assurance, self-confidence and selfknowledge. In the future, the public health professional will increasingly require skills such as interdisciplinary and interagency team working and communication skills.

To the extent that inter-professional education gains traction, one of the challenges for schools of public health is to define its role. Three possible approaches include development of concurrent degrees, joint degrees, and "embedded" degrees that could be implemented between schools of public health and other health science professional schools such as medicine, nursing, dentistry, and pharmacy.

During recent years, the relevance of a concept of Lifelong Learning has been recognized by all actors, particularly the European Union. Supported by blended or hybrid learning and employing online technology, these developments will change the educational landscape for all professionals and help make professionals more employable.

In addition, accreditation agencies can help raise the quality and standardization of a core curriculum in public health education. The recent development of the Agency for Public Health Education Accreditation (APHEA) in Europe will support and promote improvements in training.

Finally, it should be recognized that for the public health workforce to truly be equipped to tackle current public health challenges, genuine leadership should exist at all levels.

Leadership that is transformational and collaborative, not top-down, needs to be in place at the policy level, to bring about educational reform; at the teaching level, to implement change; and at the level of public health professionals, to put into practice the new skills.

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ANNEX

Case Study 1: Public health leadership in Europe (Katarzyna Czabanowska)

In October 2010, 'Leaders for European Public Health' (LEPHIE) was developed, a European Erasmus Multilateral, Curriculum Development project in the lifelong learning (LLL) format. This is a collaborative effort between Maastricht University (NL), the Sheffield Hallam University (UK), Lithuanian University of Health Sciences (LT), Medical University of Graz (AT) and the Association of Schools of Public Health in the European Region (ASPHER), and resulted from an ASPHER and EUPHA on-line survey⁴ that highlighted the need for online, problem-based leadership courses.

This module aims to develop leadership competences through the following:

- Examining the key debates around leadership in public health.
- Introducing key theoretical frameworks that underpin leadership learning, and applying theory to actual practice.
- Developing the ability to analyse the public health leadership role and development needs of individuals.
- Stimulating self-assessment of leadership competences to identify knowledge gaps and further training needs.

The competence-based programme focuses on a variety of situations related to public health risks with special attention paid to ageing and chronic diseases, as reflected by identified priorities. The public health leadership content is aimed to be applicable to performance in diverse European public health practices and contexts, and reflects the priorities and objectives of the European Health Programme.⁵ Based on an extensive literature review and expert review panels, a framework was developed to support the curriculum and facilitate self-assessment.

The module uses innovative training methods, such as problem-based and blended learning formats (a combination of face-to-face and online learning), and students are active participants in the process. Thus, students have a common goal, share responsibilities, are mutually dependent on each other for their learning needs, and are able to reach agreement through open interaction (Suzuki et al. 2007). Such an educational approach proves to be successful in the LLL context. The participants are offered interactive lectures, tutorial group meetings and other collaborative sessions at a distance. The course is delivered via an intranet, such as Blackboard or Moodle, and course material can be directly downloaded.

After being successfully piloted in the UK, a mutually recognized international blended learning leadership course worth seven ECTS will be delivered by the international consortium. It is believed that the integration of modern learning technology with collaborative learning techniques, supported by interdisciplinary competence-based education transcending institutional boundaries, will result in transformative learning, which is about developing leadership attributes (Frenk et al. 2010). This constitutes a small step towards inter-professional and trans-professional education.

⁴ Available from: http://www.old.aspher.org/pliki/pdf/LLL Liane.pdf.

⁵ http://ec.europa.eu/health/programme/policy/2008-2013/index en.htm.

Case study 2: Regional cooperation – the development of a regional public health strategy in South Eastern Europe (Vesna Bjegovic-Mikanovic)

A regional public health strategy for South Eastern Europe was developed during a public health expert seminar in August 2004, Belgrade, organised in the framework of the Forum for Public Health in South Eastern Europe (FPH-SEE). Strengths, weaknesses, opportunities, threats and their interactions were defined based on a SWOT analysis. Within this, a framework for a regional public health strategy, including strategic goals and objectives, was determined based on priorities identified by nominal group techniques.

One of the identified goals was "Strengthening human resources in public health", and, within this was the objective of "Ensuring sustainable development of human resources."

Activities included:

- Developing common curricula for public health on different academic levels.
- Providing a common glossary and terminology in public health.

Based on this process, there are the following proposed exercises:

Task 1: Students split up into groups to discuss the draft strategic framework. They analyse strengths and weaknesses, considering a) the development process; b) the draft framework with its goals and objectives; and c) recommendations for improvement. Each group prepares a summary report on strengths, weaknesses and their recommendations, and presents them in plenary.

Task 2: Students compare the national public health strategy of their own country (or health policy if no specific public health strategy exists) with the draft framework for a regional strategy and compare them by highlighting similarities and differences.

Task 3: Students experience participatory and consensus building methods: A SWOT analysis on the public health situation in their country (or province, district, community, or city) is conducted and subsequently, a priority setting method is applied so that a list of public health priorities can be identified in the selected setting.

Source: Public Health Strategies: A Tool For Regional Development. A Handbook for Teachers, Researchers and Health Professionals. ISBN 3-89918-145-X, Lage, Germany: Hans Jacobs, 2005: 583-647.

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SHORT REPORT

Shaping and authorising a public health profession

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Abstract

The aim of this short report is to stimulate a discussion on the state of a public health profession in Europe and actions which need to be taken to authorise public health professionals based on their competencies. While regulated professions such as medical doctors, nurses, lawyers, and architects can enjoy the benefits of the 2005/36/EC Directive amended by 2013/55/EU Directive on the recognition of professional qualifications, public health professionals are left out from these influential (elite) professions.

Firstly, we use the profession traits theory as a framework in arguing whether public health can be a legitimate profession in itself; secondly, we explain who public health professionals are and what usually is required for shaping the public health profession; and thirdly, we attempt to sketch the road to the authorisation or licensing of public health professionals. Finally, we propose some recommendations.

Keywords: profession, professionalization, public health, recognition of professional qualifications.

Introduction

There are many professionals within the European Union (EU) that are still waiting for the recognition of their qualifications. Contrary to regulated professions such as doctors, nurses, midwives, pharmacists and architects, the public health (PH) profession being so multidisciplinary and system-dependent is still not clearly defined in the European states, which hinders professional mobility, rights to an automatic recognition and integration of public health professionals in the single market. The survey carried out by The Association of the Schools of Public Health in the European Region (ASPHER) identified a profound need to develop clear-cut professional qualification models which would allow for the certification and licensing of the profession (1).

The aim of this short communication is to stimulate debate on the state of a public health profession in Europe and measures and actions which need to be taken to authorise public health professionals based on their competencies.

The EU Directives

The EU introduced the Directive 2005/36/EC (2) and adopted Directive 2013/55/EU (3) on the modernisation of Directive 2005/36/EC on the recognition of professional qualifications on the 20th of November 2013. This document was an attempt to provide a basic legislative framework of the recognition of qualifications. However, there are still many issues left unresolved by the directive. The directive 2005/36/EC was formulated to facilitate the mobility of professionals within the EU (4). Depending on the national legislation and the profession in question, the document provides three different legal approaches to the recognition of a qualification. Foster (2012) explained that the automatic recognition is the first possible procedure that is restricted to a limited number of regulated professions (5). In this case, the host country should recognize automatically the qualification. A second approach is the mutual recognition of qualification that is meant for the recognition of a "general system" profession. This procedure works on a case-by-case basis. In general, it establishes that an individual should undergo compensatory measures only when the education or the minimum required years of practice diverge drastically from the receiving country's regulation. Finally, the third approach is for individuals who establish themselves in another Member State (MS) by working or providing a service on a temporary or occasional basis (5,6). The legislation might allow them to work without a prior recognition from the receiving country. However, article 7 of the directive is representing a restriction to this model (4). The article states that if there is a considerable difference between the individual's qualification and/or the training required by the MS in particular in a profession having public health or safety implications, a prior check or compensation measures may be maintained (7). There are many controversial aspects within the directive: it is excluding a part of professionals from the mutual recognition by creating an inequality between the regulated and the unregulated professionals. Moreover, the insecurity for the recognition of the qualification of non-regulated professionals, especially in the health sector, will contribute to a decline in the number of applications for this field (8). Consequently, for a discipline such as public health there may be a shortage of labour force in the following years. These issues need to be solved to determine the needs of the job market.

However, fortunately, the Amendment to the 2005/36/EC Directive article 16(a) states that:

"The mobility of healthcare professionals should also be considered within the broader context of the European workforce for health" (2), thus, leaving room for public health professionals to be considered. Therefore, there is a call for action directed to the public health community to shape the public health profession.

Shaping a profession

Different countries have their specific way of looking at public health, and shaping this profession is complex as public health is a very heterogeneous interdisciplinary composite with many different fields involved. However, the leadership should be provided by a highly trained *professional workforce*, specialised in the core areas of public health and *formally recognized* as a defined profession based on academic degrees. Our focus is not on the role of medical staff covering also public health aspects in their work environment, neither on non-health professions adding to the assurance and advancement of public health.

In order to discuss the shaping of a public health profession, a significant question relates to the extent that public health profession exhibits the characteristics of a profession. There are many sociological theories which describe the concept of a profession, the professional, and professionalization. While the precise content of these models varies, there are several characteristics that distinguish the professions from other occupations. The most commonly cited traits (9) include:

- i. skills based on abstract knowledge which is certified/licensed and credentialed;
- ii. provision of training and education, usually associated with a university;
- iii. certification based on competency testing;
- iv. formal organization, professional integration;
- v. adherence to a code of conduct;
- vi. altruistic service.

Firstly, we will use these traits as a framework in arguing whether public health can be a legitimate profession in itself; secondly, we will explain who public health professionals are and what usually is required for shaping a public health profession; and thirdly, we will attempt to sketch the road to the authorisation or licensing of PH professionals. Finally, we will propose some recommendations and stimulate the debate with open questions.

Public health as a profession

Applying the trait framework to a public health profession, one can immediately observe that the first three characteristics are fulfilled. Although public health is a multidisciplinary field, it encompasses abstract knowledge which can be reflected in public health competencies (ASPHER) when it relates to science, and in the Essential Public Health Operations (EPHO) when it relates to the art. Both can serve as a strong base for licensing and certification of educational and practice qualifications. Public health education is provided by higher educational establishments in the form of Bachelor and Master programmes with specialisation in public health, or a PhD in public health (referring to the three cycles of the Bologna system). Public health programmes are in the majority of cases competency-based and, if not, their reform has been encouraged by the ASPHER Competency Project Initiative (10,11). Concerning the formal organisation and professional integration, contrary to what we observe in regulated professions such as medical doctors, nurses, midwives, lawyers, and architects, public health professionals do not have a specific organisation or chamber which would safeguard their rights and privileges. With respect to the specific code of conduct which would apply to the whole profession, we do not have many examples to follow (12,13). Finally, considering an altruistic service as something what distinguishes public health professionals from other professions, we may state that the whole ethos of public health is based on altruistic principles of serving and protecting for the benefit of public and individual health.

Based on this short inventory we are able to prove that public health can be considered a profession if we put some effort in formalising and strengthening its professional integration.

Who are public health professionals?

Unlike the medical profession, defining public health professionals is more elusive. For example, Beaglehole and Dal Poz define the public health workforce as "a diverse workforce whose prime responsibility is the provision of core public health activities, irrespective of their organizational base" (14), highlighting that public health workforce can be located both inside and outside the health sector (15). Whitfield provides a theoretical conceptualization of public health activities and the related workforce. According to this concept, the public health workforce can be divided into three groups: i) "public health specialists"; ii) "people indirectly involved in public health activities through their work"; and iii) "people who should be aware of public health implications in their professional life" (16).

Distinguishing between these three categories of the public health workforce emphasizes the multidisciplinary and diverse character of public health itself. Despite many differences among countries, public health professionals in Europe often are physicians and have a medical public health/social medicine specialization, although there has been a shift towards more multidisciplinary teams since the 1990s and 2000s, with Finland, Ireland and the United Kingdom among the first countries in Europe in which professionals with different backgrounds were educated in public health (14). However, the multi-professionalism of the future public health profession is not represented in many European countries.

For the purpose of this paper the public health workforce – whether actual or potential – consists of three main categories:

- i. *Public health professionals* professionals with sufficient public health competences at master level for public health services and/or doctor of philosophy (PhD) for public health research. A bachelor degree can be considered as an entrance level, leading to a master in public health (MPH)/PhD degree, independent of working in- or outside the health system, or: in- or outside the public health services.
- ii. *Health professionals* health staff with more restricted public health competences and functions in- or outside organised public health services; their main education would basically be a medical or other health-related programme with limited public health aspects e.g., health promotion, or screening.
- iii. *Other staff with job functions bearing on the population's health.* Examples would be teachers or policemen. We focus here on the first group, the public health professionals, which include:
 - a. *General public health professionals* individuals with a bachelor or master degree in public health. Thus, they can be younger persons with no previous professional experience. They hold the academic degree, but not necessarily a licence for a profession. The content of the education provided by the university programmes shapes *general public health professionals*. Needless to say, it should follow the ASPHER competency lists (10,11).
 - b. *Public health specialists*, i.e. general public health professionals who have added special competences to their general public health education and training from the areas such as: epidemiology, management and administration, health promotion, environmental health, public health genomics, or global public health which go beyond a selected specific track covered during their MPH programme, or ideally accomplished a PhD.

What is usually required for shaping a profession?

Firstly, there are specific legal and regulatory steps which need to be taken in order for the profession to get a legitimate recognition. Therefore, a specific national public health

legislation should be granted to national public health councils or their equivalents, giving them the regulatory authority to protect the public's health and including provisions on: a) public health positions, especially those related to leadership posts; b) second (MPH) and third (PhD) cycle academic degrees, and; c) an independent national public health chamber with the mandate to safeguard the right to enter and execute the profession, certify and license [including the mandatory minimum credits from accredited Continuing Education (CE)]. The support of WHO-INT is needed here to provide a model Public Health Law as well as the support of CE to allow for mutual recognition of academic degrees, certification, and licensing in order to enhance mobility. Formal professional certification is a national prerogative. Although some attempts have been made in some EU countries e.g. The UK Qualification Register (17), these are highly country-specific and do not necessarily fit the diverse PH systems in Europe.

Secondly, formalized CE programmes (including an official statement on required credits), accredited at the national level by either a separate administration or a professional chamber should be made available for public health professional development. Agency for public health education accreditation should provide the quality criteria for CE and offer to accredit the national accreditation procedures.

Thirdly, systematic development and adaptation of the existing public health competency models to meet the needs of continuing professional development, professional appraisal, and development of public health job profiles, should constitute the ongoing improvement process. This should be followed by the translation of the competency profiles to public health operations, thus, creating various competency-based job descriptions fitting possible EU public health qualification schemes.

Finally, the cooperation between all sectors of education, training, and the world of work is needed to improve sectoral identification and anticipation of skill and competence needs.

Potential conclusions and recommendations

Based on our analysis we see a potential in mobilizing the efforts of the public health professional community to build on the strengths and achievements of the profession so that it can join the elite of regulated professions. We strongly believe that no effort should be spared in identifying the possibilities in the EU regulatory documents and exerting influence on changing their content so that they are more inclusive in view of the Common European Market. Above all, we should make sure that the public health profession fulfils all the necessary criteria to be considered a regulated profession and is supported by a strong formal organization at the national and European level (18)¹. Therefore, we recommend the following:

- i. Strong lobbying of the professional public health community at the EU level to support the introduction of adequate legislation.
- ii. Implementation of the Professional Qualification Directive with broader mention of the recognition of public health professional qualifications.
- iii. Advocating for Public Health Laws to establish the requirements for leadership positions (see WHO database planned).
- iv. Assuring that national qualifications are recognized EU-wide and beyond (European-wide recognition required for enhanced professional mobility).
- v. Developing clear differentiating criteria related to academic (Bologna cycles) and professional certification and re-licensing based on continuous professional development credits.

¹We are obliged to Prof. Anders Foldspang for the ASPHER Concepts and Policy Brief on the classification of the public health workforce as an additional source for the publication.

- vi. Provision of certification and licensing for all public health professionals.
- vii. Acceptance of the national responsibility for certification and licensing.
- viii. Advocating for the establishment of Professional Public Health Self-Government (Chamber) at the national level.

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ORIGINAL RESEARCH

Public health leadership competency level among health professionals in a South Eastern European country

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Abstract

Aim: The aim of this study was to describe the current and the required leadership competency level of health professionals in Albania, employing a recently established international instrument.

Methods: A nationwide cross-sectional study was conducted in Albania in July-December 2014 including a representative sample of 267 health professionals (162 men and 105 women; mean age: 44.7 ± 10.3 years; overall response rate: 89%). A structured questionnaire was administered to all health professionals aiming at self-assessing the current level of leadership competencies and the required (desirable) level of leadership competencies for their current job position. The questionnaire included 52 items grouped into eight subscales/domains. Answers for each item of the tool ranged from 1 ("minimal competency level") to 5 ("maximal competency level"). An overall summary score (range: 52-260) and a subscale summary score for each domain were calculated for both the current and the required leadership competency levels. Wilcoxon signed ranks test was employed to compare the overall scores and the subscale scores of the current and the required level of leadership competencies.

Results: Mean value of the overall summary score for the 52 items of the instrument was significantly lower for the current leadership competency level compared with the required leadership competency level (138.4 ± 11.2 vs. 159.7 ± 25.3 , respectively; P<0.001). Most of the subscales' scores were significantly higher for the required than for the current leadership competency level.

Conclusion: Our study provides useful evidence about the current and the required level of leadership competencies among health professionals in transitional Albania. Findings of this study may help policymakers in Albania to identify the gap between the required and the current level of leadership competencies among health professionals. Furthermore, findings of this study should be expanded in the neighbouring countries of the South Eastern European region and beyond.

Keywords: Albania, competency level, health professionals, public health leadership, South Eastern Europe.

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Conflicts of interest: None.

Introduction

To date, there have been developed a few competency frameworks in order to assess public health leadership and medical leadership competencies (1-4). These instruments have basically included the key principles and concepts of leadership (5,6). Establishment and refinement of these tools is due to the urgent need to develop strong leadership skills and competencies among public health professionals at large (7). Hence, these leadership frameworks are deemed useful for professional training and continuous medical education in particular, but also for continuous professional development in general (5,6).

Competencies in the area of public health leadership are regarded as a crucial element for the performance and activities of health professionals operating at all levels of health care services (public health, primary health care services, as well as hospital care) in different settings and cultures (7). A key driver in improving leadership within public health is that the nature of the challenges faced by such professionals is evolving. Developing effective leadership is essential as many European countries are putting health systems under significant financial pressures and forcing them to deliver more with diminishing resources (8).

Notwithstanding the current progress towards development of leadership competencies in the area of medicine and public health, the existing frameworks are – on the face of it – too generic and not satisfactorily detailed for a proper assessment of the leadership competency level of health professionals operating in different levels of health care. It has been convincingly argued that a proper identification and assessment of the level of leadership competencies is a basic prerequisite for adjustment of the educational curriculum and training models for health professionals in different European countries (7).

For this very reason, fairly recently, it has been developed a specific public health leadership competency framework with the aim to significantly foster the competency-based European public health leadership curriculum (7). As acknowledged earlier, this competency framework was designed in the context of the Leaders for European Public Health (LEPHIE) Erasmus Multilateral Curriculum Development Project, supported by the European Union Lifelong Learning Programme (7).

The information about public health leadership is scarce for Albania, a former communist country in Southeast Europe, which is characterized by a rapid political and socioeconomic transition associated with deleterious health effects (9,10). The particularly rapid process of transition in Albania over the past twenty five years has been associated with an intensive process of migration, both internal (from rural areas to urban areas of the country) and external (mainly to the neighbouring countries including Greece and Italy) (11). This has also affected the workforce, at least to some extent. Indeed, regardless of the international financial crisis, the relatively poor economic situation and the lack of rapid economic expansion due to limited domestic resources continue to encourage Albanian adults to emigrate (12). In 2013, it was established in Albania a national School of Public Health under the auspices of the University of Medicine. Nevertheless, the curriculum of both undergraduate and postgraduate public health programs does not sufficiently promote leadership skills and competencies for future health professionals in Albania.

The new leadership competency framework was cross-culturally adapted in Albania in May 2014 in a sample of health professionals operating at different levels of health care services (13).

In this context, the aim of our study was to describe the current and the required leadership competency level of health professionals in Albania, employing this recently established international instrument, which was previously validated.

Methods

A cross-sectional study was conducted in Albania in July-December 2014 targeting a nationwide representative sample of 300 health professionals working at different health institutions all over the country (primary health care services, regional hospitals, University Hospital Centre "Mother Teresa", Institute of Public Health, and Health Insurance Fund). Of 300 targeted health professionals, 33 individuals refused to participate. The study sample consisted of 267 health professionals (162 men and 105 women; mean age: 44.7 ± 10.3 years; overall response rate: 89%).

A structured questionnaire was administered to all health professionals aiming at selfassessing the current level of leadership competencies and the required/desirable level of leadership competencies for their current job position. As reported previously, the questionnaire consisted of 52 items grouped into eight competency domains (subscales) including (7): i) systems thinking; ii) political leadership; iii) collaborative leadership: building and leading interdisciplinary teams; iv) leadership and communication; v) leading change; vi) emotional intelligence and leadership in team-based organizations; vii) leadership, organizational learning and development, and; viii) ethics and professionalism

As explained elsewhere, each domain (subscale) of the instrument corresponds to one educational session within public health leadership curriculum (7,14).

Answers for each item of each subscale of the instrument ranged from 1 ("minimal competency level") to 5 ("maximal competency level"). An overall summary score (range: 52-260) and a subscale summary score for each domain were calculated for both, the current level of competencies and the required level of competencies.

The instrument was previously validated (cross-nationally adapted in the Albanian context) in a sample of 53 health professionals in Tirana in May 2014 (13), after a careful process of translation and back-translation of the original English version of the leadership competency questionnaire, following strict methodological rules (15).

Furthermore, the questionnaire included demographic information (age and sex of health professionals), place of work (urban areas vs. rural areas), type of diploma obtained (dichotomized into: health sciences vs. other diploma), years of working experience, as well as current job position (trichotomized into: high, middle and low managerial level).

Measures of central tendency and dispersion (mean values and standard deviations) were used to describe the distribution of age and working experience among male and female participants. Conversely, absolute numbers and their respective percentages were used to describe the distribution of place of work, diploma obtained and the job position of health professionals. Cronbach's alpha was used to assess the internal consistency for both the current level of competencies and the required level of competencies (16,17). On the other hand, Wilcoxon signed ranks test was used to compare the overall scores and the subscale scores of the current level of competencies and the required level of competencies among health professionals included in this study.

Results

Mean age in the male sample of health professionals (N=162) was 44.9 ± 10.6 years, whereas in females (N=105) it was 44.4 ± 9.9 years (Table 1). About 75% of health professionals were working in urban areas and 25% in rural areas of Albania.

Around 87% (N=233) of participants had received a diploma in health sciences (medicine, public health, nursing, pharmacy, or dentistry), whereas 13% (N=34) had other backgrounds (law, economics, social sciences, or engineering).

Overall, mean working experience was 19.6 ± 10.1 years. About 21% (N=55) of health professionals were working in high-level managerial positions compared with 32% (N=84) who were operating in low-level positions.

Variable	Men (N=162)	Women (N=105)	Total (N=267)
Age (years)	44.9±10.6*	44.4±9.9	44.7±10.3
Place of work:			
Urban areas	$111 (68.5)^{\dagger}$	90 (85.7)	201 (75.3)
Rural areas	51 (31.5)	15 (14.3)	66 (24.7)
Diploma:			
Health sciences	142 (87.7)	91 (86.7)	233 (87.3)
Other	20 (12.3)	14 (13.3)	34 (12.7)
Working experience (years)	20.0±10.4	19.0±9.6	19.6±10.1
Job position:			
High managerial level	33 (20.4)	22 (21.0)	55 (20.6)
Middle managerial level	70 (43.2)	58 (55.2)	128 (47.9)
Low managerial level	59 (36.4)	25 (23.8)	84 (31.5)

Table 1. Baseline characteristics in a nationwide representative sample of health professionals in Albania, in 2014

* Mean values \pm standard deviations.

[†]Numbers and column percentages (in parentheses).

The internal consistency of the overall scale (52 items) was Cronbach's alpha=0.86 for the current competency level and Cronbach's alpha=0.96 for the required competency level (Table 2). For the current competency level, Cronbach's alpha was the lowest for the "ethics and professionalism" domain (0.49) and the "leadership, organizational learning and development" subscale (0.55) and the highest for the "political leadership" domain (0.94). Similarly, for the required competency level, Cronbach's alpha was the lowest for the "ethics and professionalism" domain (0.65) and the highest for the "political leadership" domain (0.91).

Mean value of the overall summary score for the 52 items of the instrument was significantly lower for the current competency level compared with the required competency level (138.4 \pm 11.2 vs. 159.7 \pm 25.3, respectively; P<0.001) (Table 3). All the subscales' scores were significantly higher for the required competency level than for the current competency level, except for the "emotional intelligence and leadership in team-based organisations" and "leading change" domains (Table 3).

	Cronbach's alpha		
Domain (subscale)	Current	Required	
	competency level	competency level	
Overall scale (52 items)	0.86	0.96	
Systems thinking (7 items)	0.82	0.78	
Political leadership (8 items)	0.94	0.91	
Collaborative leadership: building and leading	0.80	0.85	
interdisciplinary teams (5 items)	0.89	0.85	
Leadership and communication (7 items)	0.62	0.87	
Leading change (6 items)	0.64	0.77	
Emotional intelligence and leadership in team-based	0.83	0.83	
organizations (6 items)	0.85	0.83	
Leadership, organizational learning and development	0.55	0 70	
(7 items)	0.55	0.79	
Ethics and professionalism (6 items)	0.49	0.65	

 Table 2. Internal consistency of the leadership competency instrument administered in a representative sample of health professionals in Albania (N=267)

Table 3. Summary score of each domain (subscale) of the leadership competency instrument for the current and the required competency level of Albanian health professionals (N=267)

	Mean values ± standard deviations		
Domain (subscale)	Current	Required	P-value [*]
	competency level	competency level	
Overall scale (52 items)	138.4±11.2	159.7±25.3	< 0.001
Systems thinking (7 items)	21.1±2.8	21.8±3.4	< 0.001
Political leadership (8 items)	20.1±5.0	20.9±5.4	< 0.001
Collaborative leadership: building and	117120	12.0+2.6	<0.001
leading interdisciplinary teams (5 items)	11./±2.9	12.9±3.0	<0.001
Leadership and communication (7 items)	16.5±2.2	17.9±4.3	< 0.001
Leading change (6 items)	17.1±2.1	16.7±3.2	0.005
Emotional intelligence and leadership in	18 1+2 4	17 2+2 6	<0.001
team-based organizations (6 items)	10.1±2.4	17.3±3.0	<0.001
Leadership, organizational learning and	16 5+2 1	177+36	<0.001
development (7 items)	10.3±2.1	17.7±3.0	<0.001
Ethics and professionalism (6 items)	17.2 ± 2.0	17.6 ± 2.7	0.018

^{*}Wilcoxon singed ranks test.

Discussion

This study provides useful evidence about the level and distribution of leadership competencies among health professionals in transitional Albania, based on a recently established international instrument, which was previously validated (cross-culturally adapted) in the Albanian context.

This measuring international instrument exhibited satisfactory internal consistency especially for assessment of the required (desirable) leadership competency level. During the previous

validation exercise, the tool had also displayed a high stability over time (i.e., a high testretest reliability for the overall scale and for each of the subscales of the instrument) (13).

Main findings of this survey include a higher self-perceived level of the required leadership competencies than the current (existing) level of leadership competencies among health care professionals in post-communist Albania. Interestingly, most of the subscale scores were significantly higher for the required competency level compared with the current competency level in this nationwide representative sample of health professionals in Albania.

Findings of this study may help policymakers in Albania to identify the gap between the required and the current level of leadership competencies among health professionals.

As already reported elsewhere, the public health leadership competency-based curriculum was established in the framework of the LEPHIE project (7). Similarly, as Czabanowska et al. point out that a starting point is to identify the competency capacities of future leaders in relation to population health and well-being and apply the study results to inform education, training and culture change throughout the workforce (14), we considered that the description of the competencies supports the curriculum design and it can be used as a self-assessment instrument for students and public health professionals, helping them to reflect and identify gaps in their knowledge, skills and competencies (7). The teaching of leadership is still not common in public health training programmes around the world and seems particularly rare in countries experiencing intensive public health reforms. There is a need for substantial investment in leadership training for public health professionals (18).

In conclusion, we provide important evidence about the level and distribution of the leadership competency level among health professionals in Albania, a country embarked in the long journey towards accession into the European Union. Our survey informs about both the self-perceived leadership competency level and the required/desirable level of leadership competencies for the respective job positions of health care professionals in Albania.

Findings of our survey should be expanded further in large representative samples of health care professionals in the neighbouring countries in the Western Balkans and beyond. Similar to Albania, this type of survey will help to identify potential gaps in the level of existing leadership competencies and the required/desirable level of leadership competencies, which will ultimately inform the public health curricula about necessary content adjustments.

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REVIEW ARTICLE

The history of European public health education accreditation in perspective

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Abstract

Aim: The aim of this paper is to investigate the history of accreditation of academic public health education and understand why there is a 65 year gap between the first system in America and the uptake of accreditation in Europe. The paper intends to search for parallels and dissimilarities between the development in America and Europe and then consider if any parallels could be used for determining the future role of accreditation in Europe.

Methods: The paper draws heavily upon a literature review and analysis and the examination and interpretation of primary and secondary sources. Firstly there is an exploration of the American development which is complemented by an evaluation of the developments in Europe.

Results: The paper demonstrates that there are two key features required for the development of accreditation: interstate collaboration and a liberalisation or opening up of the education market. **Conclusions:** Since the Second World War, Europe has embraced interstate collaboration which has led to a liberalisation of certain economic markets. The future for sector based accreditation of public health education will be determined by the extent Europe pursues liberalisation and whether a competitive environment will bring into question the transparency and trust in state sponsored accreditation agencies.

Keywords: European Public Health Education Accreditation.

Conflict of interest: None.

The accreditation of higher education programmes and institutions has its roots in American higher education (1) and the history of accreditation of public health education is no exception. However histories do differ in the role of the state in education. In 18th and 19th century Europe, education was taken away from the church and placed under state control to reinforce the legitimacy of the emerging, and competing, European nation states (2). American political development differed from the European model and when the states came together to form the US, education was not among the functions specifically expressed as a federal responsibility (3). Europe continues to develop and embrace individual nation states with an increasing trend for laissez faire deregulation as a route to diminish barriers to free trade but it is yet unclear how this will affect the future of education and accreditation at a nation state level.

The research is based around a literature review and search of key websites including the American Journal of Public Health, Pubmed and Google scholar. The reviews took place between July and October 2014 based upon the search terms of "public health education accreditation". The analysis of key themes highlighted mainly American development and this was complemented for European development, by the use of the physical archives from the Association of Schools of Public Health in the European Region (ASPHER). The searches delivered over 150 separate books and articles covering the subject to varying degrees. Together these allowed for a demonstration and reflection of the origins of public health accreditation in both Europe and America.

The American laissez faire approach to federal governmental responsibility toward education was not without its detractors especially when combined with a comparable economic approach. In 1910 Abraham Flexner criticised the free market nature of medical education in America, "overproduction of ill trained men is due in the main to the existence of a very large number of commercial schools" (4) and that, "the schools were essentially private ventures, money-making in spirit and object" (5). As a result, Flexner recommended that 120 of the 155 medical schools should close. Flexner was to become soon after the head of the general education board within the Rockefeller foundation (6). Five years after Flexner's report, Wycliffe Rose and William Welch submitted their views on the development of schools of public health to the Rockefeller foundation. Given the utter calamitous state of contemporary medical education it was no surprise that the authors recommended that schools of public health should not be part of medical schools. Apart from the notion that the public health worker was not identical with that of a practitioner of medicine no other reason for the independence of schools of public health was given in the report (7).

Institutionally splitting public health from medical education did not however allay concerns about the quality of public health training. In 1920, the American Public health Association (APHA) established a committee on the standardisation of public health training and one year later it reported on what it saw: "the most serious defect in the whole system at present, however, lies in the fact that certain institutions give not only the Certificate in Public Health but even the Doctorate in Public Health for a course of a few weeks, while others require a period of almost three years, and it seems most desirable to effect some form of standardization in this field" (8). Similar to the findings of Flexner, there were also complaints of profit-making public health training programmes of questionable quality offering public health degrees (9). An editorial in the American Journal of public health in 1924 noted that, "as far as the medical end of this scandal goes the matter can be left to the strictly medical journals but unfortunately public health is also involved" (10). This situation continued for the next twenty years with some schools being recognised as, "merely seeking to attract students by deliberately and grossly misleading prospectuses" (11).

It took 26 years from the origins of the committee on standardisation until the adoption of an accreditation system in 1946 which coincided with the Committee for Professional Education within APHA taking on the responsibility for monitoring standards. This committee was headed by William Shepard who strove for the recognition of public health as a profession, *"whether we fully*

realize it or not, public health has become a profession" (12). Accreditation would play a role in producing well trained individuals and supplying relevant data on the needs of the national public health, as Shepard noted, "to my knowledge this is the first occasion in modern times that a learned profession has kept its educational house in order as it developed. Since becoming a recognized profession, we have been spared the developmental blight of having our ranks flooded with pseudo-trained people" (12).

In 1946 there were 11 criteria which comprised the minimum requirements of institutions to be accredited to the master of public health (13). The criteria had been developed by another member of the Rockefeller board and pioneer of modern public health, Charles-Edward Wilnslow, who had deliberately kept the criteria flexible and small enough to allow time for schools to comply and maintained that too much standardisation was undesirable (12). The basis for Winslow's criteria came from the notion that "public health is not a branch of medicine or of engineering, but a profession dedicated to a community service which involves the cooperative effort of a dozen different disciplines" (14).

Accreditation at this point consisted of seven criteria which looked at the institution and a further four criteria which were course specific (13). Out of these latter four, one criterion stipulated the content, see Table 1. By 1974, when accreditation became housed within the Council on Education for Public Health (CEPH) (15), these criteria had evolved to express a mixture of educational and practical competencies (16), which saw the retraction of elements such as economics and parasitology but the addition of health systems. These criteria are kept in place into the modern period (17), albeit more succinctly phrased as biostatistics and epidemiology were included as part of investigation, measurement, and evaluation (18). The one omission is focussed on the biological features of the curriculum.

APHA 1946	СЕРН 1974	CEPH 2014
1. The nature functioning of	1. Biological, physical, and social	1. Biostatistics,
human organisms;	factors;	2. Epidemiology,
2. The nature behaviour of various forms of parasitic life;	 Social and behavioural sciences; Health service delivery systems, 	3. Environmental health sciences,
3. The physical environment;	4. Community health needs;	4. Health services
4. Social and economic factors;	5. Information collection, storage,	administration
5. The major source of quantitative information and	retrieval, analysis, and dissemination;	5. Social and behavioural sciences.
its numerical presentation and analysis.	6. Environmental monitoring, analysis, and management.	

Table 1. Changes in American accreditation compulsory curricula contents 1946 to 2014

The history of American accreditation therefore took root at a time when public health was beginning to find its feet as a profession and against a laissez faire backdrop, which saw many schools geared toward profit making above quality and this is perhaps a situation which continues in a sense today with the growth of unrecognized, illegitimate degree and accreditation mills that "sell" (19). Against these developments, were the architects of an alternative and earnest public health movement based on the research focus of the German schools and the practical training methods on the English schools (20). This period of development can be seen as 1916 to 1946, from the first Rockefeller School of Public Health to the implementation of a fully functioning accreditation scheme. This period directly coincides with an epoch engrossed in war.

Although initially the criteria had been kept flexible to allow more schools to participate, the arithmetic growth of accreditation in the U.S. was not overwhelming until around the turn of the twenty first century (21) see Figure 1. In 1946, there were nine schools of public health accredited in America (13). Nearly 30 years later, in 1975 after the move to the CEPH there were 19 schools

(22). This had risen to 27 in 2000 (23) and by 2014 there were over 50 schools accredited and over 100 programmes of public health accredited (17).



Figure 1. Accredited American SPHs by Decade (compiled by Rosenstock, L. *et al*)

After the Second World War, Europe began a process of reconciliation culminating in the present union enshrined through the 1992 Maastricht treaty where, under article 126, the role of union in education was to "encourage cooperation". It is in these post war collaborative movements where European accreditation, like its American counterpart, found its foothold. As one commentator phrased, "there was an intensified development of accreditation during the 1990s in various European countries. This trend is parallel with the rapid growth in international and trans-national organisations after the Second World War" (24). Moreover, the first large scale appearance of accreditation was a direct result of competition and the post communist transformation in the Central and Eastern European region where the markets were opened up to private and foreign providers (25).

This European movement of the 1980s and 1990s was to create a fertile environment for international collaborations at a public health school level with examples being, The European Training Consortium in Public Health (ETC-PH) (26), BRIMHEALTH (27) and the European Masters of Public Health (EMPH). The latter of these, the EMPH was a collaboration between ASPHER and the World Health Organisation (WHO) to develop a European master's degree in public health based on the WHO's 38 Health For All (HFA) principles (28). This followed from a momentum in European Public Health created by the elaboration of these principals into practice which was given the title of "new public health" (29). Although this term was not new, it was first coined in 1913 as a bacteriological approach (30) and again in 1923 as health promotion (31), it did reflect the more comprehensive view of public health which still resounds today. The EMPH embraced three distinct areas: a) it should be concerned with the masters level, b) it should reflect the philosophy of the WHOs HFA and c) students should be exposed to a European perspective (32). It was enthusiastically anticipated that the EMPH would raise the standards of education and training across the European region and would provide a "gold standard" of which other schools and programmes would eagerly follow (33). Alas, attempts to realise the programme failed.

The failure of the EMPH was a product of several reasons: credit transfer mechanisms were poorly developed; systems didn't accept qualifications from other institutions; the programme was too inflexible and did not respect the diversity and traditions of the countries; European content didn't need to be all encompassing as it could be could be integrated into existing courses; and moreover, given the heterogeneity of public health training programmes in Europe it was not possible to introduce a rigorous quality assessment and assurance (34). As a result of these failures the introduction of accreditation was seen as a necessary and fundamental step. However, accreditation

was not introduced but rather a process of mutual recognition of courses, modules, programmes and institutions was established entitled the Public Health Education European Review, more commonly known as the PEER review (35). The three central principals of this review were a reflection of its EMPH foundations (33):

- The course/module/programme/institution should be concerned with postgraduate training in public health.
- The course/module/programme should be based on the philosophy of the Health for All policy.
- The students should be exposed to a European perspective.

The PEER review was established by 1994 but it differed from accreditation as it was devised primarily as a quality improvement tool conducted through academic peers in a collegial manner. Although the initial anticipation was for a multi-agency quality assurance approach this did not materialise until the advent of accreditation proper which was proposed and accepted in 2001. This was exactly the same time that ASPHER began to use the PEER review for the establishment and quality improvement of new schools and programmes of public health in the Central and Eastern European region (36). This project gave valuable insights for accreditation (37) and also showed how PEER could be used as a framework for development.

In 2011, the Accreditation Agency was established and consisted of ASPHER and four other public health based NGOs, European Public Health Association (EUPHA), European Public Health Alliance (EPHA), European Health Management Association (EHMA) and EuroHealthNet. At the time of its establishment European accreditation focused solely upon the accreditation of postgraduate (so-called second cycle) public health degrees. Similar to the American model, the processes also contained specific criteria on core curricula content: introduction, methods, population health and its determinants, Health Policy, economics and management, Health Education and promotion, cross-disciplinary themes and culminating experiences. These areas were based on the core subject domains developed through earlier ASPHER work on Public Health Core Competencies (38).

In 2014, following a two-year review of its processes, APHEA introduced two new aspects in addition to programme accreditation. The first was a curriculum validation process which replaced its initial eligibility criteria by ensuring that curricula contain the basic structure and core content expected from a modern comprehensive public health offering. The second addition was to focus on institutional accreditation which would assess the relationship of an institution, in terms of education, research and service, to the specific local, national, regional or international environments in which they serve, their so-called "social accountability" (39). This development represents a reversal of the American model which started with institutional accreditation followed by programme level accreditation.

So far, the remit of APHEA was in keeping with the first and third central principals of the earlier PEER review. However, for future development, the postgraduate focus was also brought into question with proposals to develop accreditation for bachelor and PhD programmes, thus covering the whole spectrum of school based education in public health. APHEA also began consultations on the development of training accreditation which would cover smaller units from continuous personal development (CPD), MOOCs through to summer schools which can be delivered outside of school settings. Finally, the role of using the accreditation criteria as a framework for quality improvement and development also requires future scrutiny as the PEER review had worked exceptionally well in this regard (36).

The second central principle of the previous PEER review is based upon the health for all policies of the 1970s which has been superseded of late by the development of the WHOs Essential Public Health Operations (EPHOs) (40). An encompassing definition given for these is, "a set of fundamental actions that address determinants of health, and maintain and protect population
Goodman J. The history of European public health education accreditation in perspective (Review article). SEEJPH 2015, posted: 10 February 2015. DOI 10.12908/SEEJPH-2014-39

health through organized efforts of society" (41). The potential therefore lies in the ability to change the older HFA targets for these later EPHOs, for example, by translating the operations in to a series of competences and then assessing how these competences are integrated into the education of the workforce. However, care will need to be taken so that any system will be flexible enough to respect the diversity and traditions of different countries and thus, hopefully avoiding some of the reasons for the failure of the EMPH whilst learning the lessons from Charles-Edward Winslow's introduction of accreditation in America.

All of these activities however are predicated on the future potential for sector based professional accreditation and there are two areas within the history of Public Health accreditation which may help determine its future trajectory. The first area is one of collaboration and second, the liberalisation of the education sector. The origins of both the American and European models of accreditation appeared as a result of interstate or supranational collaboration and an opening up of markets in education. The realisation of Europe has installed significant economic liberalisation, especially in the service markets. Many services in Europe are now no longer a state responsibility but rather a subject of the free market and how far this free market extends remains to be seen. For example, what will be the influence of the mooted agreements between the North American Free Trade Area (NAFTA) and the European Union on the liberalisation of the educational market? In many ways perhaps the free movement of people already enshrined in the European project has created a quasi liberalised market with students being free to study in any country. This freedom of movement is often liberally extended to international students travelling the globe. Equally important for the forthcoming years will be the influence of technologies in teaching which allow for students to receive a foreign based education without the need or hindrance of travel. The result of these present and future changes is conceivably then one of burgeoning competition above that of collaboration where education systems both within and between states increasingly compete for students and their own subsequent economic survival. The origins of the Bologna declaration and the resultant European Higher Education Area is a cooperation based on mutual trust between education systems of the member states (42) but the reason why America had accreditation before Europe is because accreditation is not best suited to centralised governments (1). The question must then be raised, if collaboration turns in to competition, will the national state accreditation agencies be seen as a credible guardian of trust or will they be seen as protective of their national systems, anti-competitive and riddled with conflicts of interest?

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ORIGINAL RESEARCH

Leadership competencies among male health professionals in a Western Balkan country

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Abstract

Aim: Our objective was to assess the *current* and the *required* level of leadership competencies among male health professionals in Albania, a country which is characterized by an intensive process of emigration of the health workforce in the past few decades.

Methods: This was a cross-sectional study carried out in Albania in June-November 2018 including a nationwide representative sample of 132 male health professionals working at different health institutions at both central and local level in Albania (mean age: 41.4 ± 10.1 years; overall response rate: 88%). A structured 52-item questionnaire was administered to all male health professionals aiming at self-assessing the *current* level and the *required* (necessary) level of leadership competencies for their actual job positions. Answers for each item of the instrument ranged from 1 ("minimal competency level") to 5 ("maximal competency level"). An overall summary score (range: 52-260) and a subscale summary score for each domain were calculated for both the current and the required leadership competency levels. Paired sample t-test was used to compare the overall mean scores and the subscale mean scores of the current level and the required level of leadership competencies.

Results: Mean value of the overall summary score of the instrument was lower for the *current* leadership competency level compared with the *required* leadership competency level (137.6 \pm 8.7 vs. 140.7 \pm 21.2, respectively; P=0.02). Mean difference between the required and the current level of leadership competencies was higher for male health professionals working in top managerial positions and those working in urban areas of Albania.

Conclusion: This study informs about the current and the required level of leadership competencies among male health professionals in Albania, a transitional country in the Western Balkans. Policymakers and decision-makers in Albania and other countries in the European region should be aware of the existing gap between the required and the current level of leadership competencies among health professionals operating at all levels.

Keywords: Albania, competency level, male health professionals, public health leadership, Western Balkans.

Conflicts of interest: None.



Introduction

Several competency frameworks have been established in the past decades in order to assess public health leadership and competencies medical leadership in different countries (1-4). All of these instruments consist of the core principles and concepts of leadership (5,6). However, most of the existing frameworks assessing leadership competencies in the field of medicine and public health are quite broad and non-specific enough. As a matter of fact, such general frameworks do not allow for an appropriate assessment of the level of leadership competencies, as a major requirement for modification and finetuning of the educational curriculum and training models public for health professionals (7).

Based on these considerations, in the past few years, it has been successfully developed a new and more specific public health leadership competency framework aiming at promoting considerably the competency-based European public health This leadership curriculum (7). competency framework was part of the "Leaders for European Public Health (LEPHIE) Erasmus Multilateral Curriculum Development Project", which was supported by the European Union Lifelong Learning Programme (7). This framework has been already adapted and used in the Albanian context (8,9).

Albania is a post-communist country in the Western Balkans, which has experienced a rapid demographic and epidemiological transition in the past few decades (10). Currently, non-communicable diseases (NCDs) and its associated risk factors constitute the highest burden of disease in Albania (10). Hence, according to the estimates of the Global Burden of Disease, the crude mortality rate from the overall NCDs in Albania in 2016 was about 731 (95%CI=646-804) deaths per 100,000 population (11). Almost 94% of Albanian

people died from NCDs in 2016 (11). Furthermore, about 84% of the overall disease burden in 2016 was attributed to the NCDs. For the same year, the burden of NCDs was estimated at about 22,260 DALYs (95%CI=19,380-25,280) per 100,000 (11). A whole range of risk factors are currently contributing to the NCD situation in Albania. Yet, the top three leading factors responsible for the disease burden in the Albanian population arterial hypertension, include the nutritional-related risks and smoking (11). The Albanian health system is currently facing a multitude of challenges including the sufficiency and sustainability of health financing mechanisms in line with the ongoing reforms in all sectors (12). Furthermore, out-of-pocket payments still constitute almost half of the overall health expenditure in Albania and bear significant impoverishing effects upon the poorest and vulnerable and marginalized population categories. Also, human resources for health is another issue which currently represents a tremendous challenge (12) given the unabated brain drain from Albania to the Western countries, mainly to Germany which has become particularly attractive in the past few years for young physicians and nurses.

In the context of an intensive process of emigration of the health workforce in the past few years, our aim was to assess the *current* and the required leadership of competency level male health professionals in Albania, using an internationally valid instrument, which has been already applied in Albanian settings (8,9).

Methods

A cross-sectional study was carried out in Albania in June-November 2018 including a nationwide representative sample of 132 male health professionals working at different health institutions pertinent to Page **3** of **9**



both the central level (Institute of Public Regional Health Directorates, Health, University Hospital Centre "Mother Teresa", and Health Insurance Fund) and local level (primary health care services, and regional hospitals). Initially, 150 male health professionals were targeted for recruitment; of these, 18 individuals did not participate. Hence, the final study sample consisted of 132 male health professionals, with an overall response rate of: 132/150=88%.

А structured questionnaire was administered all male health to professionals included in this survey. The questionnaire aimed at self-assessing the current level of leadership competencies and the required (necessary) level of leadership competencies based on the actual job position of health professionals. The questionnaire included 52 items categorized into the following eight competency domains (subscales) (7): i) systems thinking; ii) political leadership; iii) collaborative leadership: building and interdisciplinary leading teams: iv) leadership and communication; v) leading change; vi) emotional intelligence and leadership in team-based organizations; vii) leadership, organizational learning and development, and; viii) ethics and professionalism.

Possible answers for each item of each domain/subscale of the leadership instrument ranged from 1 ("minimal competency level") to 5 ("maximal competency level"). An overall summary score (range: 52-260) and a subscale summary score for each domain were calculated for both, the current level of competencies and the required level of competencies. Furthermore, the gap between the required (necessary) and the current level of leadership competencies was calculated for each participant, as a difference between the summary score of

the required level and the current level of leadership competencies.

Of note, the leadership instrument was validated since 2014 in a sample of health professionals operating in Tirana (8) and, after the respective cross-cultural adaptation, this tool was subsequently administered to a nationwide sample of male and female health professionals in Albania (9).

In addition to the leadership competency level, the structured questionnaire inquired about some basic demographic data (age of male health professionals and workplace: urban areas vs. rural areas); work experience (expressed in full years); main degree obtained (health sciences including public medicine, health. nursing, pharmacy, or dentistry vs. other degrees including economics, social sciences, law, engineering, or other disciplines; this variable was dichotomized in the analysis into: health sciences vs. other diploma); and the current job position (trichotomized in the analysis into: high, middle and low managerial level).

This study was approved by the Department of Public Health, Faculty of Medicine, University of Medicine, Tirana, Albania.

The distribution of age and working experience among male health professionals included in this study was presented by use of the measures of central tendency and dispersion (mean values and standard deviations). On the other hand, absolute numbers and their respective percentages were employed for of distribution of presentation the workplace (urban vs. rural areas), main degree obtained (health sciences vs. other degrees) and the job position (top, middle and low managerial positions) of health professionals. Cronbach's alpha was employed to assess the internal consistency for both the current level and required the level of leadership



competencies (13). Conversely, paired sample t-test was used to compare the overall mean scores and the subscale mean scores of the current level of competencies and the required level of competencies among male health professionals included in this survey. A p-value of ≤ 0.05 was considered as statistically significant. All statistical analyses were performed by use of the Statistical Package for Social Sciences (SPSS, version 19.0).

Results

Mean age in this nationwide representative sample of male health professionals (N=132) was 41.4±10.1 years (Table 1). In turn, mean working experience was 14.8±9.4 years. About 71% of study participants were working in urban areas of Albania, whereas the remaining 29% were operating in rural areas (mainly in Tirana, but also in the other districts of Albania).

About 87% of participants had obtained their main degree in health sciences medicine, public (including health. nursing, pharmacy, or dentistry), whereas further 13% had obtained their main degree in other fields (including social economics. sciences. law. engineering, other disciplines). or Regarding job position, about 34% of health professionals were operating in high managerial positions; 44% in middle managerial positions; and the remaining 22% were working in low managerial positions (Table 1).

Numerical variables	Mean	Standard deviation
Age (years)	41.4	10.1
Working experience (years)	14.8	9.4
Categorical variables	Number	Percentage
Place of work:		
Urban areas	94	71.2
Rural areas	38	28.8
Total	132	100.0
Diploma (main degree):		
Health sciences	115	87.1
Other degrees	17	12.9
Job position:		
High managerial level	45	34.1
Middle managerial level	58	43.9
Low managerial level	29	22.0

Table 1. Demographic factors and characteristics of the workplace in a nationwide representative sample of 132 male health professionals in Albania, in 2018

The internal consistency of the overall scale of the leadership instrument (52 items) was Cronbach's alpha=0.87 for the current competency level and Cronbach's alpha=0.95 for the required competency 2). For level (Table the current competency level, Cronbach's alpha was lowest "ethics the for the and professionalism" domain (0.50) and the "leadership, organizational learning and development" subscale (0.51) and the highest for the "political leadership"



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domain (0.93) followed by the "collaborative leadership" subscale (0.89). Likewise, for the required competency level, Cronbach's alpha was the lowest for the "ethics and professionalism" domain (0.67) and the highest for the "political

leadership" subscale (0.90) and the "collaborative leadership" subscale (0.86). Overall, Cronbach's alpha was higher for five of the domains of the required competency level compared with the current competency level.

Table 2. Internal consistency of the leadership competency instrument in a nationwide sample of male health professionals in Albania in 2018 (N=132)

	Cronbach's alpha			
Domain (subscale)	Current	Required		
	competency level	competency level		
Overall scale (52 items)	0.87	0.95		
Systems thinking (7 items)	0.69	0.75		
Political leadership (8 items)	0.93	0.90		
Collaborative leadership: building and leading	0.80	0.86		
interdisciplinary teams (5 items)	0.89			
Leadership and communication (7 items)	0.56	0.84		
Leading change (6 items)	0.65	0.76		
Emotional intelligence and leadership in team-based	0.82	0.81		
organizations (6 items)	0.82			
Leadership, organizational learning and development	0.51	0.75		
(7 items)	0.31	0.75		
Ethics and professionalism (6 items)	0.50	0.67		

Table 3 presents mean summary scores of each domain of the leadership instrument for both the current and the required competency level. Mean value of the overall summary score for the 52 items of the instrument was somehow lower for the current competency level compared with the required competency level (137.6 ± 8.7 vs. 140.7 ± 21.2 , respectively; P=0.02). Most of the subscales' scores were significantly higher for the required competency level than for the current competency level, except for the "emotional intelligence and leadership in team-based organisations" and "leading change" domains. Conversely, mean scores of the "ethics and professionalism" subscale were similar for the current and the required leadership competency level (Table 3).

Table 3. Summary scores of the overall scale and subscales for the *current* and the *required*leadership competency level of Albanian male health professionals in 2018 (N=132)

	Mean values ± sta		
Domain (subscale)	Current	Required	P-value*
	competency level	competency level	
Overall scale (52 items)	137.6±8.7	140.7±21.2	0.019
Systems thinking (7 items)	20.8±1.7	21.9±3.2	0.004
Political leadership (8 items)	19.5±4.7	20.2±5.0	0.001
Collaborative leadership: building and	11.4±3.0	12.6±3.5	< 0.001



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leading interdisciplinary teams (5 items)			
Leadership and communication (7 items)	16.2±2.1	17.4±3.9	< 0.001
Leading change (6 items)	17.5±2.2	16.8±3.1	0.005
Emotional intelligence and leadership in team-based organizations (6 items)	18.4±2.4	16.9±3.3	<0.001
Leadership, organizational learning and development (7 <i>items</i>)	16.3±2.0	17.5±3.3	<0.001
Ethics and professionalism (6 items)	17.5±2.0	17.6±2.6	0.603

* Paired sample t-test.

The gap of leadership competency level (mean difference between the required and the current level of competencies) was higher for male health professionals working in top managerial positions (mean difference: 4.1) compared to those operating in middle managerial positions (mean difference: 3.2) and, particularly, individuals working in low managerial difference: positions (mean 1.5). Furthermore, the gap in leadership competencies was higher among health professionals working in urban areas compared with their rural counterparts differences: 3.6 (mean vs. 2.0, respectively) [data not shown in the tables].

Discussion

Main findings of the actual study consist of a higher self-perceived level of the required (necessary) leadership competencies than the current (existing) level of leadership competencies in this nationwide representative sample of male health professionals in transitional Albania.

This finding resembles a previous report which consisted of application of the same instrument in a nationwide representative sample of male and female health professionals in Albania in 2014 (9).

The internationally valid instrument for assessment of leadership competencies in the current study had an overall reasonable internal consistency, particularly for the required (necessary) leadership competency level. This was also the case in the previous study conducted in 2014 (9).

Interestingly, the mean difference between the required and the current level of leadership competencies was higher for male health professionals working in top managerial positions. This finding points to the urgent need for specific leadership training of public health professionals operating in key managerial positions in Albania.

Furthermore, the mean difference between the required and the current level of leadership competencies was higher for male health professionals working in urban areas of Albania. This finding is somehow intuitive considering the pressure and demands for high-quality services in urban areas, especially in large cities of Albania (particularly in Tirana).

the previous study, which was In conducted in Albania in 2014 employing the same measuring instrument (7,9), there were included 162 men aged 44.9±10.6 years and 105 women aged 44.4±9.9 years (9). In this sex-pooled sample of male and female health professionals in Albania surveyed in 2014, the mean value of the overall summary score for the 52 items of the leadership instrument was 138.4±11.2 for the current leadership competency level compared with 159.7±25.3 for the required leadership competency level (P<0.001) (9). Also, most of the subscales'



scores of the leadership instrument in the study conducted in 2014 were significantly higher for the required than for the current leadership competency level (9), a finding which is somehow similar to our current study conducted in 2018.

Competencies in the area of public health leadership are considered essential components for the performance and ongoing activities of health professionals at all levels of health care services in a wide range of settings and organizational structures (14). As described elsewhere, developing effective leadership is vital in most of the European countries given the considerable financial pressures of the public health systems and their need to deliver more services in line with declining resources and financial constrains (15).

In the context of Albania, the curriculum of both undergraduate and postgraduate public health programs does not adequately promote leadership skills and competencies for future health professionals (9). However, a similar trend is observed in many other countries where teaching of leadership is still not common in public health training programmes (14,15). This is especially the case in countries experiencing intensive public health reforms including Albania. Hence, there is an urgent call for a considerable investment in leadership training for public health professionals worldwide (16).

This study may have several limitations including the study design, sampling strategy and the information obtained. Regarding the possibility of selection bias, a nationwide representative sample of male health professionals was included, which is comforting. Concerning the instruments of data collection, this study used an internationally standardized instrument (7), which had been previously validated in Albania (8) and subsequently applied to a larger sample of health professionals (9). Overall, the instrument used for the measurement of leadership competencies indicated good internal consistency. Nevertheless, the internal consistency was not high enough for some subscales of, particularly, the current leadership competency level. Regarding the possibility of information bias, there is no reason to assume differential reporting in the actual or the required levels of leadership competencies among male professionals involved in this study. Nonetheless, the possibility of information bias cannot be entirely excluded, as it is never the case with this type of surveys. Finally, findings from cross-sectional studies are not assumed to be causal and should be interpreted with caution.

In conclusion, regardless of its potential limitations, this study provides recent information about the current and the required level of leadership competencies among male health professionals in transitional Albania. based on an internationally valid instrument, which has previously validated been and administered in Albanian settings. As convincingly argued (7,9), application of instrument this useful enables the recognition of possible gaps in the level of existing leadership competencies and the required (necessary) level of leadership which competencies, will eventually inform the public health curricula about necessary content adjustments. Therefore, policymakers and decision-makers in Albania and other countries in the European region should be aware of the existing gap between the required and the current level of leadership competencies among health professionals operating at all levels.



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ORIGINAL RESEARCH

Professionalization of Public Health – an exploratory case study

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Abstract

Introduction: Public health is continuously challenged by a shortage of workforce. There are various reasons for this: 1) public health is less visible than traditional health professions and people may be unfamiliar with the nature and opportunities involved in entering this career field; 2) lack of official recognition of public health as a professional category; and 3) no umbrella organization that supports its members and governs professional standards as is the case of other more established professions. To adequately address the challenges of public health for the 21st century, a key policy element will need to focus on adequately cultivating, training and growing the future workforce of professionals in the field. The aim of this study was to examine why professionalization of public health in Europe is not as robust as it deserves to be and what steps can be taken to assure an adequate supply of professionals with the proper education and training background, and career guidance to tackle the public health needs of the future.

Method: A case study approach was used collecting data via a scoping literature review, a focus group with public health students and interviews with public health experts for convergence. Data was analysed using directed content analysis and pattern matching logic.

Results: Public health fulfilled five out of seven attributes of a profession, such as skills, training and education, certification and an altruistic service. Recognition of Public Health as multidisciplinary and multi-professional field, derived from the interviews as an additional characteristic. A code of ethics and professional conduct and a formal organization were missing.

Conclusion: Public health professionals and organisations that govern best practices in this field should consider introducing a shared code of ethics and professional conduct as well as establishing a coordinated body to help advance the public status as a the profession to increase interest in studying and specializing in this area.

Keywords: professionalization, public health workforce, qualitative study

Conflicts of interest: None declared.



Introduction

Healthcare is one of the largest economic sectors in the European Union (EU) - accounting for around 17 million jobs (1). Most of these jobs are done by the public health workforce (PHW),"people who are involved in protecting, promoting and/or restoring the collective health of whole or specific populations" - and thus distinct from other medical practices (2). The PHW is multidisciplinary and multi-professional in character (3), encompassing a core PHW that identifies with a primary public health role and a wider PHW including health professionals and others who impact on population health (4-5). According to Czabanowska et al. the main task of public health professionals is to focus on the provision of Essential Public Health Operations (EPHOs) and thus display a more focused set of skills while providing leadership that ensures networking, coherence, synergy and strategic impact. The authors further perceive the public health workforce not only as "professionals in traditional public health occupations (such as medical doctors specialized in preventive medicine and public health, food safety inspectors, environmental health officers, communicable disease control staff, etc.) [...] but also a range of "new" practitioners working in the broad field of public health protection, prevention, promotion, service delivery and quality assurance, such as those involved in projects and programmes (e.g., the Healthy Cities and Health-Promoting Schools movements)" (6).

Today, Europe is faced with a shortage of PHW due to many factors, such as low fertility rates and aging population leading to an imbalance between patients/overall population size and public health staff (7). Further, the inconsistency in defining the PHW has an impact on the shortage of workforce, demonstrating a significant challenge for European health systems. But the declining interest in the profession among young people is to be expected given the informal and fragmented nature of the public health profession, underlining the importance of a clear definition. Cioffi et al. (8) claim that, "the fact that the public health workforce is not a single profession, but rather a fabric of many professions dedicated to a common endeavour, creates challenges to any singular approach to workforce development".

When following the definition of Cruess et al. (9) who define a profession as "an occupation whose core element is work based upon the mastery of a complex body of knowledge and skills", public health seems to be a profession. However, compared to medicine or pharmacy, public health does not enjoy the benefits of the Directive 2005/36/EC (10) such as: recognition of professional qualifications by the EU Member States, professional mobility or the assimilation of workers in the single market which apply only to regulated professions (11-12). The lack of professional categorisation and recognition at the regulatory level becomes apparent in the context of attracting prospective employees or students to pursue this field of study. Bjegovic-Mikanovic et al. (13) see an additional problem in the existence of many different study programmes that focus on individual aspects of public health rather than providing a broader and basic knowledge. This makes it difficult to state what the public health discipline really is, and where decision-makers can seek advice. Therefore, there is a need for an authorised public health profession founded on graduation from comprehensive public health education (13). The establishment of public health as a profession follows with regulation and formal recognition as a "category" among the "listed" professions of Europe and their taxonomy. The purpose of the taxonomy is to facilitate the systematic



characterisation of the public health workforce. Currently, the International Standard Classification of Occupation (ISCO-88), has two sub-major groups (health professionals and health associate professionals) within which only a few occupational titles refer explicitly to public health (14). There are several pathways to establishing a profession. Professional status can be achieved via training and education resulting in a specific degree. In this respect public health follows the Bologna process, an initiative that adjusts and harmonizes study programmes. Moreover, there are social processes that transform an occupation into a profession, empowered by either employees and service users (bottomup process) or employers and government (top-down process) (15). For the employers, the professional status of an occupation means that they can require a diploma or certificate, which ensures, that the applicant possesses specific skills and knowledge. For the government, professionalization can require the development of educational standards and a unified curriculum. Moreover, a professional status requires a code of professional conduct, which can help to enhance the quality and security of and for employees. Additionally, degrees and diplomas can function as an assurance for customers, increasing their trust and confidence in making use of a service (16). Although professionalization and formal recognition of the public health field may be a way to elevate the status of the public health profession and stir international interest, little has been done in the European Region to address this pressing need. The current exploratory case study aims to find out hoand why public health is understood and recognised as a profession using multiple data sources: literature, public health experts and students of public health in view of the theory of professionalization (17).

Methodology

This study uses a case study approach which investigates a contemporary phenomenon, in this case "*professionalization*", within its real-life context, in particular when the boundaries between the phenomenon and the context are not clearly evident. It relies on multiple sources of evidence to converge in a triangulating fashion. It assumes a relativist orientation acknowledging multiple meanings, which are observant dependent (18). The study uses the theoretical propositions of the theory of professionalization to guide data collection and analysis (19-20). The propositions which represent the characteristics of a profession include:

• skills based on abstract knowledge which is certified/licensed and credentialed;

• provision of training and education, usually associated with a university;

• certification based on competency testing;

• formal organization, professional integration;

- adherence to a code of conduct;
- altruistic service.

The data were collected using: 1) a scoping literature review, 2) a focus group with public health students and 3) individual interviews with public health experts for convergence. The data were analysed using directed content analysis (21) and pattern matching logic (20, 22). If empirical patterns appear to be similar, the results can help a case study to strengthen its internal validity (20).

Scoping review

The scoping review (23-24) included articles which: 1) focus on the process of professionalization in relation to public health occupations; 2) are published in English and German; and 3) cover the period from 1st of January 1920 – 1st of July 2017. The following key words and their combinations were used:



professionalization, profession, skills, education, training, certificate, formal organization, professional integration, altruism, professional code of conduct, public health, workforce, health occupations and Europe. The study made use of the following data-PubMed, PsychINFO, bases: ERIC. Springer, BioMed Central, Science Direct, Google Scholar and the websites of the European Commission (EC) and World Health Organization (WHO). The information obtained guided the focus group and expert interviews.

Focus group

The focus group (FG) aimed to get a deeper understanding of how the missing professional status of public health might affect future workforce expectations and how graduate students perceive this issue (25). In total, ten students (males n=4, females n=6) of the Bachelor (B-EPH) and Master of European Public Health (M-EPH) at Maastricht University (NL) participated, representing two levels of higher education. Thereby, the B-EPH programme mainly focuses on the determinants of health and concrete health issues and how they are tackled in different countries. In comparison, the M-EPH approaches public health from a perspective of collective action for sustained population-wide health improvement and reduction of inequalities within the institutional, legal and administrative boundaries of health systems. Both programmes have a strictly public health focus

and an international student population. Students were selected on a voluntary basis via the electronic learning environment. During the FG, the moderator led the discussion following an interview guide referring to the awareness and recognition of the professionalization dimensions in relation to public health profession (Table 1).

The questions were open, in-depth and semistructured, meaning that they were adapted or added with the progress of the FG. Further, the 90-minute FG, was audio-taped

Expert interviews

Four in-depth interviews were carried out at the Association of Schools of Public Health in the European Region (ASPHER) Deans and Directors' Retreat in May 2017. Experts were selected, representing leading PH organisations (World Health Organization (WHO), European Centre for Disease Prevention and Control (ECDC), Agency for Public Health Education Accreditation (AP-HEA) and a university providing PH educational programmes). The interviewer followed an interview protocol with openended, in-depth and semi-structured questions (Table 2). Each interview took about forty-five minutes and was audio-taped. Both the students and the experts signed the informed consent and were offered to review the analysed results for validation. They were assured of the ethical principles including anonymity and confidentiality to increase honest answers.



Table 1. Focus Group guiding questions

Examples of questions for students

Why did students choose a bachelor or master in public health?

What are future job perspectives of public health students?

How do studies in public health prepare students for the job market?

How can studies in public health be improved?

How necessary is a specialization in public health?

What are characteristics of a profession?

Is public health a profession? Which characteristics are missing?

How is the public health workforce supported?

What are concerns regarding the future of public health?

Table 2. Individual interview guiding questions

Examples of questions for public health experts

Is public health a profession?

Which characteristics of a profession is public health missing? How can studies in public health be adapted to the job market? How can public health students be supported (to enter the job market)? Will public health at the European level change in the future? Is public health prepared to keep up with changes in knowledge and practices? Is public health taken seriously on the European level or by the population? How to raise the importance of public health?

Directed Content analysis and Pattern Matching

The data of the FG and interviews were analysed using a directed content analysis based on predetermined codes representing the constructs from the attribute models and one additional code *Public health as a profession*, which was derived from the data (18). The FG and interview data were matched with the results of the literature review to "provide predictions about the variables of interest, which helped to determine the initial coding scheme" (20), and to assure credibility and pattern matching, which is a strategy for aligning data to the theoretical propositions (22) and finally, providing theoretical explanations and developing the research outcome. The analysis and interpretation of the results were discussed among the researchers until consensus was reached to reduce a potential bias.



Results

Scoping review

Comparison of the literature with the predicted pattern shows that both patterns match only partly. Similarities and differences are explained hereafter.

Regarding a defined set of skills, major work was done by ASPHER, starting with defining a system of core competencies which could be applicable to public health education, research and practice throughout Europe (26). Since the start of the programme in 2006, much consideration was given to whether the skills taught in schools and programmes of public health reflect what is needed in reality (14, 27-29). That lead to further analyses and the development of the latest edition of the "European List of Core Competences for the Public Health Professional" (30). The most recent "WHO-ASPHER Competency Framework for Public Health Workforce in the European Region" (31) is an example of a tool to support public health workforce development, professional self-assessment and staffing.

Regarding education and training, effective pedagogy and a public health curriculum that balances theoretical and practical education is essential to enable core competencies for future professionals. The seventh out of the ten EPHOs aims to "ensure that there is a relevant and competent public health workforce sufficient for the needs of the population it is designed to serve" (32). EPHOs self-assessment tools were developed and answered by public health services in 41 countries, to detect issues regarding the public health workforce and to give recommendations with respect to training, curriculum, core competencies, accreditation or continued professional development (34). In the following, AS-PHER established the European Degrees in

Public Health project group to design a European Master Programme in Public Health (EMPH). The aim of this project was training harmonization, a recognition of degrees without restrictions and thus free movement of specialists within the European Union; public health schools and programmes were invited to apply this curriculum and adapt their education (35). Although further numerous initiatives took place to strengthen public health education and training (36-37), it illustrates a quite heterogeneous topic (34). Therefore, public health follows other harmonizing frameworks like the Bologna process or the European Higher Education Area. Thus, the basic education and training offer in public health is in place; further effort is required to ensure its comprehensiveness, including strong continuous professional development (CPD) – essential for the professional status. After successful finalisation of the studies in public health, schools of public health have to deliver a certificate that acknowledges the completion of the programme (38). Further, certificates help to test the competencies and reveal whether a person, based on his or her skills and education, can be seen as a professional in the field and fulfils the requirements needed for the position. However, since programmes are not harmonized, certificates are not always comparable and may have a varying degree of significance. This makes the job application process more difficult for both employers and applicants. Therefore, some initiatives, for instance by the US National Board of Public Health Examiners or the UK Faculty of Public Health, are being undertaken to support academic certification with professional credentialing systems in public health.

Many organizations play a role and contribute to the European public health agenda representing different groups of stakeholders.



There is the European Public Health Association (EUPHA) - an umbrella organisation for national public health associations (39), and the European group within the International Association of National Public Health Institutes (IANPHI) (40). There are also the following networks: the European Public Health Alliance (EPHA) - consisting of nongovernmental organisations and focusing on a wide range of advocacy efforts (41), the EuroHealthNet - another not for profit partnership-of organisations, agencies and statutory bodies working to contribute to a healthier Europe by promoting health and health equity between and within European countries (42), and ASPHER, "a key independent European organisation dedicated to strengthening the role of public health by improving education and training of public health professionals for both practice and research" (43). This is only a selection of five out of many organizations striving to improve and support different functions of public health in Europe. However, one formal organization that covers and combines all aspects of public health and is responsible as well as representative to achieve a professional integration was missing.

Several attempts have been made to create guidelines and frameworks for the PHW. Nevertheless, a strict code of conduct that employees as well as employers working in the field of public health have to obey and follow when conducting their job, was lacking. This constitutes a problem because public health illustrates the need to "guide the behaviour of practitioners in the field, especially when it comes to morally or ethically ambiguous activities" (15).

Conversely, for epidemiological research, which is inter-related to public health, the Declaration of Helsinki is mandatory (44). Consequently, with respect to the professionalisation of public health, Foldspang (45) argued that "in each country, we should discuss the shaping of an authorised profession and about what that means in concrete terms, including, for example, the development of agreed public health professional standards and ethical rules".

Concerning altruistic service, people within a profession should strive for the same goal and thus put the interest of the society over their own personal gain which is often described as a paradox, double role of professions as officers and servants of society. Literature that described this altruism specifically in connection with public health was not found. However, according to Yach and Bettcher (46), in public health altruism was intersecting with self-interest. One example for this is globalization and the fact that "in a world of shared global problems, the moral imperatives of addressing these problems also bring mutual benefits" because nowadays poor and wealthy countries affect each other more and more and should therefore build "knowledge partnerships" to support as well as profit from each other (47).

Focus group

Similarity was found in the fact that students agreed that a certain set of skills is required for a professional status. They found that public health provides an insight into a broad range of topics, sectors and stakeholders having an effect on health and the width of public health made a career more accessible and attractive but also caused uncertainty since in an academic setting practical knowledge is often missing. The students feared not getting an adequate position or that some parts of the studies might change in the future or the degree might become less relevant. While a master degree in public health is perceived to have high relevance by the students, a bachelor degree seems to be less important and



vague. Nevertheless, the students concur that the degree offers flexibility and the opportunity to switch between various careers.

According to the students, a representing, professional body or organization is a requirement for a profession but it is missing in public health. The field of public health is emerging but is also lacking appreciation since outcomes are often not linked to the field. Thus, the students emphasised the need for establishing a formal organization which could provide guidance for and promotion of the expanding field of public health and enforce awareness by the society. The students mentioned that a profession is characterized by a set of rules and guidelines one needs to follow when working in this field. However, none of the participants was aware of a specific code of conduct for public health. When studying public health, students have a certain way of thinking and the shared goal to improve the health and well-being of other humans, creating some kind of identity. Although outcomes are not immediately visible and are often not linked to the work of public health professionals, they still continue and try to improve the health of a population.

Expert interviews

The characteristics described by the experts are similar to the proposition of a public health profession with respect to four characteristics (skills, education/training, certification, and altruism). Experts mentioned the need for a variety of skills and the need to use this broad knowledge to show flexibility. Also, experts stressed the usefulness of a degree in public health, demonstrating knowledge in many fields that graduates, as well as employers, should see as a positive characteristic. Further, increasing numbers of courses offered in public health is leading to younger generations that will be trained in public health and ensuring that the importance of a degree is rising and that jobs handling public health issues are occupied by professionals with an educational background in the field. A more specified job within public health will add, adjust or deepen certain skills, going beyond the basic education. Further, experts recommended the involvement of major stakeholders in public health (e.g. employers, alumni) to connect education and work life. Experts consequently recommended job fairs and improved career services within study programmes. Public health education is a very fragmented

system. The experts indicated that public health schools are often small departments within a large medical faculty, causing constant pressure to prove their usefulness. Thus, collaboration between medicine and public health on an equal level should be achieved. Additionally, experts felt it was necessary that public health schools develop more independently, not as small sections of a large medical faculty and with freedom to collaborate with other departments.

Public health is changing continuously and therefore education and training should be updated by increasing communication, also including younger generations. Moreover, the ongoing changes that public health is confronted with, clarified that education has to be adjusted on a constant basis, illustrating the importance of continuous professional development. Further, education in public health should focus more on public communication and leadership skills, making professionals more flexible and adaptable to future changes.

In the opinion of the experts, studying and working in the field of public health clearly demonstrates an altruistic service. From their point of view, people in public health look out for the interest of others by preventing,



promoting and enhancing health and welfare more than for a high income or appreciation. Regarding professional organisation and the code of conduct, the pattern found amongst experts differed from the proposition. Experts agreed that a professional association and advocacy are necessary prerequisites to increase awareness about the field. However, when public health services are provided efficiently in a country, they become invisible and often go unnoticed by the population giving the impression that services lack importance and appreciation, making it difficult to promote public health. Although a failure in public health can have huge impact on other sectors (e.g. economy), public health ranks low within the political context. Therefore, much clearer guidance is needed on how to advocate for the evidence-based importance of public health, by e.g. demonstrating the cost-effectiveness of interventions. The question whether there is a code of conduct public health professionals can follow, caused uncertainty for the experts, who perceived it as a challenge. So far, no one was aware of a specific code of conduct, but they referred to ethics and the altruistic service that are present in public health. Table 3 presents the excerpts of data assigned to the constructs of the professionalization theory.

Table 3. Excerpts from the fo	ocus groups and expert interviews	assigned to the six theoreti-
cal constructs related to p	professionalization advanced with	a new derived category

Constructs	Citation
Skills	"once you have your basic academic profession there is a common ground, there are competencies that are common in public health and of course depending on what area of public health you are working in, it may
	look different. [] I think it is important too, within each domain of a larger public health, to define what are
	the competencies and then make sure that each of the professions that are working in that segment of public
	health have those additional competencies that go beyond their basic profession."
Training & education	"In many places, departments of public health are just a small piece of a much larger medical faculty and they
	are constantly under pressure to prove a usefulness. [] So yes, in several European countries, more needs to
	connections that it should be super easy for them to have like a job fair, specifically for public health students
	[]. At least if not a job they can just give us connections for us to go forward."
Certificate	"There are two ways to look at it. One is to say that the glass is half empty [] I would say the glass is half
otruncate	full or at least three quarters full, because the advantage that you as public health graduates have is that you
	have some knowledge in a lot of fields. If I were an employer, not knowing what the future actually brings, I
	would rather have graduates who are able to think in various fields rather than graduates who are focused on a
	very narrow field but have some in depth knowledge."
Formal organization	"Definitely, we need a strong professional association and strong institution, we need strong advocates. And
	there are strong advocates from the EU level or NGOs working in the public health arena but not maybe doing
	that much public health work themselves but are lobbying and supporting."
	Advocacy that is taking a strong role in the public debate. I think as a public health profession, we are very good at talking and communicating within a hubble. But we are less good at talking outside the hubble."
Code of conduct	"I think this is an interesting tonic to pursue. So I take this as a challenge."
coue of conduct	"I mean to my knowledge there is no formal code of conduct, at least I haven't seen one. I mean it might be
	that it is out there but, no visible to me."
Altruistic service	"those who chose public health do it because there is an adherence involved of making something good for
	the society." "I think that only because you have a degree in public health for example that just shows for me
	at least that you have a certain way of thinking."
Recognition of Public	"I think that there is a public health profession. But I recognize the risk of excluding people and the definition
Health as multidiscipli-	of public health should be about inclusion. [] That places us in this unique position to have a broad leader-
nary and multi-profes-	ship role in the whole system."
sional	To me, I think it would be hard to say that it is one profession. I see it more as a coalition of various profes-
	sions, [] anterent competencies working together.



Discussion

By using pattern matching and directed content analysis we attempted to triangulate multiple data sources to describe the extent to which public health can be considered a true profession. The findings coming from the three sources (literature review, student focus group, and expert interviews) were overlapping and consistent with each other. They indicate that public health, as a profession, is not yet fully developed although various aspects required for a profession are fulfilled. The validation of the results against the theoretical model shows that four out of six professionalization dimensions (18) including: skills, education and training, certification, and altruistic service are fulfilled by public health, while formal organization and a professional code of conduct are lacking. However, the results reveal a separate category: Recognition of Public Health as a multi-disciplinary and multi-professional field. While the majority of the participants did not perceive public health as a single profession but more as a job field or a coalition of different professions and multiple agencies, they still argued that it would be beneficial if the field were precisely defined.

The fact that public health is very broad leads to uncertainty among the students who may sometimes doubt whether they are well prepared for later jobs as well as fear that they can be replaceable and disadvantaged compared to the students from more defined health fields. On the contrary, the experts considered the broad range of skills students are equipped with, as a benefit enabling students to be flexible and adaptable to new situations and challenges instead of being "stuck" in a narrow field. Since today's careers develop more horizontally, such an optimistic approach should be advertised in relation to public health study programmes to eliminate the fear in current and future students and present public health as a secure future.

Bjegovic-Mikanovic et al. (14) state that the curriculum and skills have to be adapted to real work-life by the involvement of stakeholders, employers, and alumni. This was confirmed by the student respondents, who stated that experiences during their practical placements made it clear that focus on some skills should have been made more comprehensive within their classroom studies. It means that public health also needs to balance the scientific and social/relational aspects and enhance training in public communication and leadership. Regarding education and training, many public health schools follow initiatives leading to the harmonization of study programmes. This enables easier application and recognition processes and thus increases the flexible movement of professionals. It is worth noting that all participants of the study agreed that altruistic service is a feature of public health, indicating that a person who works in public health aims to improve the health and well-being of other humans and puts the interests of others as their first priority rather than appreciation or financial gains.

While on one hand the results of the study proved that there is no specific formal organization for the public health profession that the interviewees were aware of except for the United Kingdom (UK Faculty of Public Health or Public Health England), on the other they stressed the importance of such an organization for public health. It could help to ensure professional integration, increase advocacy and enhance the significance of public health within the political context to enable compliance with regulatory or legal requirements as well as issues related to salary, high quality study programmes, core



competencies and skills; consequently increasing the significance of public health degrees. Moreover, a formal organization could promote public health and help to raise the awareness of the field within society thus building public trust and confidence.

Although the presented study is direction setting, there are limitations and it remains only exploratory. This is owing to a small sample size of the focus group and expert interviews although the focus group and the interviews were in-depth, providing rich descriptions and using more than one data source contributed to increasing the validity of the study (48).

This study used two theoretical models often related to as "traits" theories. Theorising of the professions, for many years, has been strongly shaped by twentieth century professional developments and societies. These approaches have highlighted universal 'traits' and functions of the professions (17, 49). However, the scholarly discussion on professionalization shows many different views concerning the professionalization process (49) and the "traits" approaches seem to be less adequate to describe contemporary processes of professionalization. More recently, the studies of professions have paid greater attention to the diversity of professional groups and to a wider range of factors that may promote successful professionalization. Several authors have illustrated the benefits of a governance approach, as defined by WHO and others, and applied in cross-country comparison to health workforce research, thereby bringing health systems-based factors into view. For instance, cross-country comparative research shows that health systems vary in how they shape and target both organisations-based and professions-based reform strategies (7).

The results of this study can be useful for educationalists, employers, accreditation agencies and public health schools to realise that putting public health into a clearer and more defined context will help to improve European public health systems and services and increase its importance and recognition as well as resources.

Conclusion

The feeling of uncertainty and lack of trust as to whether public health is seen as a legitimate profession can be ameliorated by making public health more attractive. Thereby, the interest in public health can be enhanced to convince the future workforce that it is a field with a secure future, worth studying, working and to staying in.

Public health professionals and organisations that govern best practices in this field should consider introducing a shared code of ethics and professional conduct as well as establishing a coordinated body to help advance the public status as a the profession to increase interest in studying and specializing in this area.

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Appendix

The directed content analysis of the focus group and the expert interviews, as well as the informed consents of the participants, can be delivered upon request.

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ORIGINAL RESEARCH

A code of ethical conduct for the public health profession

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Abstract

Aim: Agreeing on a Code of Ethical Conduct is an essential step in the formation and definition of a public health profession in its own right. In this paper we attempt to identify a limited number of key ethical principles to be reflected as professional guidance.

Methods: We used a consensus building approach based on narrative review of pivotal literature and theoretical argumentation in search for corresponding terms and - in a second step - attempted to align them to a limited number of key values. The resulting draft code of ethical conduct was validated employing a framework of the Council of Europe and reviewed in two quasi Delphi rounds by members of a global think tank.

Results: The alignment exercise demonstrated the acceptability of five preselected key principles: solidarity, equity, efficiency, respect for autonomy, and justice whereas three additional principles were identified during the discussion rounds: common good, stewardship, and keeping promises.

Conclusions: In the context of emerging and re-emerging diseases as well as increase in lifestyle-related diseases, the proposed Code of Ethical Conduct may serve as a mirror which public health professionals will use to design and implement public health interventions. Future public health professional chambers or an analogous structure should become responsible for the acknowledgement and enforcement of the Code.

Keywords: code of ethics, moral obligations, principle-based ethics, professional standards, public health profession, population ethics, societal responsibility, utilitarian ethics.

Conflicts of interest: None.

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Introduction

The implementation of public health interventions raises ethical issues which require public health professionals to address them. The awareness of the ethical dimension of public health activities has given rise to the relevance of public health ethics, which Meagher and Lee refer to as "a subspecialty of bioethics" (1), and Kass refers to as a "subfield of bioethics" (2). Several authors have noted the importance of ethics for public health (3, 4), and public health professionals training (5). For example, ethical issues in public health also feature prominently in the efforts to control emerging infectious diseases at the population level (6, 7), which necessitated the World Health Organisation (WHO) to issue guidance on how to deal with ethical issues in infectious diseases control (8). Also, the efforts to address antimicrobial resistance (AMR) have raised a number of ethical questions (9). In a systematic review by Klingler et al., they have identified a comprehensive catalogue of ethically relevant conditions (10). Thus in order to address the ethical issues arising from public health practice and research, it has been noted that there is a need to establish a Public Health Ethics Framework and a Code of Conduct for public health professionals, as well as to train public health professionals in population ethics (11). Several Frameworks for Public Health Ethics have been documented (2, 12-15); among them, Marckmann et al. (12) have provided detailed reasoning on application in the field practice. However, a gap remains: the development of a Code of Ethics and Professional Conduct in the field of Public Health or in short: a Code of Ethical Conduct for the public health profession.

In a recent introductory paper, Laaser and Schröder-Bäck (16) outlined the reasoning why a Code of Conduct is an essential step in the formation and definition of a public health profession in its own right at the national as well as the European level and with relevance to a global dimension. The European Directive on the recognition of professional qualifications 2005/36/EC (17) acknowledges as regulated professions in the health sector only physicians, nurses, dentists, midwifes, and pharmacists. The Amendment eight years later in Directive 2013/55/EU opens the door to include additional professions when it refers to a 'broader context of the European workforce for health' (18) which should then include for example veterinarians given their high relevance for people's health. In most of the European countries, public health professionals are not formally organised as an autonomous profession in its own right – as for example it is the case in the United Kingdom (19) – and do not adhere to an agreed Code of Conduct (20). However, the "Good Public Health Practice framework published 2016 by the UK Faculty of Public Health 2016 (21) constitutes rather as the title says – a guide for ethical practice which may be derived from overarching principles as discussed in this paper. Although there are organisations of schools of public health (22) and public health associations (23) as well as other associations related to areas of public health relevance, agreement on a Code of Conduct as one precondition for the formalisation and integration of a public health profession has not been promoted as necessary. The American Public Health Leadership Society (24) described the rationale for an ethical code of conduct in 2002 as: "...a code of ethics thus serves as a goal to guide public health institutions and practitioners and as a standard to which they can be held accountable". The statement goes further beyond public health professionals to include institutions that are involved in public health to abide to ethical conduct. However, as a first attempt this did not initiate a lasting debate and the recent volume of the Public Health Reviews on Ethics in Public Health (25) touches the topic only indirectly.

In the introductory paper referred to above (16), Laaser and Schröder-Bäck discussed the limitations of the often dominant utilitarian principle in population ethics. The utilitarian principle says that the moral worth of an action or inaction lies in the consequences that follow. An action (or inaction) is good if it maximises the good for a maximum of people and is better in this regard than any alternative action. Intrinsic values – such as respecting persons or dignity – do not exist in utilitarian thinking. Instead of applying the utilitarian principle, the authors propose "...that solidarity and equity are core values that have to be reflected in a European version of a Code of Conduct for public health professionals... also guided by the principles of efficiency and respect for autonomy". As an additional principle they discuss justice, especially for resource sharing on a global scale. Although these five principles reflect the European heritage, the authors underline the increasingly global dimension of the public's health (26, 27, 28) and therefore of a public health profession well-defined by the same principles (29, 30).

Methods

We used a consensus building approach based on narrative review of literature and theoretical argumentation: we 1) argued the proposed five core ethical principles from the theoretical standpoint using a narrative review of selected publications in the field and trying to be as comprehensive as possible and relevant; 2) extracted and confirmed the five core principles as essential values for public health professionals and institutions in an "overlapping consensus" based on several rounds of discussion among authors, then translated the core principles into a draft Code of Ethical Conduct making use of 'mapping the terrain' as proposed by Childress et al. (31); 3) validated the draft employing the 'General framework for codes of conduct in the health sector' adopted by the Council of Europe in 2010 (32); and finally, 4) sent out the resulting draft for comments in two quasi Delphi rounds conducted by the Global Think Tank GHW-2030 (33). The comments from members of the Global Think Tank in round one have to a large degree been integrated by the authors. The second round revealed support in formulating the conclusions and recommendations and the approval of the second draft.

Results

Review of the literature with regard to corresponding terms

Table 1 presents the selected and scrutinised papers related to principles and norms regarding Public Health Ethics. We carefully aligned and synthesised theoretical frameworks to find the best fit between them.

The Draft Ethical Code

The identified literature revealed its best fit with the five core values identified earlier (16): solidarity, equity, efficiency, respect for autonomy and justice. Three additional principles were identified in the alignment exercise, which are: common (public) good, stewardship, and keeping promises and commitments. In the following we explain their core normative meaning.

Solidarity

Solidarity is a value that increases in significance in the health realm. Whereas in the conclusions of the Council of the European Union (38) solidarity was solely defined as being closely "linked to the financial arrangement of our national health systems and the need to ensure accessibility to all", the normative scope, its relevance and meaning for public health gets more and more developed during the last years. A recent report of the Nuffield Council on Bioethics defines solidarity as a concept that "signifies shared practices reflecting a collective commitment to carry 'costs' (financial, social, emotional or otherwise) to assist others." (41). Ter Meulen (42) emphasises that solidarity is more than respecting each other and assuming liberal negative rights of freedom but that positive relations among human beings should be in the forefront, next to rights and duties. He formulates: "Health care policies and arrangements should go beyond merely meeting needs and rights, by exploring how people's personal dignity and sense of belonging can be sustained within relations of recognition, reciprocity and support". From these essential cornerstones defining solidarity, one can conclude that the value of solidarity acknowledges that human beings should not forget that they are united, bond to other humans by virtue of humanity. From this also follows the duty for mutual support and the strengthening of relations among human beings should therefore be in the forefront of public health practice.

Equity

Also "equity" is one of the core values that are discussed in public health. The European Union defines equity in health simply as relating "to equal access according to need, regardless of ethnicity, gender, age, social status or ability to pay" (Council of the European Union 2006 (38)). However, equity is also the normative reminder that health inequalities have to be in the focus of all public health action if considered to be unjust and unfair (43), foremost all those which refer to religion, race, gender identity etc.

Efficiency

Despite the last values that focus on rights and stress the moral importance of every one, the value of "efficiency" stems from another philosophical school but the rights-based approach. "Efficiency" follows more utilitarian thinking inclined to maximize the positive outcome with a minimum of resources. This economic reasoning has a value - also from a moral perspective because it reminds public health professionals that one has to be careful when dealing with scarce resources. Scarce resources should be invested wisely to have the best health effect and economic evaluations are therefore important for public health. For instance, in some circumstances such as in the area of HIV/AIDS, there are challenging questions on how to allocate resources in an ethically acceptable and efficient way between preventive and curative demands (39) or between different health programmes. Also, in the example of antimicrobial resistance, the allocation of resources may require reprioritisation from other areas and sectors outside health in order to gather enough funding to support containment of the epidemic (9).

Sources of Ethical Principles and Terminologies for Public Health	Ethical Principles Proposed for Public Health	Attempted Alignment of Ethical Principles for Public Health Professionals				
World Health Organisation [2016] (8)	Justice Equity Transparency Inclusiveness/ Community engagement Accountability Oversight Utility Proportionality Efficiency Respect of persons (<i>autonomy, informed</i> <i>consent, privacy</i> <i>confidentiality</i>) Liberty Solidarity Reciprocity	Solidarity Reciprocity Community engagement	Equity	Utility Efficiency	Liberty Respect of persons (Autonomy, informed consent, privacy confidentiality) Proportionality	Justice Transparency Inclusiveness/ Community engagement Accountability Oversight
Core Ethical Principles	* · ·	Solidarity	Equity	Efficiency	Respect for Autonomy	Justice
Littmann and Viens [2015] (9)	Justice Distributive fairness Effectiveness Reciprocity Stewardship Citizen obligations to self- educate Citizens obligations not to infect others Citizen involvement in	Responsibility Citizen obligations and actions Solidarity Public engagement Reciprocity	Distributive fairness	Effectiveness Responsibility Priority setting and resource allocation	Risk information sharing	Justice Distributive fairness Health justice Trust Public engagement Distribution of research outcomes

Table 1. Review of ethical principles and terminologies with relevance to public health

Sources of Ethical Principles and Terminologies for Public Health	Ethical Principles Proposed for Public Health	Attempted Alignment of Ethical Principles for Public Health Professionals				
Royo-Bordonada and Roman-Maestre [2015] (11)	lobbying Risk information sharing Distribution of research outcomes Public engagement Solidarity Reciprocity Health justice Common good Trust Autonomy Solidarity Transparency Pluralism Community perspectives Rights of individuals Common good Partnerships (<i>public-private</i> <i>partnerships</i>) Collection and use of data (<i>information</i>)	Solidarity Partnerships (public-private partnerships)		Information (collection and use of data) Resource allocation	Autonomy Rights of individuals Pluralism	Community perspectives
Core Ethical Principles		Solidarity	Equity	Efficiency	Respect for Autonomy	Justice
Marckmann G et al. [2015] (12)	Maximizing health benefits Preventing harm Respecting autonomy Equity Efficiency Compensatory justice Transparency	Participation Justification	Equity Compensatory justice	Maximizing health benefits Efficiency	Respect for autonomy	Justice Participation Justification Transparency Consistency

Sources of Ethical Principles and Terminologies for Public Health	Ethical Principles Proposed for Public Health	Attempted Alignment of Ethical Principles for Public Health Professionals				
	Consistency Justification Participation					
Ortmann LE et al. [2016] (13)	Utility Equity Justice Reciprocity Solidarity Privacy Confidentiality Keeping promises Effectiveness Proportionality Necessity Least infringement Public justification	Solidarity Reciprocity Necessity	Equity	Effectiveness Utility	Privacy Least infringement Confidentiality Proportionality	Justice Public justification
Public Health Leadership Society [2002] (24)	Information Collaboration Respect for individual rights Diversity Incorporation Confidentiality	Collaboration		Information	Respect for individual rights, Confidentiality Diversity	Incorporation Information
Core Ethical Principles		Solidarity	Equity	Efficiency	Respect for Autonomy	Justice
Schröder-Bäck P et al. [2014] (34)	Maleficence Beneficence Health-maximisation Efficiency Respect for autonomy Justice Proportionality	Justice	Justice	Efficiency Health- maximisation	Respect for autonomy Proportionality	Justice
Sources of Ethical Principles and Terminologies for Public Health	Ethical Principles Proposed for Public Health	Attempted Align	nent of Ethical Prin	nciples for Public Hea	lth Professionals	
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Laaser U et al. [2002] (35)	Solidarity Equity Efficiency Sustainability Participation Subsidiarity Reconciliation Evidence Empathy/Altruism	Solidarity Empathy/ Altruism	Equity Subsidiarity	Efficiency Sustainability Evidence	Reconciliation	Participation Sustainability
Institute for Global Ethics [n.d.] (36)	Competence Honesty Responsibility Respect Fairness Compassion	Compassion		Competence Responsibility	Respect Honesty	Fairness
Council of the European Union [2006](38)	Equity Universality Solidarity	Solidarity Universality	Equity			
World Health Organisation [2015] (39)	Equity Solidarity Social justice Reciprocity Trust Individual liberty versus broader societal concerns Public good Distributive justice	Solidarity Reciprocity	Equity	Allocating scarce resources	Individual liberty versus broader societal concerns	Distributive justice Social justice Trust
Core Ethical Principles		Solidarity	Equity	Efficiency	Respect for Autonomy	Justice
Coughlin StS [2008]	Minimizing possible harms	Solidarity/social		Effectiveness	Least infringement	Treating others fairly

Sources of Ethical Principles and Terminologies for Public Health	Ethical Principles Proposed for Public Health	Attempted Align	ment of Ethical Prin	ciples for Public Hea	Ith Professionals	
(40)	treating others (<i>current &</i> <i>future generations</i>) fairly Sustainability Solidarity/social cohesion Precautionary principle Utility Public justification Least infringement Necessity Proportionality Efficiency Effectiveness Building and maintaining public trust Transparency (<i>speaking</i> <i>honestly and truthfully</i>) Keeping promises and commitments Protecting privacy and confidentiality Procedural justice (<i>participation of the public</i> <i>and the participation of</i> <i>affected parties</i>)	cohesion Necessity		Efficiency Sustainability Utility	Protecting privacy and confidentiality Proportionality	(minimising possible harms) Procedural justice (participation of the public and the participation of affected parties) Building and maintaining public trust Transparency Public justification
Core Ethical Principles	(summarised):	Solidarity (reciprocity)	Equity	Efficiency (utility,	Respect for Autonomy	Justice (public justification)
* Additional ethical prin attempted alignment (bo	ciples remaining after the ld in the table) are:			effectiveness)	(Respect for individual and community,	

Sources Principl	of Ethical les and alogies for	Ethical Principles Proposed for Public Health	Attempted Alignment of Ethical Principles for Public Healt	h Professionals
Public I	Hoolth			
I UDIIC I				· ·
•	Common (public)) good		privacy,
•	Stewardship			confidentiality, least
•	Keeping promises	s and commitments		infringement)

Respect for autonomy

Economic evaluation and utilitarian thinking have to be hold in check by the rights-reflecting values - equity, justice and also respect for autonomy. The normative core of the latter value is to re-iterate and focus what also is reflected in justice and equity: Every person has autonomy and thus the capacity to make own decisions (for children or other persons unable to consent, parents or guardians take this role). Respect for autonomy thus reminds public health professionals to obtain informed consent of persons who are subject to health interventions but also stresses that persons have a dignity that must not be comprised. This value warns of stigmatisation and instrumentalisation of persons for the benefit of others. If the autonomy of persons is comprised, this has at least the strong burden of proof that such an autonomy limiting behaviour is justifiable. However, respecting the autonomy of everyone not only means "to back off" and respect the liberty of a decision of persons. Rather, O'Neill (44) reminds the public health community that respecting autonomy can also refer to a duty, e.g. to participate in health interventions like immunisation campaigns to achieve herd immunity. Littman and Viens (9) in this context have noted that in order to address antimicrobial resistance "citizens have obligations to educate themselves, obligation of not to infect others, and obligation to lobby for support from political leaders and industries."

There might be examples where the infringement of a will of a person can be justified. The use of spillover effects of an intervention as a basis to restrict autonomy of an individual has been well explained by Royo-Bordonada and Roman-Maestre (11, pp. 12 of 15): "...among public health officials, there is a political component in the form of the health authority, with legal capacity in certain instances, to take action targeted at the individual or the environment. This capacity to restrict the autonomy of the individual can ... come to be justified on the basis of the externalities, positive or negative, induced by the intervention in third parties". An example could be to restrict the free movement of people with infectious diseases if their free movement could lead to severe infections of others.

Justice

When can we consider something as being unjust and unfair? A benchmark for justice theories in health is the work of Norman Daniels. Daniels (2008 (45)) follows his teacher Rawls in the assumption that public institutions are obliged to promote fair equality of opportunity for everyone. Public institutions and resources should be organized in such a way that every person can participate in society – to take public offices but also to have resources to live a good life (which is not further specified). Daniels continues the Rawlsian approach by claiming that health significantly contributes to the opportunity range that people are having. And, as a consequence, justice requires to protect health and to meet health needs of every person. Following the philosopher Boorse (46), Daniels also has a clear idea of what health means in this context: species typical normal functioning according to the functioning of others in the same (e.g., age) reference class.

Thus, for public health professionals, justice understood in this way should remind them of including everyone to benefit from health and thus getting fair equality of opportunity in life when the social and other determinants of health (incl. access to health care) do not support this goal for everyone.

The concept of distributive fairness includes also the important question of how findings from scientific research are distributed since research evidence is key for an informed

decision-making in public health. For instance, the tension in resource allocation between prevention and treatment in HIV and AIDS services can better be solved if decision makers know the evidence that treatment helps to minimize the risk of transmission, therefore, we can take treatment as part of prevention. In this way, the evidence for treatment as prevention can assist in distributive justice in resource allocation in HIV/AIDS between preventive and curative interventions. Also, by sharing research results, it will help communities to understand the value of interventions being implemented in public health and hence be more willing to support them. However, justice could also extend to include unproportionate focus on resource driven health programmes versus "other" public health calamities with significant impact. A key message to public health professionals is that distribution of research outcomes should be tailored to the audience, i.e., to the ordinary citizens; message should be prepared in simple, non-technical terms to ensure that it is clearly understood.

The core principle of justice and its emphasis on transparency, inclusiveness, and community engagement provides an opportunity for people of different culture, values, and beliefs to participate in assembling public support. "Lessons from the Human Genome Project – Ethical, Legal, and Social Implications Program" (1) indicate that engaging the public in an informed discussion aiming at reaching agreement on a particular public health intervention, can help to get support of the population or community.

Additional principles

From table 1, three additional principles have emerged, namely: protection of common (public) good; stewardship; and keeping promises and commitments.

Common (public) good

This principle focuses on the need to protect things that are shared by all for the benefit of all people in the community, population or a nation. In economic theories the characteristics of a "public good" are those of being "non-excludable" and "non-rivalrous". This means that all people can benefit from the good, no one is (or can be excluded), and use of the common good does not diminish the good. The "common (public) good" has close links to communitarian theories of public health ethics (47). This also requires public health professionals to be able to solve ethical conflicts between the protection of public good and human rights of individuals within a particular community or population (48). Knowing that priority is on preservation of common good should be the bottom-line for a Public Health Professional when implementing an intervention that encroaches on individual's rights and freedom. If a Public Health Professional decides to focus on rights of individuals alone at the expense of a common good, this may put the whole community or population at risk. Also, the principle requires the Public Health Professional to be informed by scientific evidence while making decisions about a particular intervention.

Stewardship

This normative value insists that public health professionals have a stewardship role, which means that they have to put the health of the population as their number one priority (37). In other words, the stewardship role of public health professionals makes them responsible for the health of the entire population. As stewards, public health professionals must have a vision for the health of the people they serve. This brings to them a need for using scientific information to analyse situation and design

(jointly with the population) appropriate interventions. Also, public health professionals must build skills to engage the population and to reach consensus on public health interventions that will help to solve a problem at hand. If a Public Health Professional behaves as a "good steward", then all stakeholders will likely support the implementation of public health interventions. To this end, public health professionals must be able to communicate effectively all the interventions as well as research findings to the population. Laws, regulations, and other tools for governance arrangements are part and parcel of the stewardship role. Therefore, Public Health Professionals in fulfilling their stewardship role should be able to participate in setting regulations and bylaws and support the populations to comply with in order to flourish healthy lives.

Keeping promises

This principle calls for public health professionals to hold themselves responsible on the promises and commitments they make. It should be understood by the professionals that commitment to improve and preserve the health of the population they serve is central to their duties. When a planned intervention is to be implemented in a particular community, it is the responsibility of the Public Health Professional to ensure that the promise is achieved in a transparent manner and that the resources earmarked for the intervention are used as planned.

These three additional principles underline the relevance of operational ethical competence and are constitutive elements of public health professionalism.

Validating the draft Code of Conduct

For validation we found most suitable the general framework for codes of conduct in the health sector, approved by the Council of Europe in 2010 (32). In table 2 we attempt to show that the core ethical principles we identified can be aligned to a large degree with the framework adopted by the Council of Europe.

Main areas	Subareas	Selected examples	Corresponding Core Principle
4. Areas to be regulated by a	a. Good professional practice	i. Respect for the dignity of people (employees)	2.4
code of conduct in the health		<i>ii. Honesty and confidentiality</i>	2.4
sector		iv. Use of the best scientific evidence	2.3
		vi. Compliance with regulations and legislation	2.5
		vii. Awareness of the needs, demands and expectations of the population	2.2

 Table 2. General framework for codes of conduct in the health sector of the Council of Europe
 (complete version in Annex 1)

	h Use of resources of the	i Cost offectiver age	2.2
	b. Use of resources of the	i. Cost-effectiveness	2.3
	service/system	n. Avoluing using public resources jor	2.5
		iii Prevention of fraud and corruption	2.5
	c. Handling of conflict of	i. Economic: Weighing between health	
	interests	benefits and economic gains on one	
		side and individual gains (employment,	
		etc.) (45).	
		ii. Non-economic: Managing	2.6.1
		relationships with health authorities	
		and other government officials (11,	
		45).	
	d. Proper access, sharing and use		2.4.2.5
	of information	11. Duty to disclose all relevant	2.4; 2.5
		information	
	e. Handling of gifts and benefits	<i>i. Existence of an explicit policy</i>	2.5
		concerning gifts	
	f. Research-related topics		
		ii. Truthful claims of research potential	2.4
			2.4
		<i>iv.</i> * <i>Feedback to study populations on the</i>	2.4
		resulls v * Research outcomes as part of public	
		v. Research buildines as part of public good need to be shared in order to	25
		facilitate evidence-based decisions.	2.0
	g. Relationships with other actors	•••	
	in the health sector	vii.* Collaboration between Public Health	2.1
		Professionals, Communities and Public	2.6.1
		Health Institutions.	
	h. Good corporate governance of	i. Issues of multiculturalism, tolerance and	2.4
	health	respect	
	institutions/services/centres	 ii * Participation in humanitarian	2.1
		activities	2.1
5 Enforcement	a Paparition of violations	www.uco	2.5.2
5. Enjorcement	h Composition of the body		2.5
conduct	responsible for dealing with		2.5
contanter	enforcement		
	c. Transparency of procedures		2.5
	and public scrutiny		
	d. Complaints system		2.5
	e.* Use of nudging techniques in		2.3
	design of public health		2.6.2
	interventions (46). This emphasis		2.5
	is based on the consideration that		
	to balance application of nudging		
	and strict prohibition		
6. Updating,	a. Process of development of		2.6.1

monitoring and	codes of conducts: initiative,	
development of	ownership, legitimacy	
the code of	b. Comprehensiveness	2.6.2
conduct	c. Limitations of codes of conduct	2.6.3
	d. Codes of conduct and	
	legislation	

* Amended by E. Eliakimu.

Results of two quasi Delphi rounds

The final outcome of our integrating consensus oriented approach is summarised in table 3.

Preamble:	The public health profession is defined inter alia by an adopted set of principles guiding the ethical conduct of its members. These principles form a normative core of the profession. Public Health Professionals should orient their conduct – their doing and omission – according to the following norms and values. In case of conflict of these values, professionals accept a burden of proof to argue the ethically best acceptable solution for their conduct while taking the normative guidance of all these norms and values into account.
Core ethical principles	Short characterisation taken from section 2.1-2.5 above
2.1 Solidarity	Solidarity signifies shared practices reflecting a collective commitment to carry 'costs' together to assist others. Human beings are united in the fact that they are bond to other humans by virtue of humanity. From this also follows the duty for mutual support for every human being. The strengthening of relations among human beings should therefore be in the forefront of public health.
2.2 Equity	Equity is relating to equal access according to need, regardless of ethnicity, gender, age, social status or ability to pay. Health inequities considered to be unjust and unfair have to be in the focus of all public health actions.
2.3 Efficiency	Maximisation of the positive outcome with a minimum of resources, i.e., scarce resources should be invested wisely to have the best health effect.
2.4 Respect for autonomy	Economic evaluation and utilitarian thinking have to be hold in check by the rights-reflecting values - equity, justice and also respect for autonomy. Persons have a dignity that must not be comprised.
2.5 Justice	Public institutions and public health professionals are obliged to promote fair equality of opportunity for everyone. This principle also encompasses distributive justice on research, i.e. to consider how findings from scientific research are distributed.
Operational ethics	Short characterisation taken from section 2.6.1 - 2.6.3 above
2.6.1 Common (public) good	This principle focuses on the need to protect things that are shared by all for the benefit of all. Public health professionals must be able to solve ethical conflicts between the protection of public good and human rights of individuals. Knowing that priority is on preservation of common good should be the bottom-line for a Public Health Professional.
2.6.2 Stewardship	Stewardship makes public health professionals responsible for the health of the entire population. They have to build skills to engage the population and to reach consensus on public health interventions that will help to solve a problem at hand. They should also support the citizens to comply with various laws and regulations governing public health issues.
2.6.3 Keeping promises	This principle calls for public health professionals to hold themselves responsible for the promises and commitments they make. Promoting and preserving the health of the population they serve is central to their duties.

Table 3. The aligned code of ethical conduct for the public health profession

Discussion

The proposed Code of Ethical Conduct for the public health profession hopefully will become relevant in global and not just in European contexts. For example Anderson et al. (51) have highlighted a global health ethics in addressing the challenge of maternal and neonatal mortality. The identified principles make a significant contribution to the newer related field of "Global Health Ethics", which has been shown to adopt almost similar values but operates at or requires actions at global level (52). Principles include equity, justice,

autonomy, human rights, application of scientific research, as well as related virtues such as compassion, trustworthiness, integrity, and conscientiousness. The World Health Organisation in its key document on Global Health Ethics has identified three ethical challenges that closely relate to these principles: first - "... to specify the actions that wealthier countries should take, as a matter of global justice and solidarity, to promote global health equity"; second - "... is related to cultural relativity. It is sometimes asked whether ethical standards are universal, given that different people in different countries may hold different values or place different weights on common values; third - concerns international research, especially when investigators from wealthy countries conduct research in impoverished settings where participants are especially vulnerable or where language and cultural barriers make informed consent difficult."(39, pp. 19-20) The implementation of the Code of Ethical Conduct for the Public Health Profession, supports public health professionals addressing the ethical questions and dilemmas for the benefit of population health. Ethical principles including equity, social justice, national and individual autonomy, transparency, accountability, open communication, trust, mutual respect, development of servant leadership are characterised as globally relevant to meet the global challenges. Also, solidarity, stewardship, production of global public goods, and management of externalities across countries, have been shown to be the "essential functions of the global health system" (53). The role of human rights in health links both, public and global health ethics. To this end supporting, protecting and respecting human rights is essential both to Public Health Ethics (54) and to Global Health Ethics (55). However, e.g. out of fifty-five finalized project proposals identified in the Second Public Health Programme (2008-2013) of the European Commission only 'equity' and 'efficiency' were explicitly considered in eighteen projects and four projects respectively while solidarity was only discussed in one project (56).

Limitations

The limitations of our approach to public health or population ethics are obvious. Firstly, the selected literature may not be comprehensive respectively the balance between the relevance of publications and preferences of the authoring team may be biased by prejudice.

Secondly our attempt to align relevant terms in the literature (see table 1) may similarly be biased by our prejudices, although our intensive discussions during the last year hopefully have minimised the effect of personal preferences.

Thirdly, the terminology in the subject area has not finally matured leaving boundaries foggy and allow for undefined overlaps taking the example of public health vs. population health and global public health vs. global health where the latter terms include individual health predominantly subject of clinical medicine and the former terms are restricting to public health services and thereby to the multitude of public health professions working in the public health services (physicians, economists, sociologists to name a few). The authors of this paper however, do not consider public health ethics as a subspecialty (1) or a subfield (2) of bioethics. Although there are norms and values shared in bioethics and public health ethics, the latter has a basic normative orientation towards the good of the public and populations, whereas bioethics was designed for the clinical context of the patient-physician encounter (57).

Fourth, we embrace a public health ethics perspective but the purpose of this paper is to narrow it down to a Code of Ethical Conduct to guide multi-disciplinary public health professionals in their operations and to help defining a distinct profession targeting population health rather than individual health (16). This may imply the partly loss of a comprehensive picture, however, an elaborate guide or code would not serve the needs of the public health practitioner in the field. Insofar, we adopted a somewhat different strategy focussing on a smaller but comprehensive set of core principles (see table 3 above) relevant to public health ethics rather than prescribing a lengthy set of concrete rules (like e.g. 21, 24). Fifth, trying to be focused we did not elaborate on applications in the various fields of public health relevance as for example natural or man-made disasters and the resulting emergency state (58) which relates especially to the principle of solidarity, or the issue of universal health coverage (59) which requires the consideration of justice.

Sixth, the focus on populations leaves out personal conscience and self-determination values (60) or virtues (61, 62), most important being honesty and trustworthiness, integrity and excellence.

Finally, in light of the Sustainable Development Goals, SDGs (33) and the case for people and planetary sustainability becoming increasingly more urgent, it seems timely, although beyond the scope of this paper, to reflect on aligning the proposed ethical principles with the attainment of the SDGs, and for Public Health to adopt a wider perspective that underpins a One Health concept, that is, to encourage the collaborative efforts of multiple disciplines working locally, nationally, and globally, to achieve the best health (and well-being) for people, animals and our environment (63-66).

Conclusions and recommendations

The prospects of the Code of Ethical Conduct proposed here are related to its acknowledgement and enforcement which likely in the future can be done effectively only by own professional chambers or other suitable bodies for public health, not by common medical chambers as of now. The authors therefore urge public health professionals to use the proposed Code of Ethical Conduct with its eight principles to guide them in pursuing their work so as to assure that citizens are living healthy. Given the current context in which we experience emerging and re-emerging diseases, as well as the epidemic of lifestyle-related diseases; and also that research and public (health) institutions and their actors are threatened by populist politics and anti-factual movements (67), the proposed Code of Ethical Conduct should be used to guide the design and implementation of public health interventions including research, the training of public health professionals, their professional acting, and last not least the acknowledgement of a public health profession in its own right.

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Annex 1. General framework for codes of conduct in the health sector of the Council of Europe (29)

1. Introduction

2. Values and ethical references

3. Legal framework of reference

4. Example of areas to be regulated by a code of conduct in the health sector
NB. Not all areas are applicable to all situations. The order of the items does not reflect
priority ranking. The list is non-exhaustive and the items are for illustrative purposes only.
a. Good professional practice

i. Respect for the dignity of people (employees, patients, customers)
ii. Honesty and confidentiality
iii. Keeping up-to-date professional competence
iv. Use of the best scientific evidence
v. Compliance with accepted standards

vi. Compliance with regulations and legislation

vii. Awareness of the needs, demands and expectations of the population, patients and customers

viii. Co-operation with colleagues

ix. Spirit of moderation, reconciliation, tolerance and appeasement

b. Use of resources of the service/system

i. Cost-effectiveness practice in the use of resources

ii. Avoiding using public resources for private gain

iii. Prevention of fraud and corruption

c. Handling of conflict of interests in the best interest of patients and population, whether i. Economic, or

ii. Non-economic

d. Proper access, sharing and use of information

i. Research of any information necessary for decision making

ii. Duty to disclose all relevant information to the public and authorities

iii. Duty to provide information to patients with respect to their needs and preferences

e. Handling of gifts and benefits

i. Existence of an explicit policy concerning gifts

ii. Transparency regarding gifts received from interested parties

f. Research-related topics

i. Clinical trials (Helsinki Declaration)

ii. Truthful claims of research potential

iii. Patient consent with full disclosure of risks

g. Relationships with other actors in the health sector

i. Colleagues and other health professionals

ii. Patients and their families

iii. Insurers, third-party payers

iv. Health-related industries (pharmaceutical, food, advertisement, cosmetic, medical devices, etc.), and other interest groups

- v. Government officers of health and other sectors (police)
- vi. Patients and self-help organisations, NGOs, etc.

vii. Media

h. Good corporate governance of health institutions/services/centres i. Issues of multiculturalism, tolerance and respect

- 5. Enforcement of the code of conduct
- a. Recognition of violations
- b. Composition of the body responsible for dealing with enforcement
- c. Transparency of procedures and public scrutiny
- d. Complaints system
- 6. Updating, monitoring and development of the code of conduct
- a. Process of development of codes of conducts: initiative, ownership, legitimacy
- b. Comprehensiveness
- c. Limitations of codes of conduct
- d. Codes of conduct and legislation

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Schröder-Bäck P, van Duin C, Brall C, Scholtes B, Tahzib F, Maeckelberghe E. Norms in and between the philosophical ivory tower and public health practice: A heuristic model of translational ethics (Original research). SEEJPH 2019, posted: 16 April 2019. DOI 10.4119/UNIBI/SEEJPH-2019-212

ORIGINAL RESEARCH

Norms in and between the philosophical ivory tower and public health practice: A heuristic model of translational ethics

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Abstract

This paper draws attention to the translation of ethical norms between the theoretical discourses of philosophers and practical discourses in public health. It is suggested that five levels can be identified describing categories of a transferral process of ethical norms – a process we will refer hereto as "translational ethics". The aim of the described process is to generate understanding regarding how ethical norms come into public health policy documents and are eventually referred to in practice. Categorizing several levels can show how ethical-philosophical concepts such as norms are transforming in meaning and scope. By subdividing the model to five levels, it is suggested that ethical concepts reduce their "content thickness" and complexity and trade this in for practicability and potential consensus in public health discourses from level to level. The model presented here is illustrated by showing how the philosophical-ethical terms "autonomy", "dignity", and "justice" are used at different levels of the translation process, from Kant's and Rawls' theories (level 1) to, in this example, WHO reports and communications (levels 4 and 5). A central role is seen for what is called "applied ethics" (level 3).

Keywords: ethics, practice, public health, theory, translation.

Conflicts of interest: None.



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Background

There is growing interest in public health ethics as a distinct discipline from clinical ethics and critical to consideration of population health issues (1). As highlighted by Michael Marmot there is an urgent need to understanding create better between philosophers, the health community and the real world (2). He has lamented, at times, the contemptuous approach of some philosophers, not considering real life concerns and not engaging with nonphilosophers. These philosophers are often engaged in highly theoretical discussions, even in multidisciplinary gatherings. Such issues are relevant since public health prides itself in evidence based knowledge and there is a question as to why evidence often does not translate into public health practice. It has been suggested that evidence is generated within a deliberate exchange process between scientists and practitioners, and that it is essential to take values, resources and interests of the different parties into account (3). Consequently, consideration of ethical norms and values should be seen as a critical part of the translation process (4). This is more than just linking the philosophical ivory tower approach of academics with the practical world of practitioners but rather also appreciating the language, purpose and nature of philosophy and public health, and their essential roles for effective scholarship and practice.

To give an example, ethical norms, such as "autonomy" and "justice", are often mentioned in public health policy and practice discourses. When these normative concepts are used, public health practitioners probably understand them differently to – but not necessarily incompatibly with – philosophers. This presumed discrepancy leads to the question: How can one relate the ethical concepts in practice to their philosophical background theories? This paper provides a description of the potential pathway between the ivory tower and practice using case studies of some specific conceptual issues used in theoretical, policy and practical discourses.

Translation and Transferral

In medicine the term "translational research" "translational medicine" is well or established, generally referring to the translation of scientific research to clinical practice, a process often called "from bench to bedside" [e.g. (5)]. However, translation of knowledge does not only take place in sciences and medicine. Ethical concepts also undergo a translation- from philosophical theory to, in this example, public health policy and practice. In the following discussion we focus on the translation of philosophical work into public health practice.

The term "translational ethics" is relatively new. Even though ethical concepts are frequently "transferred" or "translated" both etymologically meaning "to carry over" -between and across different domains, there is scarce academic scholarship regarding the issue (6-8). Unlike language translation it is not the name of the concept that is translated, but its specific content that is made applicable for practice: the meaning and scope of philosophical concepts is explained and made usable for - or "carried over" to contexts of professional practice in a process that we can term "translation". The metaphor "translation" is also used as a reference for other areas of "translational research", as mentioned above, when one refers to the transferral of basic scientific knowledge (the laboratory "bench") to the more applicable and practical use of the knowledge (the clinical practice at the "bedside"). In this discourse, however, the concepts sometimes



change in scope and meaning so that we consider the term "translation" to be appropriate. This translational process is by no means meant to be a one-way street (6). Indeed practical discourses can initiate or inform developments in philosophical theory as well. However, in this paper – as a starting point – we focus on the translation of philosophical knowledge to public health practice.

Translational Processes

To give an example of the translational process, the concepts "autonomy" and "dignity" shall be mentioned. These concepts have been philosophically elaborated upon by the renowned eighteenth century philosopher Immanuel Kant. However, for him these concepts had a different meaning than they do for the public health practitioner who is, for example, considering the autonomy or dignity of a child and her parents who refuse immunization. Even without knowing the precise philosophical aspects of the concept of "autonomy", at least through common, every day or professional physician possesses language. the а normative understanding of the concept that usually derives from Kant's (and others') conception of it. A normative appreciation of autonomy may lead the physician to accept a patient's decision. Another example is how public health practitioners formulate in the context of childhood immunization that [...] the impulse to maximize benefit for the highest number of people is counterbalanced by the Kantian threshold of a categorical imperative [...] that preserves individual autonomy and emphasizes ideas such as informed consent" (9). However, this formulated Kantian "side constraint" may not be as readily accepted by a more theoretically informed philosophical argumentation, such as that offered by the philosopher and Kant

scholar Onora O'Neill. In her argumentation, Kantian autonomy may even put moral obligations on parents to have their child immunized for the sake of protecting the autonomy of others (10). This is not to say – and not the question of this paper – that either Salmon and Omer or O'Neill are right in the interpretation of Kant. It is to demonstrate that the understanding of both is significantly different even though both relate back to Kant.

Indeed, autonomy is an ethical concept with a long standing philosophical tradition and strong and "content thick" background theories from which it has evolved (11). "Content thick" means the involvement of sophisticated philosophical substantiation differentiation, and perhaps including explicit consideration of other philosophical fields, such as from epistemology or metaphysics. Nevertheless, a public health practitioner is not (necessarily) aware of ethical theories behind this term when using it, even if he or she refers back to Kant explicitly, as the example of Salmon and Olmer (9) – who claim that Kantian autonomy is incompatible with involuntary immunization - shows. So, how does the practitioner come to use an ethical concept? It is the thesis of this paper that ethical concepts move from the "philosophical ivory tower" to - in this case - public health "practice" (including policy making and research). This happens while practitioners have, or display, only common knowledge of the philosophical backgrounds of the ethical concepts they are normatively applying.

Thus we suggest that if we could reconstruct the patterns of translation of meaning of the term "autonomy" from Kant to the practitioners' use of this concept, we could help to facilitate communication among the stakeholders involved in the normative elaboration and development of public



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health. The aim of this paper is thus to propose a heuristic model for discussion and to stimulate scholarship on the translation of ethical terms for practice.

Towards a Heuristic Model

The development of such a model draws on some assumptions of the philosophy and sociology of science in the tradition of Thomas Kuhn (12) and Ludwik Fleck (13). The concept held in common among these authors and underpinning the proposed model is that scientists and practitioners live and act in their respective paradigms and communities, which are partly constituent by their use of language. Thus, for members of one community to understand members of other communities, care needs to be taken to ensure that their lexicon is the same. Moreover, concepts should be made commensurable - meaning that the sense of a common concept or term is comparable in different discourses. However, this is not easy since the extension of concepts and their meanings can change. The model proposed here raises awareness of this challenge.

The "content thickness" of elaborated philosophical concepts is relevant for practice, for example, to achieve a differentiated and critical understanding of terms, similarly "content-thinness" has some virtues. "Content thin" concepts are more acceptable in pluralistic societies and policy making (because the concept could derive from and stand for many background theories and worldviews). Practitioners can agree on the normative concept first - and then elaborate upon what this means exactly by referring back to elaborations and theories of earlier levels of the translational process. It is the assumption of the model proposed here that normative concepts have legitimacy and specific roles in each of these communities be it in the philosophical ivory tower or in practice. Yet, when "carrying over" or "handing over" the normative concept like a baton, even though the concept still looks the same, its meaning has often changed.

A Heuristic and Descriptive Model of Translational Ethics

The proposed model consists office levels. These levels range – analogous to the concept of "from bench to bedside" – from the philosophical ivory tower (Level One) to public health practice (Levels Four and Five). Normative concepts such as ethical principles are complex and "content thick" on a philosophical level and, in practice, are more "content thin". Thus, the model focuses upon the transformative journey that ethical concepts make from the ivory tower to practice.

In the following section we describe the different levels of the model by using different examples: the strongly related concepts of autonomy, dignity, and justice and specifications of these. We illustrate levels 4 and 5 using the example of the WHO report on "Health Systems Performance" from 2000 (14).

Level One: Abstract and ideal philosophical theory

The first level of the model refers to philosophical works that are often the foundation for normative ethical concepts. Using the examples of autonomy, dignity and justice, one can refer to the works of Immanuel Kant. In his discussion of these concepts, Kant already uses examples, such as the murderer at the door to whom one may not lie, even to protect an innocent friend– yet, they remain very abstract, often counterintuitive in the modern world. Kant's discussions would be too abstract and somewhat unconvincing if one were to apply them directly to public health practice.



Furthermore, he also includes complex and controversial metaphysical concepts in his argumentation— such as the claim that a person as "homo noumenon" bears human dignity (15) — that are unsuitable for public health practices, as we have argued elsewhere (16). In fact, theories at this level often integrate a rich and wide scholarship of other areas of philosophy — including ontology, epistemology and metaphysics.

John Rawls (in 1971) in his theory of justice as fairness (17), has also drawn on Kant's insights. Rawls' theory also remains abstract in many regards, for instance due to his use of hypothetical models such as the contractarian approach to justify his concept of justice and the difficulties associated with the applicability of the concept to everyday concrete problems. In fact, Rawls' account has been considered an "ideal" theory (18). Thus, we would consider this level as representing ideal theory; meaning that it abstracts from concrete real-world practice and conditions (7, p. 210). Similarly, Rawls is criticized by Amartya Sen for dealing with the design of "ideal" institutions (19, p. 15ff), as opposed to institutions that function in the real-world. Marmot has highlighted that nonphilosophers are not familiar with complex philosophical concepts and that many think that "Rawls were to do with building sites" (2), given that the British English word for "screw anchor" is "rawl plug".

Level Two: Non-ideal theory for a field of practice

The second level covers ethical theories that are already more concrete with regard to the field of practice in question, and are developed based on empiric knowledge of that setting. Theorists build a theory for a concrete context referring to and basing it on Level One theories such as Rawls and Kant. Theorists from this level include figures such

as health justice theorist Norman Daniels who developed a theory based on Rawls' basic ideas (20); or the philosopher Madison Powers and the bioethicist and public health researcher Ruth Faden, with their work on social justice (21). While developing, in their view, a sound theory of health justice, they also claim to develop a decided non-ideal theory. Powers and Faden (21) criticize Rawls' assumption of equality of persons in a hypothetical situation. Instead, they look at real world inequalities and work on criteria of why these inequalities matter. However, without Rawls' ideal theory of justice (and indirectly Kant's concept of dignity) their own theory would probably not have been developed. Despite this very theoretical difference between Levels One and Two, the intention to be more practical on Level Two and to try to deliver real world solutions for public health makes a significant difference. Yet, both Daniels and Powers and Fadens' theoretical approaches, explicitly draw on Level One theories, criticize them and dialectically develop their own, more accessible, Level Two theories for philosophers and practitioners.

Level Two academic scholarship is often made more practical by collaborations between philosophers and public health scientists (e.g. Daniels, Kennedy and Kawachi (22), Powers and Faden (21)). On Level Two, interdisciplinary perspectives and collaboration become more relevant. Here, the aim is, as O'Neill formulates it (23), to give more ethical substantial input to applied ethical debates, leading us to the next level.

Level Three: Applied ethics

Level Three represents what is often called "applied ethics", meaning that concepts and theories from previous levels are "applied" to concrete practical problems to receive



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normative guidance – but this is also an area where normative convictions and judgements could be inductively connected to ethical theory. Level Three discourses are often initiated by practitioners. They look for interdisciplinary discourses with ethicists to find criteria or even solutions to moral questions. Public health practitioners at this level are positive about the powers (and limits) of philosophical ethics, as they are often already ethically informed or educated. Ethicists, when working on these issues often in interdisciplinary teams or even commissions, like the Nuffield Council on Bioethics and its report on public health ethics (24) – try to use generally understandable references of ethical theories. At Level Three the works of applied ethics such as the influential work of philosophers Beauchamp and Childress (25) is very prevalent. In their four-principle approach for biomedical ethics, they also refer to "autonomy" and "justice". Beauchamp and Childress explain the background concepts of their principles such as "autonomy" and" justice" - making reference to Level Two and Level One theories and approaches. In the context of "autonomy" for instance, they combine Kantian ideas of autonomy and the related concept of dignity with other relevant philosophies (most notably the related concept of "liberty" of John Stuart Mill). Yet, they explain this overlap so broadly and generally that practitioners can understand and apply the principles. This might mean a loss of theoretical complexity and content thickness (even though Beauchamp and Childress would argue that they have a unifying background theory of coherentism and might claim their work to be on Level Two). For the sake of being interdisciplinary, pluralistically communicable, agreeable and helpful as tools and criteria for decision making this is understandable and in fact very helpful. Of course, as the example of Beauchamp and Childress shows, philosophers can work on different levels and levels should not be identified with persons. A good example is philosophers who engage in Level One scholarship but also write on applied ethics or work in interdisciplinary ethics commissions (such as e.g. Tom Beauchamp, a renowned Hume scholar).

Level Four: Applied ethics in practice

The normative concepts used at Level Four mainly refer to literature from Level Three. Authors of arguments using the terms "respect for dignity" or "autonomy" refer to the works of theorists such as Beauchamp and Childress. They understand these terms rudimentarily (in a philosophical sense). They are not (as) aware of the background theories. In this translation process the "content thickness" and depth of the norms are further lost, yet, these criteria help to make normative arguments around the acceptability of public health interventions. Representatives of these levels would be public health researchers or practitioners aware of moral problems. They are also aware of these being norms and concepts coming from a rich ethical discourse. Normative tools – including codes of conduct - that are established to guide practical conduct (1) arguably also belong to this level, or between Levels Three and Four.

The example we use to explain this level and Level Five is the use of ethical norms in a framework for health systems performance assessment developed for and used by the World Health Organization. The initial framework was developed by Christopher Murray and Julio Frenk and was improved and adopted for use in "The World Health Report 2000".

With their framework for health systems performance assessment, Murray and Frenk



aim to advise decision makers (26,27). In other words, their work should be of very practical use. Within their framework, they formulate "health system goals". The main goals are "health", "responsiveness" and "fair financing and financial risk protection". These goals are to be measured in health systems performance and efficiency assessments. "Responsiveness" has two dimensions. The second one is "client orientation", the first one, upon which we focus, is "respect for persons". Of the several sub-components, the first three explicitly use ethical norms and can be closely related to the philosophy of autonomy and dignity: "Respect for the dignity of the person" as the sub-component first forbids instrumentalisation of persons. As they formulate, it is important to show "respect for the autonomy of the individual to make about his/her choices own health. Individuals, when competent, or their agents, should have the right to choose what interventions they do and do not receive" (26). They further talk of "respect for confidentiality" (26). In referring to these ethical norms and applying them to their context, Murray and Frenk formulate precisely in the language of applied ethics and refer to 18 sources, many of which are works in applied ethics (Level Three), including Beauchamp and Childress.

The third goal "fair financing and financial risk protection" makes explicit reference to the concept of fairness (related to the concept of justice). Here they reference work by the philosopher Daniels and colleagues where they apply his theory to concrete health care issues (28). Here again it can be seen that normative arguments are clearly made, using ethical norms without going back to "content thick" theories of Level One.

Level 5: Reference to ethical-normative concepts in practice

On the final level, practitioners use ethical concepts as normative terms without making any reference to theories of ethics or applied ethics (Levels One -Three). No explicit elaboration of the normative concepts can be found at Level Four. At this point these concepts have only a rudimentary link with the concepts of Levels One and Two. Nevertheless, a certain normative essence is encapsulated.

To illustrate this, we look at how "The World Health Report 2000" was further condensed and "translated" for practice and the public by an accompanying message from the former WHO Director General, Gro Harlem Brundtland, and by the press release of the WHO. Gro Harlem Brundtland's statement opens the report as a "Message from the Director-General". Brundtland starts by asking two (of three) questions relating explicitly to ethical concepts "What makes for a good health system? What makes a health system fair?" She continues by saying that it is the task of the WHO and of such a report to help all stakeholders "to reach a balanced judgment" (29, p. vii). Moreover, she makes reference to values and norms we are already familiar with from Level Four, the framework paper by Murray and Frenk (26). She continues with stating the ethically relevant part: The goals of health systems "are concerned with fairness in the way people pay for health care, and with how systems respond to people's expectations with regard to how they are treated. Where health and responsiveness are concerned, achieving a high average level is not good enough: the goals of a health system must also include reducing inequalities in ways that improve the situation of the worst-off." According to these (normative, ethics based) considerations, health system performance is



measured to give policy-makers information to act on.

Additionally, the translational function of journalism is considered by formulating a press release. In this press release, there are direct quotes by the Director General but also by Murray, Frenk and others. The press release additionally refers to the ethical concepts and norms. It mentions "injustice" and treating with "respect". However, it also refers to the main categories and components of the performance index "responsiveness" and "fairness of financial contribution". The aspect of "responsiveness" based on the ethical norms is now concisely summarized as "respect for persons (including dignity, confidentiality and autonomy of individuals and families to decide about their own health)". In the press - e.g. in the New York Times (30)– the ethical concepts are even less prevalent. Formerly used foundational norms such as "respect" and "dignity" are not used any longer, only the term "fairness" related to the measurements. In other words, the explicit ethical norms are even further in the background. Yet, one could trace "fairness" back - translated through the levels - to Rawls' Level One explication.

Discussion

Philosophers often develop their normative concepts and ideal theories without considering real world practice. Public health practitioners, on the other hand, often refer to normative ethical concepts without explaining their specific meaning or referring to underlying ethical theories (and possible normative ambiguities). In many cases, practitioners use these norms because they are "common sense" or belong to the "common morality", yet, in their normative explication they can generally be traced back to philosophical theories that substantiate the norms' normative content. This paper

explores how these norms make their way into the language of practitioners (e.g. health policy documents). It is the thesis of this paper that there is a translational process in the background through which the norms in practices are also connected to (underlying, foundational) ethical theories. The paper proposes a model with several levels highlighting how this translational process occurs. The model is intended to heuristically describe how ethical norms are used (and translated) between scholarship (Levels One - Three) and practice (Levels Four and Five). Whereas in public health the use of schematic models is widely accepted, even though models are always a simplification and models like the 'policy action cycle' are by no means meant to be exhaustive or static, this seems less common in ethics. We are aware that the differentiation between the levels can be debated and concepts like "applied ethics" are contested in philosophy, yet we deem such a model a heuristic starting point for discourses aiming to better connect philosophical theory to public health practice. In this model we observe what we call the inverse relationship thesis which is visualized in Figure 1. On the one side (on Level One), there is content thickness and complex original philosophical thought with regard to theory building in the foreground. On the other side (Levels Four and Five) there is public health practice. Here the content thickness and complexity of the normative concepts proportionally decreases while there is an increase of applicability and suitability for practice. In other words, we formulate the thesis that there is an inverse relationship between content thicknesses and practicability. In public health practice there are also often inherent unsaid value judgements which are made around content "thickness" and "thinness" and their suitability to practice and the issue of practice



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is important in terms of generating knowledge and interdisciplinary research and practice.

The developed model has several limitations that point in the direction of a need for further scholarship and development on this topic. The five levels have blurred boundaries and partly overlap (for example, the rich work of Beauchamp and Childress could be considered to be both Level Two and Three). Demarcations between these categories and levels are difficult to set. In fact, one could argue that there could be more or fewer categories and one would probably also find good reasons for these changes. Having five levels, however, also makes visible the central role of applied ethics as an intermediary and interface between the academic and the practical world. We believe that such a model helps raising awareness that different discourses on ethical norms are taking place and that a "translation" process exists. Awareness of this process is important to improve communication and ultimately to elaborate better arguments, consequently also improving public health practice.

Figure 1. The translational process of ethical norms: The relation of content thickness and suitability for use in practice





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Lastly, we have suggested that there is a linear, top-down direction of travel from Level One to Level Five. Despite this not (necessarily or always) being a linear process - where levels can be jumped or individuals can work on several levels at the same time – the process works in several directions (6,31). It can work its way backwards – more practical levels inspiring more philosophical levels. And, of course, practical levels can request from multiple philosophical levels to reflect on implications of the use and meaning of normative concepts. For instance, discussions on the concept of autonomy in the philosophical levels can be prompted and inspired by problems arising on the work floor in the practical levels. To illustrate, certain groups can be encountered to whom autonomy and informed consent cannot be readily applied, such as young children or patients with Alzheimer's disease. In such cases, it can be helpful to have discussions in the philosophical levels on the meaning and applicability of autonomy in different contexts (31).

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Conclusion

There seem to be transferral or transformative processes, here referred to as translational processes, of ethical concepts from the "philosophical ivory tower" to public health practice – and vice versa. The model presented here describes that a norm reduces philosophical-theoretical "content thickness" and complexity to become more applicable in practice and, in the other direction, that norms from practice are connected to ethical theories. Awareness of these translational processes can ultimately help to improve the moral foundation of public health practice and critically inform practice of norms and values. More research would be helpful to validate this model, identify and discuss more examples of translational ethics as modelled here, and to investigate the relationships between the different levels. Furthermore, attention needs to be given to the practical consequences of our model.

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ORIGINAL RESEARCH

The relevance of ethics in the European Union's second public health programme

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Abstract

Aim: The objective of this paper was to investigate whether ethical values were explicitly identified in the Second Public Health Programme (2008-2013) of the European Commission. **Methods:** A qualitative case study methodology of exploratory nature was followed. The data used were the summaries of the project proposals and Public Health Programme objectives and was retrieved from the publicly available Consumers, Health and Food Executive Agency database. Since the PHP was finalized during the study, the study only focused on the summaries of the fifty-five finalized project proposals while excluding the ongoing projects and those projects at the reporting stage. The full proposals for the projects are confidential and thus could not be retrieved. However, the project summaries were inarguably sufficient to conduct the study. Using a table, a content analysis method in addition to the ethical framework, was applied in order to analyze and categorise the project findings.

Results: The results unfold that, out of the seven ethical principles, only 'equity' and 'efficiency' were explicitly considered in eighteen projects and four projects respectively. Moreover, from the shared health values, eight projects identified aspects pertaining to 'accessibility to quality health care' while 'solidarity' was only discussed in one project. Lastly, the ethical aspects 'ethics' and 'values' were identified in three projects and in one project respectively.

Conclusions: From the results, there is a limited consideration of ethical principles within the projects. Therefore, future public health programmes could use this as an opportunity to emphasis on the inclusion and application of ethical principles in public health projects.

Keywords: accessibility for quality health care, efficiency, equity, respect for human dignity, universality.

Conflicts of interest: None.

Introduction

In the recent years, there has been an increased focus on implementing policies that promote better health, that are cost effective and use targeted strategies against targeted ill-health worldwide. This interest has sparked an even greater concern for public health practices, as well as how ethics is observed with regards to health, especially since populations continue to suffer from emerging health challenges (1). It is also commonly known that human health is greatly influenced or affected by public health practices as well as socio-economic circumstances of individuals. In a response to solve this, researchers are constantly evaluating and checking their research work against ethical aspects of public health; assessing whether the recommendations that are or can be derived from their work can be ethically justified. Even though there has been a growing interest on how ethics applies to public health, it has not yet gained a prominent position in all public health research. With the increasing burden of disease and emergent public health programmes, it is important to emphasize the need for public health ethics and develop this interest into maturity in order for it to have benefits (2).

Ethics is an academic discipline that questions what is required to be done, what is right, fair, just and good. Therefore, ethics clearly defined is the study of human values and reasoning, but also refers to the systematizing of these values or rules or moral conduct that guides human lives. Through the application of ethics, policy makers are able to frame policies and make critical decisions (3). The rise in the study of how public health and ethics are connected has been gradually developing in the past last years, due to human mal-practices, actions and problems in healthcare practice. Public health focuses on ways to detect and quantify factors that put the population's health at risk, once these factors are quantified policies are formulated to tackle or reduce adverse health outcomes for the population (4). Public health ethics is concerned with the dissemination of health resources in a more equitable, efficient way and protecting the society (5).

Numerous studies have been carried out on ethics and public health actions and these have led to normative frameworks of public health ethics. Hence, one could assume that ethical aspects are considered by researchers and public health professionals to be significant in enabling a functioning plan, execution and development of various public health programs. Within the European Commission, the 2007 Health Strategy 'Together for Health' is a better example of a health policy that considers values, as it is based on shared values. Moreover, founded on these values, the second PHP 2008-2013 was implemented (6). It therefore goes without saying that when ethics are considered, public health is safeguarded, particularly when the ethical aspects are predicted or recognized in advance through critical investigations and discussions (7).

An example of how ethical values can be considered in different public health disciplines is through Gostin's work. Gostin looks at public health ethics from three viewpoints. The first is ethics of public health, by which professionals need to work for the common good with regards to their public duty and trust from the society. The second, ethics in public health, involves examining the position of ethics in public health. It involves communal and individual interests in relation to the allocation of returns and harms in an equitable way, e.g. in decision making and implementation of public health policies. Ethics for public health, Gostin's third point, mainly entails a healthy population where the needs of the vulnerable and marginalized populations are considered in a more practical manner (8). As outlined in Gostin's perspectives, the ethical framework applied in this paper acts as an umbrella to ascertain whether the professionals carrying out the projects are working for the good of the public, whether the allocation and distribution of resources is fair, and whether the needs of the minorities are taken into consideration to ensure a healthy population.

Ethical principles and standards are not only important for public health, they are also considered important for other disciplines, institutions and they have been used in recent years to guide professional conduct and behaviour (9). The European Union (EU) is an example of such organizations, it does not only fund research through its framework programmes, but also monitors how health research is done or how projects are implemented (European Union, n.d). Through the health programme funding, the Directorate General for Health and Consumer Affairs (DG SANTE) oversees the health programme which is managed by the Consumers, Health and Food Executive Agency (CHAFEA) (Chafea, n.d).

Every year, the European Commission through CHAFEA sends a call for proposal for operating grants, conferences as well as joint actions and sets the criteria for funding options available (Chafea, n.d). The European Commission has so far adopted three Public Health Programmes (hereafter referred to as PHP). In this work, we will focus on the second PHP 2008-2013 because of its significance in forming part of the Commission's execution of the EU Health Strategy "Together for Health" (10).

The objectives of PHP 2008-2013 were directed towards improving the health information and knowledge of EU citizens. This is done so as to increase the competences of how individuals respond to health threats or how they consider various determinants to stimulate better health or obviate disease (Chafea, n.d). Against this background, the PHP 2008-2013 was also aligned with the Health Strategy 'Together for Health'. The first principle of shared health values emphasizes overarching values of solidarity, universality, access to good quality care and equity (6). For this paper, it is interesting to see how the funded projects of the PHP explicitly dealt with these ethical values and whether they used them as a foundation for setting their public health priorities. It is important to note that exploring the scope and the role of values in public health actions and strategies relates to the discipline of ethics. Thus, this paper explores whether ethical values, principles and aspects have been explicitly considered in the Second PHP objectives, proposals and its finalized projects.

Theoretical framework

In order to investigate whether ethical aspects or concerns were considered in the PHP objectives, projects funded by DG SANTE, a selection and combination of ethical appropriate principles, safeguarding and incorporating relevant values and aspects of human rights retrieved from studies addressing various aspects of public health ethics are proposed. There are five principles for public health ethics which are also known as ethical principles, these are: *Health maximization, respect for human dignity, social justice, efficiency and proportionality* (11), the principle of *respect for autonomy* (1), and finally *equity* as a principle proposed by Tannahill are also combined (12). To formulate the framework for this study, these ethical principles will be combined with the shared health values of the EU health Strategy namely: 'universality', 'solidarity', 'accessibility for quality health care'.

Respect for autonomy is targeted at various aspects, such as the decision-making power of individuals in relation to their health or the general public health. Additionally, it focuses on individual autonomy relating to self-domination, privacy, personal choice and free will (1). *Respect for human dignity* compliments *respect for autonomy*, it guards the various interests of an individual and his or her absolute value so that an individual is referred to with respect

especially for his or her liberties, such as self-control (11). It further emphasizes that an individual's liberties should not be defiled unless it harmfully affects others (13).

Health maximization is applied in practices where the monetary values of various projects are considered so as to give priority to the most cost effective project but also making sure that the public takes full advantage of all health benefits. The principle *social justice* guards against segregation and marginalization of vulnerable individuals. It ensures that individuals are treated fairly, particularly in matters of equity and maximization of health benefits, so as to minimize and avoid inequalities related to health care services. Due to the growing public health needs and the inadequate public health resources, the principle of *efficiency* is significant in public health ethics. It is viewed as a moral act that ensures benefits are maximized especially in the execution of public health strategies, done by promoting the dissemination of basic necessities in a resourceful way.

The *proportionality* principle advocates for benefits to be considered and assessed alongside the harmful properties, especially when debates on individual liberty versus public good arise (11). *Equity* seeks to ensure that, the less privileged are not secluded in key public health actions that are important to them. In response to this, interventions and strategies that analyze the unfair allocation of services across different populations are implemented to target those at risk in a way to find the influencing factors and decrease inequalities (12). From the health strategy, shared values, *Universality* value ensures that every EU citizen has equal access to use the available healthcare and services and that no one is denied care. The value *access to good quality care* guarantees that the available health care and services are of high quality and no EU patient is denied any high-quality care. *Equity* as a value ensures that every EU patient is entitled to receive health care and services irrespective of their ethnic, gender or social economic backgrounds and status. *Solidarity* ensures that all the financial arrangements made by the respective Member States will promote the accessibility of health care and services to all citizens (6).

Using this framework, this paper will explore whether ethical principles, values and the 2007 strategy's shared values were sufficiently addressed in objectives, proposals and finalized projects of the Second PHP.

Ethical Aspect	Description	
Health maximization	Complete utilization of health benefits	
Respect for human dignity	No violation of individual liberties	
Social justice	Promotes fairness and guards against discrimination	
Efficiency	Promotes cost effectiveness, maximizing of benefits and	
	limits wastefulness	
Proportionality	Considers the benefits alongside harm	
Respect of autonomy	Promotes individual's free will and privacy	
Fauity	Supporting the fair access with reference to the need but	
Equity	regardless of origin, sex, age, social or economic rank	
Universality	No patient is denied access to health services and care	
Accessibility to quality health care	Ensure accessibility of high quality health care for all	
Solidority	The financial organization of a Member States' health	
Solidarity	system so as to ensure health is accessible for all.	

 Table 1. Overview of ethical principles and health strategy values
 (source: references 11-13)
Methods

A qualitative study design was carried out to gain insights into the ethical concepts and determine whether they have a role in the funding allocation of PHPs and in the reported project results. The search items used, relate to the seven principles and basic terms of ethics: 'equity', 'autonomy', 'health maximization', 'respect', 'dignity', 'social justice', 'justice', 'efficiency', 'proportionality', 'ethics', 'moral', 'value', 'ethic', 'ethical framework'. Including the shared health values 'universality', 'solidarity', 'accessibility' and 'quality health care'. It is important to note that despite the fact that, a number of projects used 'equity' to imply the reduction of inequalities, the term 'inequalities' was still excluded used as a keyword.

All data was retrieved from the Consumers, Health and Food Executive Agency (Chafea). The proposals were available as summaries which included the following sections: - general objectives, strategic relevance and contribution to the public health program, methods, means and expected outcomes (Chafea, n.d). The research focused on the summaries of the fifty-five finalized project proposals at the data collection time and excluded projects that were still ongoing as well as projects at the reporting stage. The study included all the projects from all the three strands of the CHAFEA project database: health information, determinants/health promotion, and health threats/health security. For the analysis, the individual project aims, goals and principles were compared against the ethical framework principles and the shared health values so as to show the overlapping concepts and which ethical gaps still need to be addressed. Moreover, the identified ethical aspects are further scrutinized to ascertain whether they were only mentioned as keywords or whether they were expected outcomes of the analyzed project.

Methodological and theoretical limitations including other potential challenges

The results from this study will indicate whether ethical concepts and public health ethics are already a constituent part of public health projects particularly with regard to the Second EU Public Health Programme. However, since this is a qualitative research, the study may encounter some limitations. To ensure validity as proposed by Bowling the researcher intends to organize, clustering the retrieved data into relevant and respective ethical themes (14).

This study has looked into the PHP's, assessing whether ethical aspects were explicitly considered in its objectives and the summaries of the project proposals. The study recognizes that, by focusing on the only the explicit role of ethics in PHP through the eyes of only the seven principles and the shared health values, other ethical relations and aspects which are still vital in PHPs may have been excluded. In addition, not all projects that implicitly discussed aspects related to the principles and shared values were reported due to the act that, out 55 finalized projects, ethical principles and related concepts were identified both explicitly and implicitly in 27 projects. Since the researcher used the given description of the principles to decide which ethical aspects and values were related to each other, there may be some form of interpretation bias.

However, as discussed in the paper, it is inarguable that there are various definitions of ethics and ethical frameworks depending on different disciplines. This has led different ethical frameworks to be defined and applied to suit certain situations. The seven ethical principles proposed for the framework may therefore be exclusive in terms of excluding other significant values and concepts. Additionally, given different definitions, application and descriptions of the principles, it is clear that some aspects may refer to various principles such as universality and accessibility to health care. The study recognizes that, by focusing on the explicit role of ethics in the PHP through the eyes of only the seven principles and the shared health values, other ethical relations and aspects which are still vital in PHPs may have been excluded.

The results focusing on the project proposals show minimal external validity as they only apply to the 55 finalized projects and may perhaps not be adequately generalized to a broader setting. However, regarding the results focusing on the objectives of the PHP, the representativeness of the findings cannot be questioned since the objectives apply to all the projects funded during the 2008-2013 PHP. Thus, it can be generalized to improve the projects that are yet to be finalized and even aid in the drafting of the objectives of future PHP's in the case of learning from best practices.

Since most of the projects and proposals from the second PHP 2008-2013 were still in the final phase during the data collection, only the projects that were finalized by June 2014 were included and the projects submitted at any later date were excluded. The full proposals for the projects were also confidential and thus could not be retrieved. Therefore, it may be likely that some ethical principles and values might have been considered elsewhere in the full proposals hence resulting in limitations on the findings of this study. However, the project summaries were inarguably sufficient to conduct this study as they included a detailed executive summary of the project objectives in relation to the PHP objectives.

Results

After examining the summaries of the 55 project proposals and the EU Public Health Programme objectives, the findings were as follows. Out of the seven ethical principles from the theoretical framework, only two principles were identified. Other terminologies used in the analysis included 'ethics' and 'values' which were identified in three projects and in one project respectively.

Since the second PHP was founded on values prioritized in the EU Health Strategy: Together for health, the keywords 'universality', 'access', 'quality health care' and 'solidarity' retrieved from the first principle of the health strategy were identified differently in nine projects. Eight projects identified aspects pertaining to accessibility to quality health care and solidarity was only discussed in one project. Additionally, out of the four shared health values, only 'equity', 'solidarity' and 'access to quality health care' was identified explicitly in the objectives of the PHP. The projects were analysed basing on the seven ethical principles, the four shared health values and the ethical concepts ethics, morals and values. The results will be analysed and presented in the following categories. The different research questions will be answered and discussed in their respective sub-sections below.

Categories used in analysis and how results are presented	The terminologies used	Those identified in project proposals and/or in PHP objectives
Ethical concepts in PHP objectives & project proposals	Morals, values, ethics,	Ethics, values,

Table 2	Presenta	ation of	the	findings
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Shared health values identified in PHP objectives and project proposals	Equity, accessibility to quality health care, universality and solidarity	Solidarity, universality and accessibility to quality health care
Ethical principles identified in PHP project proposals	Health maximization, equity, proportionality, respect for human dignity, autonomy, efficiency, social justice.	Efficiency and equity

Ethical concepts and shared health values in the PHP-2008-2013 objectives

Ethical concepts such as, 'ethics', 'morals' and 'values' were not identified in the PHP objectives. However, the shared health values equity, solidarity and access to quality health care were explicitly identified in the PHP objectives. From the general objectives of the PHP, the common goal evident is improving ways that will ensure and promote the health security of the EU citizens. This goal is in line with the shared health value of ensuring 'accessibility to quality health care'. Even though 'accessibility' is not explicitly mentioned in the PHP objectives, it is one of the main objectives of the PHP because through the PHP, the EU Commission seeks to improve the Member State's capacities of responding to all kinds of health threats and ensure that the health care services, treatment and medications, for example transplant organs, are of the highest quality.

The PHP 2008-2013 also aims to promote the health of the EU citizens while reducing health inequalities. Solidarity ensures that all Member States commit to working in unity while supporting each other for the growth and development of the entire EU. Moreover, with regards to the solidarity value, the PHP was envisioned to complement, offer assistance and add value to the Member State's policies by developing, distributing and sharing all information, evidence, best practices and expertise relating to health to all Member States. Since solidarity ensures that less capable countries are not left out in the development or growth, the PHP fully supports this value as it aims to see to it that prosperity in the European Union is increased, and as a counter effect public health is improved.

Shared health values of the EU Health Strategy	Description as given in chapter 4 of this paper	How the concept is used in the PHP objectives
Equity	Reduces inequalities among the minorities	"promote health and reduce health inequalities"
Solidarity	Mutual support and commitment among the MS	 "it is intended to complement, support and add value to the policies of the Member States and contribute to increasing solidarity and prosperity in the European Union" "generate and disseminate health information and

Table 3. Shared health values in the PHP-2008-2013 objectives (source: adapted from reference no. 15)

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		knowledge, exchanging knowledge and best practice on health issues''
Access to quality health care	Safe and quality health care is made available to everybody	"promoting actions related to patient safety through high quality and safe healthcare, scientific advice and risk assessment, safety and quality of organs, substances of human origin and blood"

Ethical principles in the PHP 2008-2013 project proposals

From the 55 projects, only 6 projects explicitly discussed findings that related to equity, while efficiency was only identified in four projects.

- Equity: The project 'DAYSAFE- Improving patient safety of hospital care through day surgery', recognized existing challenges health systems face while trying to ensure fair access to high quality and safe health care. The project therefore proposes to offer applicable solutions and as a result increase patient satisfaction, safety, equity and quality of health care. According to the 'Chain of Trust' project, increasing the awareness and understanding of the available recommendations regarding the perceptions, challenges and advantages resulting from the use of tele-health, will equip all the key stakeholders with knowledge and information that will add value and further promote the provision of health care equitable to all patients in the EU. The 'HealthVent' project discusses equity under the strategic relevance and contribution to the public health programme section of their proposal. It emphasizes that, its objectives will be aligned with those of the PHP as it aims to tackle environmental health determinants specifically those related to the use of energy in homes, schools and various public buildings so as to prevent chronic diseases and further decrease inequalities in health. 'Crossing Bridges' builds on the execution of article no. 168 of the EC Treaty to ensure that the HiAP vision is accomplished for equity across the EU. Moreover, 'Crossing Bridges' expects that through the project results, the respective stakeholders will be encouraged to implement policies that will result in health equity. By developing a suitable surveillance and information system for health the 'EUMUSC.NET' project expects to increase and harmonise the quality of care to allow for equity in care for rheumatic illnesses and musculoskeletal disorders across the member states. Through the consideration of structural aspects of gender inequality and gender stereotypes that openly affect men and women's health, 'ENGENDER' project aims to ensure equity by creating an online inventory of good practice of policies and programmes that focus on promoting health.
- Efficiency: 'DAYSAFE' expects to improve the technical efficiency of health services by ensuring that the policy-makers are well-informed and recognize the factors limiting the performance of DS, such as operational issues and incompetently designed structures. 'HealthVent' project: through establishing a health-related ventilation guideline focussing on buildings such as schools, homes, offices and nursery buildings among others, 'HealthVent' expects that inhabitants will utilize energy in a more reasonable manner so as to have more energy efficient buildings. BORDERNET project aims to improve the prevention, testing and treatment of HIV/AIDS/STIS by reducing obstacles related to practice, policies and cooperation between border countries and among member states though a more transparent and sustainable network. This will further improve the effectiveness and efficiency capacity of organizations of various sectors responding to AIDS/STIS. 'ENGENDER' expects that increasing the awareness and creating a platform for all stakeholders to be well informed through the online inventory of best practices, will result in effective, efficient policies and programs that focus on achieving gender equity in health.

Project title	Aspects of efficiency/ efficient identified in the PHP project proposals
Improving patient safety of hospital care through day surgery (DAYSAFE).	"The project will enhance DS which represents a crucial strategic approach toward the improvement of health services safety and quality, including patient's satisfaction, together with technical efficiency and, possibly, equity"
Health-Based Ventilation Guidelines for Europe (HealthVent)	The (guidelines) "will reconcile health and energy impacts by protecting people staying in these buildings against risk factors, and at the same time taking into account the need for using energy rationally and the need for more energy efficient buildings"
Highly active prevention: scale up HIV/AIDS/STI prevention, diagnostic and therapy across sectors and borders in CEE and SEE (BORDERNETwork)	"The improved effectiveness and efficiency on regional and cross-border level in interdisciplinary response to AIDS/STIs and scale up of HIV/STI- testing will put forward the practical implementation of HIV combination prevention"
Inventory of good practices in Europe for promoting gender equity in health (ENGENDER)	"Increased awareness and knowledge for all stakeholders including: policy makers, politicians, researchers, NGOs and citizens, within and outside the health sector about effective, efficient policies and programmes to achieve gender equity in health"

Table 4. Efficiency aspects identified in project proposals

Shared values of the 2007 EU Health Strategy in the PHP 2008-2013 project proposals?

Out of the four shared health values, only accessibility to quality health care and equity were addressed in the summaries of the project proposals. Basing on the description given for universality, the value was in a way linked to the context used to describe accessibility. From this assessment, more principles are seen to be used in association such as, 'accessibility and universality', 'universality and equity'.

Accessibility to quality health care: Accessibility was analyzed in the projects in two parts: first, those projects that promote high quality health care services and secondly, those that ensure high quality of health care are accessible to all. 'COORENOR', 'DAYSAFE' and 'IMPLEMENT' projects discuss 'high quality of health care' by stating that quality assurance models are present in their projects and will ensure safe and high quality of services across the EU. 'Imp.Ac. T' and 'PROMOVOX' projects promote actions that particularly focus on marginalized groups and migrants. 'Imp.Ac. T' aims to ensure that access to HIV/TB testing for marginalized groups is improved, and 'PROMOVOX' emphasizes the facilitation of better access of immunizations among the migrant population. 'CARE-NMD' relates accessibility of healthcare to reduced inequalities. The project believes that, by improving the access

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to expert care, there will be a reduction of inequalities among member states and within a Member State.

Project title	Accessibility to quality health care value as used in the PHP project proposals
Coordinating a European initiative among national organizations for organ transplantation (COORENOR)	"All requirements for ensure recipient safety and high quality of the treatment as well as running models for quality assurance will be considered and transferred to the EU institutions
Improving patient safety of hospital care through day surgery (DAYSAFE)	"The general objective of the project is to improve patient safety & quality of hospital care through the promotion of DS best practice and standards.
Implementing Strategic Bundles for Infection Prevention and Management (IMPLEMENT)	"Aims to improve patient safety through high quality and safe healthcare".
Highly active prevention: scale up HIV/AIDS/STI prevention, diagnostic and therapy across sectors and borders in CEE and SEE. (BORDERNETwork)	"BORDERNETwork' focuses both disease causes and underlying social determinants of health, aiming to improve responses to prevention offers and accessibility of care services".
Improving access to HIV/TB testing for marginalized groups (Imp.Ac.T)	a) "Improving Access to HIV/TB Testing for marginalized groupsb) "to increase the percentage of IDUs and migrants having access to HIV and TB testing"
Promote Vaccinations among Migrant Populations in Europe (PROMOVAX)	"Improve migrants understanding & acceptance of immunizations and facilitate their access to immunizations by identifying a network of relevant sites".
Dissemination and Implementation of the Standards of Care for Duchenne Muscular Dystrophy in Europe (including Eastern countries) (CARE-NMD)	"Improved access to specialist care for DMD and reduction of inequalities between countries & within countries due to better trained health professionals"

Table 5. Accessibility to quality health care as identified in the summaries of the project-proposals

Ethical concepts or aspects in the PHP 2008-2013

• *Ethics:* Under the strategic relevance and contribution to the PHP section, 'Chain of Trust' acknowledges that the consideration of ethical associated issues while developing recommendations related to the approval of telemedicine by patients and health professionals is important especially during the implementation of telemedicine.

'APYN' will assist in realizing the Work Plan priority 3.3.4 for preventing addiction and further contribute to the Alcohol strategy. The project proposes to consider "ethically sound actions" which, according to the priority areas for 2008 as stated in the 2008 work plan, refers to the ethical aspects outlined in the Charter of Fundamental Rights of the European Union. "Ethical considerations: Any proposal, which contravenes fundamental ethical principles particularly those set out in the Charter of fundamental Rights of the European Union may be excluded from the evaluation and selection process" (16).

APYN' and 'Healthy Eco Life' will support the work plan actions through the "Involvement of new (non-traditional) actors for health in sustained, co-operative and ethically sound actions, both at regional or local level and across participating countries" (Chafea, n.d).

• *Values:* 'ACTIVE' intends to introduce a new method that will engage children between 5-8 years of age in Europe. It is evident from their title that the project aims to teach and inspire the children with values and views concerning healthy eating and physical activity- 'Animation for Children to Teach and Influence Values and Views on healthy Eating and physical activity (ACTIVE)'. However, the project only mentions the term 'values' in its title.

Discussion

These ethical principles ensure that the individuals or professionals governed by them align their actions and conduct with the principles in order to uphold the society's trust. Most of the ethical principles used in public health actions and research assist in making sure that researchers and public health professionals are held responsible by society. Moreover, ethical principles enable researchers to develop trust with the society, which often may cause them to receive funding or financial support for their research from the public because of their reliable and excellent work. Furthermore, upholding ethical principles in research will stimulate the consideration of significant moral and social values (9). Therefore, it is important for public health professionals and all stakeholders to abide by ethical principles in their duties. Additionally, ethical consideration is not limited to public health professionals only at a European level, it is also relevant for public health research and projects of the EU's Public Health Programmes.

With the PHP 2008-2013 being aligned with the Health strategy 'Together for Health', which was explicitly value based in setting priorities, ethics still plays a significant role in the explicit project proposals; yet, this role is not evident in all the PHPs. However, it is surprising to see that less than half of the projects considered the principle equity which is regarded as a public health and an EU strategy priority.

It is clear from the projects, that the mention of equity in their objectives and expected outcomes is not a sufficient indication of ethical consideration, for example, by mentioning that project actions will promote the coordination of abilities from both Eastern and Western Europe, COORENOR project justifies its role in reducing health inequalities. This is an example to show that the mere mention of ethical principle is not an indication for its consideration in the entire project implementation and therefore the project falls short of explicitly considering equity.

In spite of this, various projects still gave relevance to ethical principles and values as they exhaustively discussed in their project summaries matters that related to ethics. 'DAYSAFE' recognizes that challenges exist which cause inaccessibility to quality and safe health care, hence they progress to propose methods that will promote equity in health.

In discussing 'efficiency', the four projects, 'BORDERNETwork', 'HealthVent', 'DAYSAFE' and 'ENGENDER', only discussed how their activities and methods will result in efficient services and materials. They however fail to show in their methods how this will be attained and only limit it to mention that providing of policy guidelines will promote efficiency. Regarding 'accessibility to quality health care', the projects questioned the quality and safety of health care services offered in Europe and offered to foster a high level of surveillance and monitoring to further ensure that the quality health care is accessible to all patients. They linked quality assurance strategies to high quality services.

Even though some projects did not explicitly mention 'accessibility', their objectives and method description matched the value 'universality' while also linking it to reduced inequalities, as they emphasized that no one particularly minorities such as, migrants, HIV/AIDS and TB patients, should be denied access to health care. Most of the projects had implicit discussions of how best practices should be shared across the EU and coordination among all different stakeholders should be supported in order to reduce inequalities in health instead of the explicit mention of solidarity.

Ex-post evaluation of the health programme

The aim of this evaluation was to assess the main results that were reached as well as recognize the key challenges and solutions especially after consideration of recommendations from preceding assessments. The post evaluation study was guided by four key themes that is programme management, dissemination methods, the effect of the health programme collaboration with other programmes and services. According to the assessment, the programme lacked proper management as monitoring data was not used, thus making follow-up a challenge. In order to increase the number of accepted and executed Health Programme funded actions, the main results of the health actions have to be made available to the relevant target groups. The 2nd Health Programme objectives were very broad, covering various significant needs of the Member States as well as those of the stakeholders. It was therefore recommended that the Health Programme ought to introduce more specific progress analysis as they have been defined in the 3rd Health Programme.

With regard to the 2nd Health Programme's objectives, the funded actions led to significant advancements such as, promoting cross-border partnerships. It is important to note that, the administrative duties of the programme were increasingly efficient. Moreover, the 2nd programme has shown major EU added value in recognizing best practices as well as networking (17). Even though, the objectives of the Health Programme are commendable as they seek good practices and also focus on national priorities while contributing to a healthy status for the European population, they are still very broad and only focus on the relevance of the action. Therefore, they may fail to explicitly address most of the ethical principles used in this study.

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Since the study has examined only the explicit use of ethical principles and concepts in the project summaries and the PHP objectives, the ethical framework may therefore exclude implicit discussions of ethical principles and other significant ethical values especially those based on ethical definitions not considered in the descriptions provided for this study. Despite the fact that the ethical framework used for this assessment was based on seven principles, the study therefore doesn't provide a full picture of this ethical role in PHP but provides a new mentality and platform that will enable the explicit rethinking and reconsidering of ethics and ethical aspects in public health.

This new mentality and concern according to Callahan and Jennings will lead us to considering vital questions such as: - "What are the basic ethical issues of public health? What ethical orientations are most helpful in the clarification and resolution of these issues? How are ethical principles and concepts incorporated into decision making in public health agencies and programs? How adequately are ethical dimensions of public health policy identified and debated?" This is because as public health gains more prominence, the ethical aspects regarding health issues increase too (2).

Conclusions

This paper has presented and outlined ethical aspects that were explicitly identified in the 2008-2013 programme objectives and available project reports of the PHP. The projects were assessed, based on the theoretical framework consisting seven ethical principles. Furthermore, the four shared health values of the EU Health Strategy were considered as they were more general ethical concepts. From the analysis, the principle 'equity' was extensively discussed and considered by some of the projects, followed by the 'efficiency' principle and then the value 'accessibility to quality health care'. The study recognizes that by focusing on the role of ethics in PHP through the eyes of only the seven principles and the shared health values, other ethical relations and aspects which are still vital in PHPs may have been excluded.

Most commonly addressed values of the EU Health Strategy: 'Together for health' by the projects were, 'equity', 'accessibility' and 'universality' as it seemed expected from them since the PHP was based on values. It is encouraging to see that most of the shared health values were discussed in most of the projects. Even though vital principles such as- 'respect for human dignity', 'autonomy', and 'health maximization' were not addressed by any of the projects.

It is clear from the projects, that the mere mention of a principle briefly such as 'project will ensure equity' in the project objectives and expected outcomes is not enough to justify that the principle will be adequately considered or that the project understands or acknowledges the significance of ethics in public health today. The project needs to consistently consider ethical aspects in its entire proposal, in this case a project summary, and not just mention it, since it is required and expected to be included under the 'strategic relevance and contribution to public health programme' section.

This study has tried to paint a picture of the role of ethics in public health programmes. Even with its prominence, ethics in public health programmes and activities still needs to be encouraged. Moreover, more awareness in understanding ethics and ethical aspects in public health activities will further steer more ethical considerations not only amongst public health professionals and researchers, but also a more explicit and consistent consideration in PHPs and public health actions. In addition, basing on Gostin's work, ethical values ought to be

considered firstly by professionals in order to guide them in working for the common good of the society. Secondly, in public health in terms of how decision making influences the balance between individual and communal interests especially in the implementation of public policies. Thirdly, ethics for public health where the needs of the population are met in practical ways, such as more emphasis on training and research to improve ethical knowledge, as well as applications.

This study has therefore provided a new mentality and platform that will enable the explicit rethinking and reconsidering of ethics and ethical aspects in public health.

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Schröder-Bäck P, Maeckelberghe E, Royo-Bordonada MÁ. The Ethics effect (editorial). SEEJPH 2014, posted: 23 September 2014. DOI 10.12908/SEEJPH-2014-31

EDITORIAL

The Ethics effect

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Moral issues – Also in public health

Sometimes researchers and practitioners of public health are confronted with situations where it is not self-evident which option for action is the better choice. A decision about implementing a particular public health intervention can be difficult because there is a lack of scientific evidence that would speak clearly for or against its effectiveness. Moreover, a decision can be difficult because of moral values that are at stake. Indeed, taking a decision might sometimes feel like replacing one evil with another; or at least accepting some restrictions of liberty of individuals in the trade-off for another good, e.g. the health of others. Examples of difficult choices can be to implementing quarantines and isolations (like those being currently in place in relation to the Ebola outbreak in West-Africa), obligatory immunizations, prohibitions of risky behaviour or (re-)distributing resources.

Ethics is the discipline in which one asks systematically what the right and good choices are – in life in general, but also in academic and professional fields such as public health. Ethics asks "Why should I do this or that?" and the reply consists of giving reasons and developing an argument. Ethics hereby draws on principles, values and virtues and has developed substantive theories in the last two-and-a-half-thousand years. In medicine, the value of ethics for taking the right choices in the context of professional conduct, deeply rooted in the Hippocratic Oath, has a successful tradition of some decades by now. In the last century the combination of ethical argumentation with medical problems lead to intensive discourses under the name "bioethics" (1).

Bioethics, however, focuses on the individual patient and does not (usually) have a public health perspective. Yet, in public health there are, as just mentioned, many ethical challenges that request reasoning about choices. In 2003, Gaare Bernheim carried out a study with public health professionals. She found that public health practitioners *"often feel ill-prepared to make the ethical trade-offs and perceive a need for more education and support to make these decisions"* (2). Thus, it is no surprise that more and more actors in public health research and practice requested to introduce the discipline of ethics into public health science, practice and education. Schools of public health in the European region asked for more support from their association (ASPHER) to introduce ethics in their schools and curricula, because only some schools do offer ethics training in their bachelor or master programmes (3).

Integrating ethics into public health

The implementations of difficult public health interventions have usually lacked explicit preceding ethical analyses or had to contend with conflictive and ambiguous ethical principles. Yet, when we started several years ago to advocate introducing ethics into academic European public health discourses (4), we did not only preach to the converted. In fact, the term 'ethics' also had a negative effect on some public health researchers. Even though many researchers and practitioners applauded the introduction of ethical discourses into public health, we have also quite often heard that ethics is not the most urgently awaited for input for public health research. Colleagues were sceptical because, in their opinion, ethics commissions are the institutions that may hinder proper public health research. Sometimes public health practitioners were doubtful: Can ethics really be helpful? The answer becomes obvious when we realize that no health intervention, including a preventive or health promotion program, is risk-free. Even when the harm caused to a particular person by a public health intervention might be minimal, the impact can be extremely relevant if the intervention is targeted at the population level, most of whose recipients are healthy.

Among the opportunities ethics offers when being introduced into public health discourses are reflections about leading values and decision-making criteria, identification of normative loopholes or inconsistencies in argumentation, shifting burdens of proof among actors, and

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the like. Among the limits are that ethics does not offer a ready to use algorithm for making decisions and often the feeling prevails that after an ethical discussion one has not a definitive answer or is still confused – but on a higher level (as the physicist Enrico Fermi once formulated it in a different context).

The way forward

In our perspective, recent developments to establish public health ethics discourses are highly welcome, because of the ethics effect on human practice in general and public health research and practice in particular: having an understanding of what are the reasons for choosing A over B. Ethics can help to identify good reasons and unmask bad reasons. It is through the exchange of arguments, within discourses, through which public health can get (even) better: doing the right thing for the right reason. Because only if it is for the right reason – and not by chance, based on a prejudices or because of following a dogma – one can convince others; as Sen says "*bad reasoning can be confronted by better reasoning*" (5). And to identify good and convincing arguments is a task of ethics. Thus, ethics can and should be further integrated in public health education, research and practice – but it is still a long way to go until ethics is as well integrated into public health researchers and practicioners. To contribute to this endeavour, we welcome in this journal articles that have ethics integrated into the public health perspective; or articles that deal with public health ethics explicitly.

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SHORT REPORT

Towards a Code of Conduct for the European Public Health Profession!

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Introduction

Is the group of public health professionals consistent of other professions such as physicians, nurses, social workers and the like, or should public health professionals define themselves as a distinct profession in their own rights? As of today, in Europe, public health professionals do not build an own profession. Czabanowska et al. (1) define and promote in this journal the formalization of the public health profession, based on the criteria which – following Macdonald (2) – differentiate a profession from an occupation. These criteria include adherence to a code of conduct and altruistic service. From an ethical point of view, both elements are essentially related and both are reflected in the most famous example of a code for a health profession: the ancient Hippocratic Oath (3). For a public health profession we can draw only partly on the Oath as public health deals with populations – not with individual patients – and, therefore, requires population ethics, not medical or bio-ethics, the latter well accepted since the 1980s at least (4).

Population ethics

What is particularly relevant when we take a social or population ethics point of view? Following e.g. Laaser (5) financial means are in principle never sufficient because the health of population groups is always subject to potential improvement. Therefore, efficiency or cost-effectiveness of interventions gains ethical relevance as resources can be spent only once, and are then not available for alternative use. For this reason, population ethics often adhere to the utilitarian principle. However, it is normatively important to amend the utilitarian calculus, namely that the 'pursuit of happiness' for the greatest number must not be achieved by reducing the benefit of any single individual (6). Given the specific prevailing European value tradition of Solidarity (7), an additional amendment may be considered namely, that differences between population groups should not increase by any public health measure but be minimized wherever possible. Another deontological limitation of the utilitarian principle is the respect for the autonomy of persons and their rights (8). In addition, a fundamental moral issue remains in that all decisions on population health level are based on probabilities and statistical lives (9), making possible technologies of assessing interventions - and promoting the giving or withholding of interventions - based on utilitarian cost-effectiveness rationales (10). The utilitarian principle, its ethical limitations and practicability for public health decision-making requires a continuous public health ethics discourse (11).

Which principles could nevertheless be identified guiding a public health profession in its decisions on the population's health? Summarising the ethical literature, Schröder-Bäck et al. (12) proposed seven mid-level principles to be considered: maleficence, beneficence, health maximisation, efficiency, respect for autonomy, justice, and proportionality. Laaser et al. (13) proposed with reference to a specific European heritage the following principles: solidarity, efficiency, participation, equity, subsidiarity, sustainability, reconciliation, and evidence, underlining in addition the component of empathy/altruism which is of essential relevance in the individual physician-patient relationship, as well as in the professional-population realm. With regard to a European dimension, the European Commission published Council Conclusions (14) manifesting four overarching principles: equity, universality, access to good quality of care, and solidarity – critically discussed by Schröder-Bäck et al. (15).

From this short account it seems that, in spite of different terminologies used, the following four values can be considered as core for a European framework: solidarity, equity, efficiency and respect for autonomy. The access to good quality of care describes only one of the preconditions of health and can be hardly considered as an ethical principle.

A professional code?

Can we build a professional code on this value account? Various aspects are published in volume 36 of the Public Health Reviews (16). In its Recommendation on good governance in health systems (17) in 2010, the Council of Europe promotes codes of conduct for stakeholders in the health sector including effective mechanisms for enforcement and specific clauses on conflict of interest. In 2002, the American Public Health Leadership Society published twelve Principles of the Ethical Practice of Public Health (18) [Table 1].

No.	PRINCIPLE
1	Public health should address principally the fundamental causes of disease and requirements
1	for health, aiming to prevent adverse health outcomes.
2	Public health should achieve community health in a way that respects the rights of individuals
2	in the community.
3	Public health policies, programs, and priorities should be developed and evaluated through
5	processes that ensure an opportunity for input from community members.
	Public health should advocate and work for the empowerment of disenfranchised community
4	members, aiming to ensure that the basic resources and conditions necessary for health are
	accessible to all.
5	Public health should seek the information needed to implement effective policies and
5	programs that protect and promote health.
	Public health institutions should provide communities with the information they have that is
6	needed for decisions on policies or programs and should obtain the community's consent for
	their implementation.
7	Public health institutions should act in a timely manner on the information they have within
,	the resources and the mandate given to them by the public.
8	Public health programs and policies should incorporate a variety of approaches that anticipate
0	and respect diverse values, beliefs, and cultures in the community.
9	Public health programs and policies should be implemented in a manner that most enhances
-	the physical and social environment.
	Public health institutions should protect the confidentiality of information that can bring harm
10	to an individual or community if made public. Exceptions must be justified on the basis of the
	high likelihood of significant harm to the individual or others.
11	Public health institutions should ensure the professional competence of their employees.
12	Public health institutions and their employees should engage in collaborations and affiliations
14	in ways that build the public's trust and the institution's effectiveness.

Even though the values we mentioned and affirmed above are somewhat reflected in the Code of the Leadership Society, values that seem particularly important for a European perspective on public health – namely solidarity and equity – are not explicitly mentioned. According to Prainsack & Buyx (19), often they are even referred to as opposed to the American thinking. Prainsack & Buyx define solidarity as shared practices reflecting a collective commitment to carry costs (financial, social, emotional, or otherwise) to assist others. Also, the term equity has a long European tradition and has likewise a moral dimension. Inequity refers to differences which are unnecessary and avoidable but, in addition, are also considered unfair and unjust (20).

We propose herewith that solidarity and equity are core values that have to be reflected in a European version of a Code of Conduct for public health professionals, operating in a

framework that is also guided by the principles of efficiency and respect for autonomy. With a transnational perspective, Verkerk & Lindemann (21) call in addition for more justice of resource sharing on a global scale, whereas Stapleton et al. (22) talk already about a global ethics.

These values would reflect a specific European value dimension in public health conduct. But, what does this mean? If we assume – what we do – that a Code of Conduct is important to function as an explicit normative compass for public health and to help building the public health profession for Europe, then such a Code of Conduct should be formulated and it will help to further professionalization of public health.

Professionalization of public health is important to advance public health education, training, and practice. In our opinion, there is no contradiction that the profession of public health consists of members of different other professions – which also have their own values and conducts. Yet, if professions work under the roof of public health, the pillars – the core values – of the house that is built are the common denominators. Making the guiding norms and values explicit is important for the self-definition of the professional field/profession and giving guidance in pursuing a fair and respectful improvement of population health.

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ORIGINAL RESEARCH

Level of competencies of family physicians from patients' viewpoint in postwar Kosovo

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Abstract

Aim: Besides the health professionals' perspective, it is equally important to assess the perceptions of the users of health care services with regard to abilities, skills and competencies of their family physicians. Our aim was to assess the level of competencies of family physicians from patients' viewpoint in transitional Kosovo.

Methods: A nationwide survey was conducted in Kosovo in 2013, including a representative sample of 1340 primary health care users aged ≥ 18 years (49% males aged 50.7±18.4 years and 51% females aged 50.4±17.4 years; response rate: 89%). Participants were asked to assess the level of competencies of their respective family physicians regarding different domains of the medical encounter. The self-administered questionnaire included 37 items structured into six domains. Answers for each item of the instrument ranged from one ("novice" physicians) to five ("expert" physicians). An overall summary score related to family physicians' competencies was calculated for each participant [range: from 37 (minimal competencies) to 185 (maximal competencies)]. Furthermore, demographic and socioeconomic data were collected. General Linear Model was used to assess the demographic and socioeconomic correlates of the overall level of family physicians' competencies of the overall level of family physicians' competencies of the overall level of family physicians' competencies.

Results: Mean value of the overall summary score for the 37-item instrument was 118.0 ± 19.7 . It was higher among the younger and the low-income participants, and in patients who reported frequent health visits and those not satisfied with the quality of the medical encounter. Conversely, no sex, or educational differences were noted.

Conclusions: Our findings indicate a relatively high level of competencies of family physicians from patients' perspective in post-war Kosovo. Future studies should comprehensively assess the main determinants of self-perceived competencies of family physicians among primary health care users in Kosovo.

Keywords: competencies, family physicians, primary health care users, quality of care.

Introduction

Recently, it has been argued that competency-based instruction is vital for professional development of health professionals (1). Hence, competency-based education enhances the abilities and skills of the health personnel to address complex and changing demands for critical services at a population level (1-3). Fostering competencies and skills of the health care workforce will lead to an increase in the satisfaction level of the users of health care services, which has been convincingly linked to a better quality of primary health care (4) and more favorable health outcomes (5,6). From this point of view, in order to meet patients' demands, quality improvement and performance evaluation have recently developed into core issues in primary health care practice (7).

We have previously argued about the need for development of useful tools for the continuous assessment of physicians' performance in order to identify potential gaps in their level of skills, abilities and competencies with the ultimate goal of improving the quality of patient care (7,8). To meet this end, we have suggested a conceptual framework and a suitable instrument which help to self-assess competency gaps among primary health care professionals (7,8). However, besides the health professionals' perspective, it is equally important to assess the perceptions of the users of health care services with regard to abilities, skills and competencies of their family physicians and the other health personnel. Thus, there is a need to develop measuring instruments for health professionals' competencies as viewed from patients' perspective.

In this line of argument, we have developed and tested an international instrument aiming at assessing the level of skills, abilities and competencies of health professionals from both family physicians' perspective (self-assessment) and from primary health care users' standpoint (8). This measuring instrument has been validated in Albania among primary health care users (9) and in general practitioners and family physicians (10). More recently, a cross-cultural adaptation of this instrument has been also conducted in Kosovo among primary health users (11) and family physicians (12).

In this framework, we aimed to assess the level of skills, abilities and competencies of family physicians from primary health care users' perspective in Kosovo, a transitional country in the Western Balkans. We used the validated version of the international instrument developed with the support of the European Community Lifelong Learning Program. This standardized tool addresses the competency levels of general practitioners and family physicians regarding different domains of quality of health care (7,8).

Methods

A nationwide cross-sectional study was conducted in Kosovo in January-December 2013.

Study population

A representative nationwide sample of 1340 primary health care users (both sexes aged ≥ 18 years) was included in this survey. Calculation of the sample size was made by use of WINPEPI for a number of hypotheses related to patients' socio-demographic and socioeconomic correlates such as sex, age and level of education. The significance level (two-tailed) was set at 5%, and the power of the study at 80%. Based on the most conservative calculations, the required minimal size was about 1200 individuals. We decided to recruit 1500 individuals in order to increase the power of the study.

Of the 1500 targeted individuals, 160 did not participate in the survey. Overall, 1340 primary health care users were included in our survey [661 (49%) males and 679 (51%) females;

overall response rate: 1340/1500=89.3%]. The response rate was similar in each of the regions included in the survey. In addition, respondents and non-respondents had similar sex and age distribution in all of the regions included in the survey.

Data collection

We employed an international instrument aiming at assessing the level of skills, abilities and competencies of family physicians from primary health care users' perspective. All participants included in this survey were asked to assess the level of skills, abilities and competencies of their family physicians with regard to the following six crucial domains of the quality of primary health care: (i) Patient care and safety (8 items); (ii) Effectiveness and efficiency (7 items); (iii) Equity and ethical practice (8 items); (iv) Methods and tools (5 items); (v) Leadership and management (4 items), and; (vi) Continuing professional development (5 items).

Answers for each item of each subscale ranged from 1 ("novice"= physicians have little or no knowledge/ability, or no previous experience of the competency described and need close supervision or instruction) to 5 ("expert"=physicians are the primary sources of knowledge and information in the medical field) (9-12).

An overall summary score [including 37 items; range: from 37 (minimal competencies) to 185 (maximal competencies)] was calculated for all participants included in this study.

Demographic and socioeconomic data (age and sex of participants, educational attainment, employment status and income level) and information on the overall satisfaction with the medical encounter and the number of health visits in the past year were also collected.

The study was approved by the Ethical Board of the Ministry of Health of Kosovo. All individuals who agreed to participate signed an informed consent form prior to the interview.

Statistical analysis

Cronbach's alpha was used to assess the internal consistency of the 37-item instrument measuring family physicians' competencies from primary health care users' perspective.

Conversely, Spearman's rho was used to assess the linear association (correlation) of the subscale scores (domains) of the instrument.

General linear model was employed to assess the association of the overall score of competencies of family physicians' from patients' viewpoint with their demographic and socioeconomic characteristics. Unadjusted and age-adjusted mean values, their respective 95% confidence intervals (95%CIs) and p-values were calculated.

Statistical Package for Social Sciences (SPSS), version 17.0 was used for all the statistical analyses.

Results

Background characteristics of study participants

The overall mean age of survey participants was 50.5 ± 17.9 years – it was similar in males and females (Table 1).

On the whole, mean years of formal schooling were 9.4 ± 4.0 years. The educational attainment was higher in males compared with female participants (mean years of formal schooling: 10.3 ± 3.7 years vs. 8.5 ± 4.1 years, respectively). About 20% of study participants reported a low income level (18% in males and 21% in females), whereas 7% reported a high income level (8% in males and 7% in females). The unemployment rate was quite high in this

representative sample of primary health care users in Kosovo, particularly among female participants (53% vs. 22% in males). Very few participants reported their first health visit at the primary health care services in the past year (overall N=16), about 19% reported 1-2 health visits, whereas 18% of individuals reported seven or more health visits in the past year. Remarkably, survey participants reported a high degree of satisfaction with primary health care services: 75% of individuals perceived as "good" or "very good" the medical encounter, compared to only 3.4% of individuals who rated as "poor" or "very poor" the quality of primary health care services. There were no gender differences with regard to the overall satisfaction with the quality of primary health care services (Table 1).

Variable	Male (N=661)	Female (N=679)	Overall (N=1340)
Age (years)	50.7±18.4*	50.4±17.4	50.5±17.9
Educational level (years)	10.3±3.7	8.5±4.1	9.4±4.0
Income level:			
Low	$119~(18.0)^{\dagger}$	146 (21.5)	265 (19.8)
Middle	491 (74.3)	485 (71.4)	976 (72.8)
High	51 (7.7)	48 (7.1)	99 (7.4)
Employment status:			
Employed	288 (43.6)	168 (24.7)	456 (34.0)
Unemployed	146 (22.1)	363 (53.5)	509 (38.0)
Students	66 (10.0)	55 (8.1)	121 (9.0)
Retired	161 (24.4)	93 (13.7)	254 (19.0)
No. health visits in the past 12 months:			
0	7 (1.1)	9 (1.3)	16 (1.2)
1-2	131 (19.8)	125 (18.4)	256 (19.1)
3-4	268 (40.5)	214 (31.5)	482 (36.0)
5-6	136 (20.6)	204 (30.0)	340 (25.4)
27	119 (18.0)	127 (18.7)	246 (18.4)
Overall satisfaction with health services:			
Very good/good	500 (75.6)	503 (74.1)	1003 (74.9)
Average	140 (21.2)	151 (22.2)	291 (21.7)
Poor/very poor	21 (3.2)	25 (3.7)	46 (3.4)

Table 1. Distribution of socioeconomic characteristics and satisfaction with health care services
in a representative sample of primary health care users in Kosovo, in 2013

^{*}Mean values ± standard deviations.

[†]Numbers and column percentages (in parentheses).

Instrument for measuring competencies of family physicians

Overall, reliability (internal consistency) of the whole scale (37 items) was Cronbach's alpha=0.96 (95%CI=0.96-0.97); it was similar in male and female participants (0.97 vs. 0.96, respectively) [data not shown].

Table 2 presents a correlation matrix between the subscale scores (that is domains of the measuring instrument). Spearman's correlation coefficients ranged from 0.55 (for the linear association of *"leadership and management"* with the *"patient care and safety"* and the *"equity and ethical practice"* domains) to 0.70 (for the *"effectiveness and efficiency"* and the *"patient care and safety"* subscales) – indicating a moderate linear relationship between the domains of the family physicians' competencies instrument.

Domain	Continuing professional development	Patient care and safety	Effectiveness and efficiency	Equity and ethical practice	Methods and tools
Patient care and safety	0.57 (<0.001)*	-			
Effectiveness and efficiency	0.56 (<0.001)	0.70 (<0.001)	-	-	-
Equity and ethical practice	0.58 (<0.001)	0.59 (<0.001)	0.64 (<0.001)		
Methods and tools	0.66 (<0.001)	0.62 (<0.001)	0.68 (<0.001)	0.64 (<0.001)	
Leadership and management	0.64 (<0.001)	0.55 (<0.001)	0.58 (<0.001)	0.55 (<0.001)	0.71 (<0.001)

 Table 2. Correlational matrix of subscale scores (alias domains of the instrument)

* Spearman's correlation coefficients and their respective p-values (in parentheses).

Correlates of competencies of family physicians

Mean value of the overall summary score for the 37-item instrument was 118.0±19.7 [range from 37 (minimal competencies) to 185 (maximal competencies)].

Mean value of the overall summary score of the competencies of family physicians from patients' viewpoint was higher among the younger (<45 years) participants compared with their older (\geq 45 years) counterparts (119 vs. 117, respectively, P=0.04) [Table 3]. There was no evidence of gender-differences in the mean scores of the overall competencies of family physicians even upon age-adjustment. Furthermore, mean scores of competencies of family physicians were similar among participants with different levels of educational attainment. On the other hand, the low-income participants exhibited lower mean scores of their family physicians' overall competencies compared with the high-income group (age-adjusted overall P<0.001). Employed and unemployed individuals exhibited similar mean scores – a finding which persisted also upon age-adjustment. Patients with frequent visits in the primary health care clinics (three or more visits in the past year) displayed the lowest scores of competencies of their family physicians (age-adjusted overall P<0.001). As expected, participants who were satisfied with the medical encounter showed a higher mean score of their family physicians' competencies compared with the individuals who were less satisfied with the quality of primary health care services (overall P<0.001) [Table 3].

Table 3. Association of competencies of family physicians from patients' viewpo	oint with their
demographic and socioeconomic characteristics; mean values from the General	Linear Model

Patients' socioeconomic	τ	Jnadjusted mo	dels	Age-adjusted models				
characteristics	Mean [*]	95% CI	Р	Mean [*]	95% CI	Р		
Age:								
Younger (≤44 years)	119.4	117.6-121.0	0.042					
Older (≥45 years)	117.1	115.8-118.4						
Gender:								
Males	118.2	116.7-119.7	0.704	118.4	116.9-119.9	0.735		
Females	117.8	116.3-119.3		118.0	116.5-119.6			
Educational level:			0.601 (2) [†]			$0.998(2)^{\dagger}$		
Low (0-8 years)	117.4	115.9-118.9	0.371	118.2	116.5-119.9	0.992		
Middle (9-12 years)	118.3	116.5-120.2	0.802	118.3	116.4-120.2	0.954		
High (≥13 years)	118.7	116.3-121.1	reference	118.2	115.7-120.7	reference		
Income level:			<0.001 (2)			<0.001 (2)		
Low	113.4	111.1-115.8	0.037	113.9	111.5-116.3	0.077		

Middle	119.2	118.0-120.4	0.649	119.3	118.1-120.6	0.527
High	118.2	114.4-122.1	reference	118.0	114.2-121.9	reference
Employment status:			0.222 (3)			0.690 (3)
Employed	118.8	117.0-120.6	0.141	118.7	116.8-120.5	0.400
Unemployed	117.4	115.7-119.1	0.564	117.7	115.9-119.5	0.758
Student	120.4	116.9-123.9	0.077	119.8	116.2-123.5	0.289
Retired	116.5	114.1-118.9	reference	117.2	114.5-120.0	reference
No. health visits in the						
past 12 months:			<0.001 (2)			0.001 (2)
0	126.6	117.0-136.2	0.048	126.3	116.6-135.9	0.064
1-2	122.1	119.7-124.5	< 0.001	122.0	119.6-124.4	< 0.001
≥3	116.9	115.7-118.0	reference	117.1	115.8-118.3	reference
Overall satisfaction with						
health services:			<0.001 (2)			<0.001 (2)
Very good/good	119.8	118.6-121.0	0.031	120.0	118.7-121.2	0.036
Average	112.4	110.1-114.6	0.718	112.7	110.4-114.9	0.710
Poor/very poor	113.5	107.9-119.1	reference	113.8	108.2-119.5	reference

* Range of the overall summary score from 37 (minimal competencies) to 185 (maximal competencies).

[†]Overall p-values and degrees of freedom (in parentheses).

Discussion

Findings from this survey provide useful information on the level of skills, abilities and competencies of family physicians from primary health care users' perspective in post-war Kosovo. The assessment instrument administered in our study sample showed a very high internal consistency, which was similar in male and female participants. As a matter of fact, the overall internal consistency in our survey (Cronbach's alpha=0.96) was higher than in a prior cross-cultural adaptation exercise conducted in Kosovo, which reported an overall Cronbach's alpha=0.88 (11). In addition, the internal consistency in the current study conducted in Kosovo was higher than in a previous validation study conducted in Albania (9). In our study, the reliability of the tool (i.e. the internal consistency) was similar in both sexes, a finding which is basically compatible with a previous report from Albania (9).

The overall level of competencies of family physicians – as assessed by the summary score of the 37-item instrument - was quite high in our study which included a nationwide representative sample of primary health care users in Kosovo. There were no sex-differences with regard to the perceived levels of family physicians' competencies according to patients' standpoint. As pointed out earlier, this finding related to a high level of family physicians' knowledge and competencies is in line with the very positive assessment of the quality of primary health care services among our study participants (13). Thus, in our study, 75% of participants perceived as "good" or "very good" the medical encounter, a finding which is quite different from a previous study conducted in Gjilan region, Kosovo, in 2010 including a representative sample of 1039 primary health care users (14). In this survey, patients' evaluation of primary health care services was assessed through EUROPEP, a 23-item instrument tapping different aspects of the medical encounter. Findings from this study indicated that considerably fewer primary health care users in Kosovo were satisfied with the overall medical encounter compared with their European counterparts (14). However, there are differences between the two studies: our survey included a nationwide representative sample in contrast with the previous study confined to Gjilan region only (14). Furthermore, we assessed only the self-perceived level of competencies of family physicians from patients'

perspective. On the other hand, the prior survey conducted in Gjilan region included other important dimensions of the quality of primary health care services which are not related to the level of knowledge, skills and competencies of health care professionals (14).

Furthermore, the overall level of competencies of family physicians in our study was higher compared to the previous validation study (cross-cultural adaptation) which was conducted in a sample of 98 primary health care users in Kosovo (11). In addition, the overall summary score in our study was particularly higher compared to prior reports from the neighboring Albania, where a similar survey employing exactly the same instrument was conducted (9,10).

In our study conducted in Kosovo, the level of skills, abilities and competencies of family physicians as assessed by patients' perspective was positively related to income level, in contrast with the Albanian study which reported lack of associations with socioeconomic characteristics of study participants (9). Nonetheless, there was no evidence of relationship with educational attainment in the current survey, too.

Future studies in Kosovo and Albania should compare primary health care users' assessment scores with the self-assessed scores of their respective family physicians in order to identify potential gaps in the perceived levels of skills and competencies. As argued earlier, primary health care users' viewpoints about the quality of health care services including the skills and competencies of their respective family physicians may vary significantly from the self-perceived level of competencies of health care professionals themselves (13). Competencies are considered as composites of individual attributes including knowledge, skills and attitudes that represent context-bound productivity (15). However, patients' viewpoint on productivity may differ considerably from providers' perspective. Hence, future studies in Albanian settings and elsewhere should explore this important issue in a robust manner.

In conclusion, findings from this nationwide survey conducted in transitional Kosovo provide useful information on the level of skills and competencies of family physicians from primary health care users' perspective. Nonetheless, findings from this survey should be replicated in future studies in Albania and Kosovo.

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ORIGINAL RESEARCH

Seasonal variations of schizophrenic patients in emergency departments in Sofia, Bulgaria

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Abstract

Aim: The purpose of this study was to reveal the seasonal distribution of emergency department visits of schizophrenic patients in Sofia, Bulgaria.

Methods: We collected daily data for visits of patients with schizophrenia, schizotypal and delusional disorders in the emergency center of the regional dispenser for mental disorders in the city of Sofia for the period 1998-2003. The total number of emergency visits was 5723 (mean daily visits: 5.04 ± 2.4). T-test was used to compare the monthly and seasonal distribution of visits. **Results:** The season with the highest levels of emergency visits was summer, and the lowest levels were observed in winter (P<0.0001). Spring and autumn had intermediate values close to the mean value, and significantly differentiated from winter values. The month with the highest levels were observed in December, followed by May and the three summer's months. The lowest levels were observed in December, October and January, with statistically significant differences observed between the values of all the three months. Differences between July values compared with December and October values were significant, but not with January values.

Conclusion: The study showed significant seasonal and monthly differences in emergency schizophrenics' visits. The data confirm the outcome of similar studies conducted in countries with temperate climate in the Northern Hemisphere. These results could prove useful for psychiatrists, public health specialists, and governmental authorities dealing with team planning and prevention programs in the field of psychiatry.

Keywords: month, schizophrenia, season.

Introduction

Schizophrenia is a mental disorder characterized by enormous societal and economic costs due to the extensive therapeutic care and loss of economic productivity, as well as personal suffering and stigma which often affect the patient and his/her family for most of the patient's life. As for schizophrenia patients, there is still no cure, the research of etiologic factors, particularly environmental ones that could be avoided and used in effective prevention programs, is essential (1).

Many studies have demonstrated evidence of seasonal patterns in the incidence of psychotic disorders, and schizophrenia in particular. It is known since the time of Esquirol (1838) that the number of patients admitted in mental hospitals increases in summer months and decreases in winter (1). Most of the studies for seasonal distribution of hospital admissions in schizophrenia also report summer peaks (2,3), some of these for female patients only (4).

Shiloh et al. (5) conducted research on admissions of schizophrenia and schizoaffective disorder patients to Tel-Aviv's seven public psychiatric hospitals during 11 consecutive years. They found that the mean monthly admission rates are significantly higher during the summer (for schizophrenia patients) and fall (for schizoaffective patients).

Clarke et al. (6) studied first admissions for the diagnosis of schizophrenia, citing April and October as peak months.

In a few publications (7-10), no significant difference between admissions in various seasons was observed. Eastwood and Stiasny (7) failed to replicate the summer peak in the admissions for schizophrenia in Ontario, Canada. Partonen and Lonnqvist (8), in a study of 295 schizophrenic patients, also reported no significant seasonal variation of admission with schizophrenia (cited by 9). De Graaf et al. (11) did not find seasonal variations for schizophrenia. The authors concluded there are only limited seasonal variations in mental disorders in general population studies, at least in countries with a mild maritime climate.

It is interesting that while most of the studies conducted in the Northern Hemisphere found summer peaks in hospital admissions for schizophrenia, results from three studies in the Southern Hemisphere show converse results – winter peaks (9,12,13). Owens and McGorry (13) analyzed data for six years and found that only male cases of schizophrenia showed a significant seasonal distribution in the dates of onset of symptoms, with a peak in August. The other two studies: Davies et al. (12) in first episode schizophrenia (strongly visible for the males, but the pattern for females also displayed annual periodicity) in Queensland, Australia and Daniels et al. (9) in male patients with schizoaffective disorder in Tasmania also showed austral winter peaks in admission data.

While the problem of seasonal admissions of patients with schizophrenia has been widely discussed in Western Europe, America and Australia, in Eastern Europe it has been neglected. In this region, we are only familiar with research conducted in Poland by Kotsur and Gurski, where the authors confirmed the presence of seasonality in admission of schizophrenic patients (14). We are not aware of any published research on this subject in Bulgaria, which makes the present study important as a contribution to the scientific literature on the problem in the country and in the South East Europe (SEE) region. Its findings could also raise the awareness of the problem of health care management for psychiatric patients in SEE countries besides Bulgaria.

The aim of the present research was to study the seasonal distribution of emergency department visits (not planned visits) of schizophrenic patients in the city of Sofia, Bulgaria (42°40' North latitude, 23°18' East longitude).

Methods

We collected daily data for visits of patients with schizophrenia, schizotypal and delusional disorders (F20-F29, ICD-10) in the emergency center of the regional dispenser for mental disorders in the city of Sofia for the period 1 January 1998 – 30 June 2003. The total number of emergency visits of schizophrenic patients was 5723 (mean daily visits: \bar{x} =5.04, σ =2.4). The total number of

analyzed days was 1135 (data was missing for a part of the period). Data was categorized by months and then by meteorological seasons – the Winter season defined as December, January and February; the Spring season as March, April and May; the Summer season as the months of June, July and August; and the Autumn (Fall) season as the months of September, October and November.

Because of missing information for some of the days during the period, the mean *daily* (not monthly) values were calculated for the particular month and season, and then the values were compared by using *t*-test.

Mathematically, this method could be used by application of the following formula:

$$t = \frac{x_1 - x_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

where, $\overline{x_1}$ and $\overline{x_2}$ are the mean arithmetic values of the two samples, σ_1 and σ_2 are the dispersions of the two samples, and n_1 and n_2 are the numbers of the two samples.

Results obtained by t-test were compared with table values, which show the probability connected with the zero-hypothesis. For this purpose, the degrees of freedom are calculated using the following formula:

$$K = n_1 + n_2 - 2$$

The calculated value of the degree of freedom was subsequently compared with the table critical value. If the t-test value is lower or equivalent to the critical value, then it is accepted that there are occasional differences between the two samples. If the t-test value is higher than the critical value it is accepted that the differences between the two samples are statistically significant, thus rejecting the zero-hypothesis.

Results

The season with the highest levels of emergency visits was summer (\bar{x} =5.44) and the lowest levels were observed in winter (\bar{x} = 4.63) (Figure 1), with statistically significant differences between these two seasons (t= 4.12*, p<0.0001) (Table 1).

Spring and autumn had intermediate values close to the mean value (respectively, 5.15 and 5.02). Spring and autumn values also significantly differentiated from winter values (t=2.78*, p=0.006 and t=2.07*, p=0.035, respectively) (Figure 1).

Table 1. Comparative analysis of the mean seasonal visits of schizophrenic patients in the emergency
department of the regional dispenser for mental disorders in Sofia, Bulgaria, January 1998-June 200

Season	Winter	Spring	Summer	Autumn
Winter	-			
Spring	2.78^{*}	-		
Summer	4.12^{*}	1.36	-	
Autumn	2.07^{*}	0.63	1.95	-

^{*} The quotients marked with an asterisk are statistically significant (p < 0.05).



Figure 1. Seasonal patterns of admissions of schizophrenic patients in the Emergency center of the Regional dispanser for mental disorders in the city of Sofia

The month with the highest admission levels was September ($\overline{x} = 5.79$), followed by May ($\overline{x} = 5.63$), and the summer months (August, June and July). The lowest levels were observed during the cold months: December ($\overline{x} = 4.22$), followed by October ($\overline{x} = 4.58$), and January ($\overline{x} = 4.71$) (Figure 2).





Statistically significant differences were observed between the values of all the three months, with the highest levels compared with the three months with the lowest levels. Differences between July values compared with December and October values were significant, but not with January values (Table 2).

Table 2. Comparative analysis of the mean monthly visits of patients with schizophrenia in theemergency department of the regional dispenser for mental disorders in Sofia, Bulgaria, January1998 – June 2003

Month	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
January	-											
February	1.07	-										
March	0.61	0.35	-									
April	0.78	0.29	0.09	-								
May	2.76^{*}	1.7	1.95	1.99*	-							
June	2.28^{*}	1.22	1.5	1.51	0.47	-						
July	1.86	0.78	1.06	1.05	0.97	0.5	-					
August	2.51*	1.52	1.77	1.79	0.09	0.35	0.83	-				
September	3.04*	2.03^{*}	2.25^{*}	2.3^{*}	0.38	0.84	1.34	0.47	-			
October	0.42	1.33	0.92	1.08	2.84^{*}	2.41^{*}	2.02^{*}	2.62^{*}	3.1*	-		
November	0.59	0.44	0.06	0.16	2.11*	1.64	1.19	1.91	2.41*	0.91	-	
December	1.8	2.64^{*}	2.11*	2.4*	4.1^{*}	3.67*	3.35*	3.8*	4.3*	1.14	2.2^{*}	-

^{*} The quotients marked with an asterisk are statistically significant (p < 0.05).

Discussion

The results obtained in this study confirm the presence of seasonality in the emergency visits of schizophrenic patients in Sofia. Our findings confirm many of the studies conducted in the Northern Hemisphere (summer peak) in countries with continental temperate climate (3,4,6).

With respect to the factors responsible for the summer excess of admissions, Myers and Davies (15) have suggested a rise in ambient temperature; Parker and Walter (16), the increasing luminance; and Carney et al. (17), the length of day. Social factors, such as summer holidays, "*are unlikely to have an effect*" (4).

Some publications confirm a straight relationship between the ambient temperature and hospital admissions of patients with diagnosis schizophrenia. Such a relationship was found by Gupta and Murray (18) and Faust (19). Hansen et al. investigated the effect of heat waves on mental health in Australia (temperate climate) and found that hospital admissions were increased by 7.3% during heat waves. Mortalities attributed to mental disorders also increased during heat waves in the age group of 65-74 years and in persons with schizophrenia (20). Shiloh et al. (5) concluded that the mean rates of monthly admissions of patients with schizophrenia correlate with the maximum mean monthly environment temperature (R=0.35). They connect the admission rates with the higher summer temperatures, and conclude that "*persistent high environmental temperature may be a contributing factor for psychotic exacerbation in schizophrenia patients and their consequent admission to mental hospitals*".

In previous research (21) using the present data, we also found a positive straight relationship between mean ambient temperature and the emergency visits of schizophrenic patients in Sofia.

The analysis of the observed relationship is somehow complicated because of many uncertainties coming from the etiology of the mental disorders. From a physiological point of view, there are still not firm conclusions about the reasons for the outcome of these disorders in psychiatry, and
Spasova Z. Seasonal variations of schizophrenic patients in emergency departments in Sofia, Bulgaria (Original research). SEEJPH 2014, posted: 09 February 2014. DOI 10.12908/SEEJPH-2014-07.

many theories try to explain these uncertainties. Yet, some conclusions could be made from a theoretical point of view and the literature review.

Since we have been interested in the effect of meteorological factors on the mental crises manifesting, comparatively most important is the theory connected with the fundamental physiological processes in the cerebral cortex – as we are interested in the changeable side of environmental factors influencing the damaged human psyche. First, the Russian scientist Pavlov developed on a theoretical level his hypothesis in relation to the concept of the so-called "Patho-dynamical structures" ("sick point"). The patho-dynamical structure is characterized by a change in the ratio between the basic neural processes – excitement and suppression, which leads itself to the development of phase states. Depending on the structures involved in the pathological process, the external manifestations of the disorders are different (22).

With respect to schizophrenia, strategic guidance for the interpretation of the impact of the ambient temperature on the occurrence of mental crisis could be made by applying the theory of Pavlov. According to him, the main emphasis should be placed on spilled retention, which covers the cortex and sometimes spread on the sub-cortex and brain stem departments, as well as the transition between wakefulness and sleep phases. The main reason for the increased retention of hemispheres in schizophrenia, the Russian scientist sees, is the weakness of the nervous system, when multiple stimuli from the environment are super strong, causing over the limit detention. Such detention in some departments of the brain can lead to release and positive induction of others, and ultimately to a distortion of the interaction of brain structures, such as the relationship between signaling systems, bark and under-bark (cited by 22). Considering that the ambient temperature has a direct impact on the physiological processes in humans by thermo-receptors, it could be expected that its impact will play the role of these super strong as – Pavlov calls them – stimuli. They act as stressors on the body – especially the nervous system – and consequently, in combination with other stimuli (predominantly of the social character), lead to disturbance of the balance and induce psychological crisis.

Conclusion

Our study shows significant seasonal and monthly differences in emergency visits of schizophrenia patients. The results confirm the outcome of many other studies conducted in countries with temperate climate in the Northern Hemisphere.

Results from this study could be useful for psychiatrists and medical staff working in emergency centers and mental health hospitals, public health specialists and governmental authorities dealing with team planning and prevention programs in the field of psychiatry.

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ORIGINAL RESEARCH

Self-perceived level of competencies of family physicians in transitional Kosovo

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Abstract

Aim: Family physicians and general practitioners are currently facing increasing demands to meet patients' expectations and rapid technological and scientific developments. The aim of this study was to determine the self-perceived level of competencies of primary health care physicians in Kosovo, a post-war country in the Western Balkans.

Methods: A cross-sectional study was conducted in Kosovo in 2013 including a representative sample of 597 primary health care physicians (295 men and 302 women; mean age: 46.0 ± 9.4 years; response rate: 90%). A structured self-administered questionnaire was used in order to determine physicians' competencies regarding different domains of the quality of health care. The questionnaire included 37 items organized into six subscales/domains. Answers for each item of the tool ranged from 1 ("novice" physicians) to 5 ("expert" physicians). An overall summary score (range: 37-185) and a subscale summary score for each domain were calculated for each participant. General linear model was used to assess the association of physicians' self-perceived level of competencies with covariates.

Results: The internal consistency of the whole scale (37 items) was Cronbach's alpha=0.98. Mean summary score of the 37-item instrument and subscale summary scores were all higher in men than in women. In multivariable-adjusted models, mean level of self-perceived competencies was higher among older physicians, in men, those with >10 years of working experience, physicians serving >2500 people, specialized physicians and those involved in training activities.

Conclusion: Our study provides useful evidence on the self-assessed level of competencies of primary health care physicians in post-war Kosovo. Future studies in Kosovo and other transitional settings should identify the main determinants of possible gaps in self-perceived levels of physicians' competencies vis-à-vis the level of physicians' competencies from patients' perspective.

Keywords: competencies, family physicians, general practitioners, primary health care.

Introduction

In the past few years, there is evidence of a growing interest in competency-based medical education as – among other things – it focuses on outcomes such as development of abilities, skills and competencies (1). Therefore, competency-based education has also been introduced in public health training and education in order to close the gap between public health educational content and the competencies required in public health practice (2).

As a matter of fact, there is overwhelming evidence indicating that primary health care professionals are presently facing growing demands in order due to meet patients' expectations for higher quality health care services, as well as the rapid technological developments and scientific progress (3,4). Therefore, at a global scale, health care professionals are increasingly expected to provide better-quality health care services, especially in line with the aging population trend observed in most of the countries. Consequently, quality improvement in different domains and components of health care services are currently recognized as essential issues in health care practice (3,4). For this very reason, quality improvement needs to be included at all levels of medical education and in all aspects of health care services with the ultimate goal of improving the health of the populations (4).

The required competencies for quality improvement are especially relevant for primary health care professionals who face a continuous and huge demand for high-quality health care services from the serving populations. In order to cope with this situation, there have been recently suggested models of required or desirable abilities, skills and competences for medical doctors and health professionals at all levels of care including also continuous professional development (5). Such frameworks or models of abilities, skills and competencies are also deemed as a valuable tool for self-assessment of primary health care professionals aiming at improving their health care practices, analyze their clinical experience, plan improvement strategies, and determine a supposed improvement integrating knowledge, skills and abilities into the routine daily practice (4,6,7).

However, to date, the information about the content, structure and outcomes of teaching quality improvement topics within the medical curricula in European countries and beyond is scant. This is especially true for the former communist countries of Southeast Europe including Albania and Kosovo¹. In 2008, Kosovo emerged as the newest state of Europe after ten years under United Nations' administration following a devastating war (8). Currently, Kosovo is trying to rebuild its health system (9,10) and, among the reforming efforts, an important aspect is the reorientation of health services to ensure basic medical care for all individuals but especially so for the vulnerable segments of the population (9-11). One of the main challenges of the reform concerns the human resources pertinent to the health sector. Nevertheless, there are no well-documented reports informing on the level of competencies of physicians and other health care professionals in Kosovo.

In this framework, the aim of our study was to determine the self-perceived level of competencies of primary health care physicians in Kosovo, a post-war country in the Western Balkans which is currently facing a difficult period of political and socioeconomic transition.

Methods

A cross-sectional study was conducted in Kosovo in 2013 including a representative sample of primary health care physicians.

¹ Kosovo: This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence". http://ec.europa.eu/enlargement/countries/detailed-country-information/kosovo/ (accessed: April 19, 2014).

Study population

Our study targeted a representative sample of primary health care physicians in five regions of Kosovo, namely Pristine, Gjilan, Gjakove, Prizren and Peje. According to the calculations of the sample size, a minimum of 612 physicians was required for inclusion in this survey. We decided to recruit 660 physicians (220 in Pristine and 110 in each of the other regions) in order to increase the power of the study.

Of the 660 targeted physicians, 597 participated in the survey (overall response rate: 597/660=90%). The response rate was somehow lower in Peje (87%) and Gjakove (88%), but higher in Prizren (95%). In Pristine, the capital of Kosovo, the response rate was 91%.

Of the 597 physicians included in our study, 295 (49.4%) were men and 302 (50.6%) were women. Mean age in the overall study population was 46.0 ± 9.4 years.

The study was approved by the Ethical Board of the Ministry of Health of Kosovo. All physicians were sent an official invitation letter where the aims and procedures of the survey where explained in detail.

Data collection

An international instrument was developed with the support of the European Community Lifelong Learning Program aiming to self-assess the level of skills, abilities and competencies of primary health care physicians (4). This instrument has been already validated (cross-culturally adapted) in Albanian settings (12,13).

All physicians included in this survey were asked to self-assess their level of skills, abilities and competencies regarding the following six essential domains of quality of primary health care (4): (i) Patient care and safety (8 items); (ii) Effectiveness and efficiency (7 items); (iii) Equity and ethical practice (8 items); (iv) Methods and tools (5 items); (v) Leadership and management (4 items), and; (vi) Continuing professional development (5 items).

Responses for each item of each subscale ranged from 1 ("novice"= physicians have little or no knowledge/ability, or no previous experience of the competency described and need close supervision or instruction) to 5 ("expert"=physicians are the primary sources of knowledge and information in the medical field).

An overall summary score (including 37 items; range: 37-185) and a subscale summary score for each of the six domains were calculated for all primary health care physicians included in this study.

Demographic data (age and sex of participants), information on working experience, number of population served, working place, type of specialization and involvement in teaching/training activities were also collected.

Statistical analysis

Median values (and their respective interquartile ranges) were used to describe the distribution of age, duration of work experience and the number of population served among male and female physicians included in this study. On the other hand, frequency distributions (absolute numbers and their respective percentages) were used to describe the distribution of sex, working place, specialization, involvement in teaching and training activities of study participants.

Cronbach's alpha was employed to assess the internal consistency of the overall scale (37 items) and each of the six subscales/domains of the measuring instrument.

Mean values (and their respective standard deviations) were used to describe the distribution of the summary score of the overall tool (37 items) and the summary scores of each of the six subscales/domains. Mann-Whitney's U-test was used to assess sex-differences in the mean values of the overall level of competencies (37 items) and the competency levels of each subscale of the instrument.

General linear model was used to assess the association of self-assessed overall level of competencies with demographic characteristics, work experience, type of specialization and involvement in teaching/training of physicians included in this study. Initially, crude (unadjusted) mean values of the overall level of physicians' self-perceived competencies and their respective 95% confidence intervals (95%CIs) were calculated for each category of the covariates (age, dichotomized into: \leq 40 years vs. >40 years; sex: men vs. women; working experience, dichotomized into: \leq 10 years vs. >10 years; number of population served, dichotomized into: \leq 2500 people vs. >2500 people; working place, dichotomized into: Pristina vs. other regions; specialization: general practice, family medicine, other specializations; and involvement in teaching/training activities: no vs. yes). Subsequently, multivariable-adjusted mean values and their respective 95%CIs were calculated.

SPSS (Statistical Package for Social Sciences, version 15.0), was used for all the statistical analyses.

Results

Overall, median age among study participants was 47 years (interquartile range: 40-53 years) (Table 1). Conversely, median duration of working experience in the overall sample of physicians was 13 years (interquartile range: 6-21 years). About 34% of primary health care physicians worked in Pristina, whereas 66% of them worked in the other regions of Kosovo. About 31% of participants were general practitioners, 49% were family medicine, whereas 20% had received different medical specializations (such as cardiology, paediatrics, internal medicine, gastroenterology, rheumatology, or obstetrics-gynaecology). About 29% of the physicians were involved in teaching and training activities in Family Medicine (Table 1).

Variable	Distribution
Age (years)	47.0 (40.0-53.0)*
Sex:	
Men	295 (49.4) [†]
Women	302 (50.6)
Working experience (years)	13.0 (6.5-21.0)*
Number of population served	3000 (2500-4000)*
Working place:	
Prishtina	201 (33.7) [†]
Gjilan	98 (16.4)
Gjakova	97 (16.2)
Prizren	105 (17.6)
Peje	96 (16.1)
Specialization:	
General practice	$187 (31.3)^{\dagger}$
Family medicine	292 (48.9)
Other specializations [‡]	118 (19.8)
Involved in teaching:	
No	427 (71.5) [†]
Yes	170 (28.5)

Table 1. Distribution of demographic characteristics, work experience and specialization in a representative sample of primary health care physicians in Kosovo, in 2013 (N=597)

* Median values and interquartile ranges (in parentheses).

[†]Numbers and column percentages (in parentheses).

[‡] Cardiology, paediatrics, internal medicine, gastroenterology, or rheumatology.

The internal consistency of the overall scale (37 items) was Cronbach's alpha=0.98 (Table 2). In general, Cronbach's alpha was high for all the subscales [ranging from 0.86 (for the "leadership and management" domain) to 0.94 (for the "patient care and safety" and "methods and tools" subscales)].

Domain (subscale)	Cronbach's alpha
Overall scale (37 items)	0.98
Patient care and safety (8 items)	0.94
Effectiveness and efficiency (7 items)	0.93
Equity and ethical practice (8 items)	0.90
Methods and tools (5 items)	0.94
Leadership and management (4 items)	0.86
Continuing professional development (5 items)	0.90

Table 2. Internal consistency of each domain (subscale) of the instrument

In the overall sample of male and female physicians (N=597), the summary score for the 37 items of the tool was 147.7±24.3 (Table 3). The summary score of self-perceived competency level was significantly higher in men compared to women (151.2 ± 24.3 vs. 144.1 ± 23.8 , respectively, P<0.001). As a matter of fact, the subscale scores were all significantly higher in men than in women, except the "methods and tools" domain which was not significantly different between men and women (19.6 ± 4.0 vs. 19.0 ± 4.0 , respectively, P=0.09).

Domain (subscale)	Overall (N-507)	Sex-specific				
Domain (Subscale)	Overall (N=597)	Men (N=295)	Women (N=302)	P [†]		
Overall scale (score range: 37-185)	147.7±24.3*	151.2±24.3	144.1±23.8	<0.001		
Patient care and safety (score range: 8-40)	31.5±5.6	32.4±5.6	30.6±5.5	<0.001		
Effectiveness and efficiency (score range: 7-35)	27.1±4.9	27.8±4.9	26.3±4.9	<0.001		
Equity and ethical practice (score range: 8-40)	33.7±5.3	34.5±5.2	33.0±5.4	0.001		
Methods and tools (score range: 5-25)	19.3±4.0	19.6±4.0	19.0±4.0	0.090		
Leadership and management (score range: 4-20)	15.8±3.2	16.2±3.3	15.4±3.2	<0.001		
Continuing professional development (score range: 5-25)	20.2±3.4	20.8±3.4	19.7±3.4	<0.001		

Table 3. Summary score of each domain (subscale) of the instrument by sex

* Mean values ± standard deviations.

[†] P-values from Mann-Whitney U test.

Table 4 presents the association of self-perceived competencies with covariates. In crude/unadjusted general linear models, mean level of self-assessed competencies was significantly higher among older physicians, in men, those with >10 years of working experience, physicians serving >2500 people, specialized physicians and those involved in teaching and training activities (all P<0.001). Physicians working in the capital city had a borderline significantly higher mean level of self-perceived competencies compared with their counterparts operating in the other regions of Kosovo (P=0.052). Upon multivariable-

adjustment, findings were somehow attenuated, but remained essentially the same and highly statistically significant. Hence, mean level of self-perceived competencies was higher among older physicians (P=0.022), in men (P<0.001), those with >10 years of working experience (P<0.001), physicians serving >2500 people (P=0.007), specialized physicians (P<0.001) and those involved in teaching and training activities (P<0.001). On the other hand, in multivariable-adjusted models, physicians working in Pristina had a significantly higher mean level of self-perceived competencies than those operating in the other regions of Kosovo (150.1 vs. 145.6, respectively, P=0.008).

Variable	Crude (unadjusted)) models [*]	Multivariable-adjusted models [†]		
variable -	Mean (95% CI) P		Mean (95% CI)	Р	
Age:					
≤40 years	129.3 (125.9-132.6)	< 0.001	145.2 (141.4-149.0)	0.022	
>40 years	154.5 (152.4-156.5)		150.5 (148.2-152.7)		
Sex:					
Men	151.2 (148.5-153.9)	< 0.001	150.9 (148.1-153.8)	<0.001	
Women	144.1 (141.4-146.9)		144.7 (142.2-147.2)		
Working experience (years):					
≤ 10 years	132.5 (129.9-135.0)	< 0.001	143.7 (140.7-146.8)	<0.001	
>10 years	158.8 (156.6-160.9)		151.9 (148.8-155.1)		
Number of population served:					
≤2500	137.3 (134.2-140.4)	< 0.001	145.5 (142.4-148.6)	0.007	
>2500	153.4 (151.1-155.7)		150.2 (147.8-152.6)		
Working place:					
Prishtina	150.4 (147.0-153.7)	0.052	150.1 (147.0-153.2)	0.008	
Other regions	146.3 (143.9-148.7)		145.6 (143.3-147.9)		
Specialization:					
General practice	126.9 (124.1-129.7)	reference	135.3 (131.9-138.7)	reference	
Family medicine	154.9 (152.7-157.2)	< 0.001	151.7 (148.8-154.6)	<0.001	
Other	162.8 (159.2-166.3)	< 0.001	156.5 (152.3-160.7)	<0.001	
Involved in teaching:					
No	142.9 (140.7-145.1)	<0.001	144.1 (141.9-146.4)	<0.001	
Yes	159.5 (156.0-163.0)		151.5 (148.3-154.8)		

Table 4. Association of self-assessed competencies with demographic characteristics	, work
experience and specialization of primary health care physicians in Kosovo	

* Mean values, 95% confidence intervals (95%CI) and p-values from the General Linear Model.

[†] General Linear Models simultaneously adjusted for all the variables presented in the table.

Discussion

Our study obtained evidence on the self-perceived level of competencies of physicians working at primary health care services in post-war Kosovo. The sample size included in this survey was big and representative of all the physicians working at primary health care services in Kosovo.

Main findings of our study include a higher level of self-perceived competencies among male physicians, older participants, those with a long working experience, physicians serving a larger population size, specialized physicians and those involved in training activities.

Overall, the international instrument employed in this survey exhibited a high internal consistency in this representative sample of physicians operating at primary health care

centres in different regions of Kosovo. In general, the internal consistency was high for each domain/subscale of the instrument.

It should be noted that each subscale/domain of the instrument employed in our survey taps a crucial component of the quality of primary health care. As reported elsewhere (4), the domains of the instrument imply reflection and self-assessment in order to improve the quality of health care provision (6). Furthermore, each domain of the instrument measures a number of specific competencies which represent individual standards (7).

Many studies reported in the international literature have linked the quality of health care services with health outcomes of the population (14,15). This is especially relevant for primary health care services which are considered as the most important level of health care in many developed countries (16), but also developing and transitional countries. Therefore, physicians and other health care professionals working at primary health care centers should be extremely concerned of users' demands, a process which is related to the need for continuous improvement of the quality of primary health care services. Furthermore, the "gate-keeping" function of primary health care services requires a substantial degree of patients' satisfaction.

Future studies should be conducted in the Western Balkans and beyond employing a similar methodology and the same standardized instrument as reported in our study conducted in Kosovo. If so, it would be interesting to compare our findings on the self-perceived level of primary health care physicians' competencies with their counterparts from the neighbouring countries in Southeast Europe and beyond. Also, determinants of self-perceived level of physicians' competencies should be explored in future research studies.

A study was conducted in Kosovo in 2013 including a representative sample of 1340 primary health care users aged ≥ 18 years (49% males aged 50.7±18.4 years and 51% females aged 50.4±17.4 years) in order to assess their perceptions on the level of competencies of their primary health care physicians (17). According to this report, the level of competencies of family physicians from patients' perspective was significantly lower than physicians' selfassessed level of competencies evidenced in our study. Hence, the mean value of the overall summary score for the 37-item instrument was 118.0 ± 19.7 according to patients' perspective (17), which is considerably lower compared with our findings related to the mean value of physicians' self-assessed level of competencies (147.7 ± 24.3) (Table 3). In the primary health care users' survey, the perceived level of physicians' competencies was higher among the younger and the low-income participants, and in patients who reported frequent health visits and those not satisfied with the quality of the medical encounter (17). On the other hand, no sex, or educational differences were evident in the survey including primary health users (17). It is appealing to determine in future studies the underlying factors of this differential competency level between health care providers (physicians) and users of services (patients).

Our study may have several limitations. Our survey included a large representative sample of primary health care physicians and the response rate was high. Nevertheless, we cannot exclude the possibility of information bias. In any case, we used a standardized instrument which was cross-culturally adapted in the Albanian settings (12,13). Furthermore, there is no reason to assume differential reporting on the level of competencies by different demographic categories of physicians, or other background variables included in our study.

In conclusion, our study provides useful evidence on the self-assessed level of competencies of primary health care physicians in post-war Kosovo. Findings from this study may help policymakers and decision-makers in Kosovo to perform necessary adjustments to the job description and terms of references pertinent to the work contracts of primary health care physicians in this transitional country. Nonetheless, future studies in Kosovo and other transitional settings should identify the main determinants of the apparent gaps in self-

perceived levels of physicians' competencies vis-à-vis the level of physicians' competencies from patients' perspective.

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REVIEW ARTICLE

Nurses' roles, knowledge and experience in national disaster preparedness and emergency response: A literature review

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Abstract

Aim: Nurses play a central role in disaster preparedness and management, as well as in emergency response, in many countries over the world. Care in a disaster environment is different from day-to-day nursing care and nurses have special needs during a disaster. However, disaster nursing education is seldom provided and a lack of curricula exists in many countries around the world. The aim of this literature review is to provide an overview of nurses' roles, knowledge and experience in national disaster preparedness and emergency response.

Methods: An electronic search was conducted using multiple literature databases. All items were included, regardless of the publication year. All abstracts were screened for relevance and a synthesis of evidence of relevant articles was undertaken. Relevant information was extracted, summarized and categorized. Out of 432 reviewed references, information of 68 articles was included in this review.

Results: The sub-themes of the first main theme (a) roles of nurses during emergency response include the expectations of the hospital and the public, general and special roles of nurses, assignments of medical tasks, special role during a pandemic influenza, role conflicts during a disaster, willingness to respond to a disaster. For (b) disaster preparedness knowledge of nurses, the corresponding sub-themes include the definition of a disaster, core competencies and curriculum, undergraduate nursing education and continuing education programs, disaster drills, training and exercises, preparedness. The sub-themes for the last theme (c) disaster experiences of nurses include the work environment, nursing care, feelings, stressors, willingness to respond as well as lessons learned and impacts.

Conclusion: There is consensus in the literature that nurses are key players in emergency response. However, no clear mandate for nurses exists concerning their tasks during a disaster. For a nurse, to be able to respond to a disaster, personal and professional preparedness, in terms of education and training, are central. The Framework of Disaster Nursing Competencies of the WHO and ICN, broken down into national core competencies, will serve as a sufficient complement to the knowledge and skills of nurses already acquired through basic nursing curricula. During and after a disaster, attention should be applied to the work environment, feelings and stressors of nurses, not only to raise the willingness to respond to a disaster. Where non-existent, national directives and concepts for disaster nursing should be developed and nurses should be aware of their duties. Nursing educators should prepare nurses for disaster nursing for all groups of nurses. The appropriateness of theoretical and practical preparation of disaster nursing competencies in undergraduate nursing courses and continuing education programmes should be evaluated.

Keywords: disasters, disaster planning, emergencies, emergency preparedness, nurses.

Conflicts of interest: Thomas Grochtdreis is a member of the German Red Cross and vice president of the German Red Cross Youth. The other authors do not declare any conflicts of interest.

Introduction

Disasters are defined by the Centre for Research on the Epidemiology of Disasters (CRED) as "a situation or event, which overwhelms local capacity, necessitating a request to a national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering" (1). Disasters are classified as natural, biological, geophysical, climatological, hydrological, meteorological, and technological (2).

Recent examples of major disasters are the earthquake in Haiti in 2010 as an example of a natural disaster and the earthquake followed by a tsunami and the nuclear catastrophe in Japan in 2011 as an example of a mixed natural and manmade disaster. Within the countries of Western Europe, more than five million people have been affected by a variety of disaster types (e.g., 4,295,600 people affected by storms, 684,492 by floods, and 816 by epidemics) in the last 20 years. Within this timeframe, 8,835 people were injured and 38,643 people were killed (3).

In order to master a huge number of affected people due to a disaster within a short period, it is important to have well trained first-response personnel or volunteers. Here, an essential role is allotted to nurses for integrating communicating efforts across these protagonists and for having role competencies in disaster preparation. It is quite probable that at some time in the future, nurses may be called upon to respond to a mass casualty event or disaster outside of the hospitals. Therefore, a need for nurses, who are well trained and prepared, arises on a national as well as on an international level (4).

Referring to the conditions in the USA, four strengths of nurses, which are key to a central role in disaster preparedness and management, as well as in emergency response, can be stated (5):

(i) Nurses are team players and work effectively in interdisciplinary teams needed in disaster situations; (ii) nurses have been advocates for primary, secondary, and tertiary prevention, which means that nurses can play key roles at the forefront in disaster prevention, preparedness, response, recovery, and evaluation; (iii) nurses historically integrate the psychological, social support, and family-oriented aspects of care with psychological needs of patients/clients; and (iv) nurses are available and practicing across the spectrum of health care delivery system settings and can be mobilized rapidly if necessary.

However, approximately two out of five health care professionals would not respond during health emergencies. The nurses' intention to respond to disasters, the needs of nurses who respond to disasters and other health emergencies, and as well as the influence of the nursing shortage and the lack of education preparing nurses for disaster response are important issues which need to be approached (6).

Concerning the anticipated needs of nurses during a disaster, Giarratano, Orlando and Savage (7) report that during a disaster nurses have to live through the uncertainty of the situation and have to be prepared to adapt to the needs that arise in both patient care and self-preservation situations.

In order to prepare for emergency response, education within the field of disaster nursing is essential. Disaster nursing curricula and preparation of nursing faculty members are distinctly needed to teach disaster nursing in order to prepare nursing students for possible disaster situations adequately in future (6). Extensive work towards a comprehensive list of core competencies has been done by the WHO and ICN in their Framework of Disaster Nursing Competencies (8). Pang, Chan and Cheng (9) suggest that this framework should equip nurses with similar competencies from around the world while giving attention to local applications.

There is no comprehensive review covering all relevant fields of professional socialization: role, knowledge and experience. Recent reviews do concentrate on either the nurses' disaster preparedness, or the response of nurses working during a bioterrorism event (10). The aim of this literature review is to provide an overview of the nurses' role, knowledge and experience in national disaster preparedness and emergency response within the international scientific literature.

Methods

Search strategy

A database search was conducted during September-November 2012 using CINAHL (EB-SCO), PubMed, Cochrane Library, and CareLit. A search strategy was used utilizing the terms 'disaster' and 'nursing' as keyword searches or subject headings, where applicable. All study designs as well as expert opinions were included in the review. Inclusion criteria were the existence of a relevant abstract on the role, knowledge and experience in the field of disaster nursing. All results, independent of their publication year and country of publication, written in English or German language, were included.

Selection criteria

In total, 503 articles were identified within the databases; out of these, 71 appeared in more than one database. The abstracts of all included literature (432 references) were scanned for their relevance on the topic. Articles were excluded if they definitely lacked relevance, meaning that the topic of disaster nursing did not appear at all (242 references). As a second step, the articles, which were deemed relevant (190 references), were evaluated in-depth by the first author by initial reading and appraising the relevance in relation to the aim of the literature review. Articles were excluded if they failed to address nurses' role, knowledge or experience in national disaster preparedness and emergency response in their full text (103 references) or if they were not available for evaluation (19 references) resulting in 68 included references. A flow chart of the selection process is presented in Figure 1.

Figure 1. Flow chart of the selection process



Data analysis

As articles differed in their (study) design, no meta-analysis was possible. Therefore, synthesis of the written evidence was undertaken. Categories for analysis, which were predefined through the aim of this literature review, included: (a) roles of nurses during emergency response, (b) disaster preparedness knowledge of nurses and (c) disaster experiences of nurses. For each category, sub-themes were determined out of the different focuses of the articles on disaster nursing (11). For each article, the narratives about a particular sub-theme were extracted. The narratives were paraphrased and generalized, where possible.

Results

In total, 68 relevant sources were identified from the literature search. The majority of the studies were descriptive (40%), or expert opinions/case reports (40%). Furthermore, 15% of the studies were qualitative and correlational studies, whereas 3% were systematic reviews. The three categories, according to which the articles where analysed, represented also the most important themes: (a) roles of nurses during emergency response, (b) disaster prepared-

ness knowledge of nurses and (c) disaster experiences of nurses. Most of the articles on disaster nursing were drafted in North America. In Europe, no articles concerning disaster experiences of nurses had been published. Below, each theme is divided into paragraphs, which are equivalent to the determined sub-themes.

Roles of nurses during emergency response

The six identified sub-themes include expectations of the public and the hospital, general and special roles of nurses, assignments of medical tasks, special role during a pandemic influenza and biological terrorism, role conflicts during a disaster and willingness to respond to a disaster.

Expectations of the public and the hospital: The public expects that nurses are prepared at a personal and professional level and that they have procedures in place, which enable them to

serve in an emergency (12). Reinforcing, the public has a right to expect effective response from healthcare professional, including nurses (13). Moreover, it is anticipated from the hospitals that nurses know before a disaster what will be expected from them in such a situation, what tasks will have to be fulfilled and who is authorized to issue directives towards them and many employees in hospitals do not know what their role during a disaster will be (14). In order to develop or to optimize the field of disaster nursing nationwide, it is proposed to develop a national committee to help define the discipline, build disaster curricula, and to set disaster competencies. Furthermore, nurses need to participate in disaster preparedness planning to become familiar with their responsibilities in disaster situations (15).

General and special roles of nurses: In general, nurses will have to provide care in a very different context than in their usual practice during disasters (16,17). Further, it is imperative that nurses are able to continue working to provide care to additional patients (18). Different authors acknowledge that nurses are key players in emergency response (15,17-22). In other words, it can be determined that nurses are in a natural position to assist in a disaster (23), they are the most vital resources in dealing with disasters (24), they have been part of disaster response as long as nurses have existed, nurses will continue to be key players (20) and when nurses are not involved yet in the aspects of disaster care, the involvement should become mandatory (25). Particularly, nurses working in disaster-prone areas need to know their professional role in a disaster (26).

Not every nurse is expected to fulfil any assigned role, and special roles before, during and after a disaster are assigned to nurses with different qualifications (Table 1).

Groups of persons	Role description
	Conducting surveillance in the field
Nurses meeting surge	Dispensing mass medication or vaccination in shelters
capacity needs (20)	Staffing information hotlines in departments of health
	Admitting patients in hospitals
	Identify signs and symptoms of injuries and exposures
Nurses within hospitals	Work in a disciplined team
(20,27)	Follow clear lines of communication
	Perform according their assigned role directions and responsibilities
	Establish disaster plans
	Train responders
Number in general $(28, 20)$	Coordinate the disaster response
Nurses in general (28-30)	Provision of care for disaster victims
	Support and protect others from health hazards
	Make life-and-death decisions and decisions about prioritization
	Preserve open lines of communication
Nuncing executives (21)	Ensure the quality of patient care, provide current education
Nursing executives (31)	Influence policy and political decisions
	Provide security for staff, patients and families.
	Screening
Public health nurses (20)	Administer first aid and psychosocial support
	Implement infection control procedures and monitoring

Table 1. General and special roles of nurses

Assignments of medical tasks: During a disaster, nurses are expected to be able to fulfil the role of a medical practitioner in some ways. This role can be described as outside of the normal scope of nursing practice, their knowledge or their abilities (32). Nevertheless, it is im-

perative that nurses are trained in disaster medicine in order to be assigned to medical tasks in emergency response (30). The task of triaging patients as an assigned medical task is figured prominently in the literature (19,29,32).

Special role during a pandemic influenza and biological terrorism: The tasks during epidemic situations are contact tracing, conducting case investigations, engaging in surveillance and reporting, collecting specimens, administering immunizations and educating the community (20). Furthermore, in hospital settings, it is expected from nurses to be able to identify, manage and treat infectious outbreaks (32).

Role conflicts during a disaster and willingness to respond to a disaster: Nurses might have conflicts between their professional, their private and their community role, respectively (33). Nurses might be therefore less willing to respond to work during a disaster. Other reasons influencing the willingness to respond are low baseline knowledge, low perception of personal safety, and low perception of clinical competence (34). It is also stated that these factors will lead to a shortage of nurses to provide care during a disaster. Nurses not responding to a disaster describe having feelings of guilt towards their jobs and co-workers, recognizing the impact of their decision. On the other hand, it is also possible that nurses maintain being able to respond to disasters beyond normal working hours (33).

Disaster preparedness and knowledge of nurses

The six identified sub-themes include definition of a disaster, core competencies and curriculum, undergraduate nursing education and continuing education programs, disaster drills, training and exercises, as well as preparedness.

Definition of a disaster: It is acknowledged that nurses might perceive a disaster differently than described from official definitions and classifications such as the one of the CRED (1,2). In a study by Fung et al. (29), nurses described their perception of a disaster in a fourfold manner. Most of the nurses attributed specific characteristics to disasters. Exemplarily, these characteristics are being unpredictable, sudden, unexpected or unpreventable, being out of control and not manageable, urgent response, horrible crisis or unknown disease with no treatment available. Another way of describing a disaster is by impact, as for example: large numbers of victims, damage to the environment, adverse psychological effects, loss of family, and serious consequences. Moreover, disasters were described as demanding emergency services and care. Examples are being in need for immediate medical attention, a challenge to professional services or requiring extensive work force to cope. Only few nurses described disasters in a way a definition would do: epidemics, accidents, terrorist attacks, natural disasters, extreme weather and war.

Core competencies and curriculum: For preparedness purposes, it is very important to have core competencies for education and training as well as for the effectiveness and efficiency of response during a disaster (35). The identification of core competencies and knowledge needed to help and protect self and others during a disaster is an important first step to qualify nurses for disaster response (20,35). Weiner (36) refers to the core competencies defined by the Nursing Education Preparedness Education Coalition (NEPEC) (Table 2). When comparing knowledge and experiences underpinning these competencies with nursing practice, it can be concluded that many of them are basic to a nursing curriculum (35). Furthermore, others claim that nurses already possess the skills enabling them to respond to a disaster. These are purported to be the values of human caring, creativity, the ability to improvise, communication and management skills (20,23). On the other hand, Usher and Mayner (22) state that working in an emergency department or a similar area is (still) not good enough to meet the

required competencies to respond to a disaster. Others claim that nurses working in acute care already have specific disaster nursing core competencies (28).

Some authors annotate that the area of disaster nursing is underrepresented or lacking in undergraduate nursing curricula, nurses and nurse practitioners are not able to meet required disaster nursing competencies and that it is urgent to include content in order to enable nurses to respond in times of disasters (6,12,15,17). Nursing educators are hold accountable to preparing nurses for disasters, for example by adjusting the curricula and by meeting the increased need for education and training in disaster nursing for all groups of nurses (6,17,37).

Concerning a disaster curriculum, Lund et al. (30) propose seven modules for a comprehensive nursing curriculum to address chemical and biological warfare (Table 2). Elsewhere, such a training of specialized skills and knowledge is criticized because they are unlikely to be retained until an opportunity to use them is afforded (38). Others propose educational components that are more medically oriented (Table 2) (14,24).

Undergraduate nursing education and continuing education programs: The fields of undergraduate education and continuing education programmes for nurses are widely discussed in the literature. Because nurses have to be aware of disasters and be prepared for them, it is imperative that disaster management and nursing contents and experience are integrated into undergraduate nursing and continuing education programme curricula (15,17,22,24,35,39-41). It has to be acknowledged that all nurses, irrespective of being educated and trained or not, may be called during a disaster and therefore, all nurses must have a minimal knowledge and skills for appropriateness of their response (17,26,29,35). Education is critical to the feeling of safety and competence as well as the willingness to participate in an emergency (32,34), but it needs to be tailored according to the specific needs of the location such as capacity and expected role of nurses (16). For Australia, Usher and Mayner (22) state that the theoretical and practical preparation of disaster nursing competencies in undergraduate nursing courses are inadequate or only little is known about the inclusion and that professional development opportunities are needed.

One possibility for an adequate provision of knowledge and skills required in a disaster could be the collaboration and sharing of knowledge between nursing schools and the military medical communities as well as other trained medical professionals, for example volunteers from the Red Cross or Red Crescent and other medical response teams (17). Another effective strategy might be the dissemination of information and educational materials related to disasters (18).

It is central that nurses receive education which is specific to their actual knowledge and skills in order to not duplicate efforts or miss important content because the more advanced nurses are, concerning both experience and knowledge, the more likely they are to implement advanced disaster nursing (15,32,35).

Disaster drills, training and exercises: Drills and training play also an important role for disaster preparedness. It is concluded, that intensive training and periodical drill programs simulating hospitals' emergency plans will improve capabilities of nurses for emergency response (15,20,21,31,42,43). All nurses are recommended to participate in periodic emergency response drills and disaster training, and nursing schools should collaborate with the local EMS to give their students a disaster field experience and to expedite teamwork between first responders and first receivers, because during a disaster an enormous pool of nurses will be needed (20,21,23,25,35).

Further reasons for participating in and specific issues for disaster training are described in Table 3. Others contrarily describe specific medical tasks and conclude that these tasks should be tailored to the nurses' background knowledge and clinical experience (13,16).

With any disaster training, a broad range of topics should be covered in order to prepare nurses to function in disasters due to any hazard and settings other than their work settings (41). Goodhue et al. (21) conclude that having disaster training, besides having a specified role in the workplace disaster plan, is the most easily modifiable variable with the most impact on increasing the likelihood of response in the event of a disaster.

Preparedness: Disaster preparedness of nurses is pivotal to the ability and capacity to respond as well as the delivery of effective disaster response (6,18,24,33). There are two ways of viewing preparedness, personal preparedness and professional preparedness. Special attention is given to bioterrorism preparedness, because being especially prepared for bioterrorism and thus infectious disease emergencies, has a positive impact on patients, families and the nurses themselves, for example by preventing a secondary spread (18,45). Furthermore, bioterrorism preparedness readies nurses for other disasters, because the skills and response actions are the same and misconceptions can be prevented (46). Due to this importance, bioterrorism preparedness should be part of continuing education and nursing school curricula (18,43). Other special fields where preparedness is necessary are described in Table 4.

Description	Contents
	Protect self and others from harm
	Participate in a multidisciplinary, coordinated response
C ()	Communicate in a professional manner
Core competencies de-	Recognize disaster situations and potential for mass casualty events
fined by the Nursing	Seek additional information and resources needed to manage the event
Emergency Preparedness	Recognize your roles and limitations in disaster response efforts
Education Coalition	Cope with challenges that occur in disaster situations
(NEPEC) (36)	Define terms relative to disaster management response
	Discuss ethical issues related to mass casualty events
	Describe community health issues related to mass casualty events
	Triage
	Securing of personnel, supplies and equipment
	Recordkeening
Already existing specific	Patient transport
disaster nursing core	Decontamination
competencies of nurses	Patient management of specific illnesses and injuries
working in acute care	Patient management of special needs population
(28.41)	Figure indition
(20,41)	Development of disaster plans
	Ethics
	Response to stress reactions
	Anatomy of a disaster
	Enidemiology of disaster
Disastar aurrigulum	Disaster planning
modulos of Lund et al	Communications in disaster
(20)	Introduction to disaster medicine
(30)	Introduction to assister medicine
	The disaster response
	Introduction to biological and chemical terrorism
	Surveillance systems for bioterrorism
	Identification of agencies
	Communication
Nursing aurriculum to	Pagnonga systems
address chemical and	Response systems Biological and chemical agents of concern
biological warfare (40)	Mass immunization
biological wallate (40)	Decontamination and mass triage
	Thereavy and pharmacology
	Psychosocial effects of terrorism
	Nursing leadership during emergencies
	First old
	Prist ald Bogie life support
	A dyanged cordiovaceular life support
Madiaally aniantad adu	Infaction control
intentically offented edu-	Field triage
(14 24)	Proto unage Dre hognital troume life summert
(14,24)	A dyon and trauma me support
	Auvanceu trauma care nursing
	Post-traumatic psychological care
	Peri-trauma counselling

Table 2.	Core	competenci	ies and	disaster	curriculum	
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Description	Contents			
	Test and maintain disaster preparedness			
	Create awareness for disasters in general			
Reasons for participating in disaster training	Create awareness for physical and mental limits			
(10,13,15,18,21,24,26,27)	Increase personal safety			
	Increase confidence in disaster management			
	Minimize emotional and psychological trauma			
	Triage			
	Mass casualty management			
	(Bio-) Terrorism preparedness			
	Communications			
Specific issues for disaster training (38,43,44)	Command and control			
	Interagency cooperation			
	Waste management			
	Decontamination			
	Personal protection			
	Cardiopulmonary resuscitation			
Specific medical tasks (13,16)	Central venous catheter insertion			
	Trauma care			

Table 3. Reasons for participating and specific issues for disaster training

Table 4. Personal and professional disaster preparedness

Description	Contents
	Go-pack containing essential personal supplies
	Preparing and protecting the family
Personal preparedness (15,18-20,27,47)	Personal plan for times of disaster
	Knowing employment contract statement about
	obligation to report to duty during a disaster
	Pre-registering in a disaster registry
	Developing and knowing disaster plans
Professional proposed ness (15, 10, 26, 27, 20, 47)	Assembling emergency supplies
Professional preparedness (15,19,20,27,29,47)	Studying evacuation or shelter options
	Ongoing training and drills
	Experience in disaster nursing
Special fields of disaster propagadaess	Bioterrorism
(33,34,40)	Disasters involving special need populations
	Chemical or radiation disasters

According to Al Khalaileh et al. (15), Jordanian nurses consider themselves being weakly to moderately prepared for a disaster and think that additional training would be beneficial. The same issues are made out for Hong Kong nurses and the existence of a lack of understanding their preparedness needs with regard to disaster is concluded (24,29). Being prepared for a disaster as a nurse might maximise safe conditions, decrease vulnerability and minimise risk to individuals during a disaster (12).

Disaster experiences of nurses

The six identified sub-themes are work environment, nursing care, feelings, stressors, and willingness to respond to disasters and to treat patients as well as lessons learned and impacts.

Work environment: Nurses will experience challenging working conditions, an environment of fear and difficult infection control requirement conditions during a bioterrorist event (10). Nurses believe that during a disaster will be a chaotic clinical environment without a clear chain of command, with insufficient protective equipment and little freedom to leave (47). Manley et al. (38) assume, even if hospitals are well prepared, that during a disaster will be chaos, inadequate resources, deaths and injuries, confusion and contention over who is in command, lapses in security and breakdowns in communication. During a disaster, problems concerning organizational and social supports caused by challenges with care for children, elderly or pets during prolonged shifts and quarantine might also prevail (48).

Nursing care: Nursing care during a disaster is a special type of care because of the exceptional situation and the change of routine. During a disaster, care is provided by an interdependent team of nurses, clinicians and EMS professionals, each playing unique roles (41). Thus, nurses especially feel as advocates for their patients, especially those who are frightened or most vulnerable, and their merits of caring and unity are the most appreciated aspects of their rescue experience, reinforced through communal sprit with their colleagues and the feeling of being rewarded by the victims (7,27). Nurses are confronted with conflicts and ethical issues when working during a disaster. Because of increased staff requirement and the allocation of resources nurses come into conflict with the delivery of dependent care (27,48). Other challenges for nurses are the identification of unfamiliar infectious agents, long working hours, limited supplies, unfamiliar environments, provision of care to infected patients, or fear of infection (10). Chaffee (49) concludes that tasks like triage, quarantine and mandatory administration of medication might be ethically challenging during a disaster. If uncertainty of the conditions worsens, nurses might experience discouragement and fear (7).

Feelings: On the one hand, nurses feel guilty when taking leave, are concerned about causing pain and distress to their patients, are overwhelmed by the scale of the tragedy, feel disgusted or distressed at the nature of the injuries and the scale of the suffering or felt apprehensive about being able to cope. On the other hand, nurses also feel excited and challenged by what they have to do, or feel to be valued as much-needed colleague (50). Anger towards people in authority, because of the expectation to fulfil the duty to care, is another feeling described by nurses (7). Fear, anxiety, stress and confusion are perceived to be felt in the event of bioterrorism. Fears might arouse in consequence of the possibility of acquiring a lethal disease from exposure to an infectious agent, transmitting an infectious agent to other patients or the family, lack of knowledge about disease agents, isolation procedures, and access to content resources (47). Other feelings might be uncertainty, hopelessness, or abandonment related to the issue of chaos in general and evacuation in special (7).

Stressors: There is a widespread assumption that nurses "by virtue of their training and personality traits are relatively impervious to the effects of distressing experiences", such as disasters (50). Newer studies disqualify this assumption, because for example, the work of nurses can be compromised when a lack of adequate rest, poor nutrition, erratic eating patterns and insufficient fluid intake prevails (26). Other stressors might be information and work overload, crisis, confusion, uncertainty, chaos, disruption of services, casualties, or distractions with crowds and media, decline of infrastructure, limited medical supplies and loss of electricity and potable water (7,25,31,47,48). Moreover, poor knowledge and working skills, combined with a heavy workload and lack of equipment, leads to emotional distress during a disaster (25). A disaster can also lead to personal trauma because of the experienced loss of homes, workplaces, and close relationships as well as suffering or dying patients (7). *Willingness to respond to a disaster and to treat patients*: Main issues related to a reduced willingness to treat patients during an epidemic include having a high level of concern about

an infection and lack of medical knowledge (46). During a disaster, nurses will have the same vulnerability to property damage, injury or displacement, will have fear and concern about own and family's safety and will, therefore, have to make a decision whether to report to work or to care for oneself, one's family, or personal property (49). Other reasons for unwill-ingness to respond to a disaster are responsibilities to children or elderly, a second job, transportation issues or obligations to care for a pet (49). Goodhue et al. (21) found out in their study that less than one third of paediatric nurse practitioners would definitely respond during a disaster. One result of the study of O'Boyle et al. (47) is that many nurses would leave hospitals or would not report for work when a bio-terroristic event occurred. Not all nurses will be willing to respond to chemical, biological or radiological disasters, because of personal risk and not all nurses will be able to respond because of the unavailability of personal protective equipment (33).

In order to raise the willingness to respond to a disaster, nurses need to be educated on what the hospital expects from them and what the implications of certain choices of not responding to work will be (49). Other factors might be: knowing that family members are safe and provided for, having a home disaster plan, having disaster training, having an assigned role in the workplace disaster plan and prior disaster experience (21).

Lessons learned and consequences: Based on experience, often lessons learned and consequences for the future are stated. Ammartyothin et al. (42) conclude that medical personnel, such as volunteers, should be incorporated into the organic medical staff during a disaster as well as that communication systems are important for disaster management and have to withstand the actual event and the unavoidable. As a health institution, it is important to find out about the nurses' determinants of reporting for work when a disaster strikes in order to be better prepared (46). During a disaster, it is imperative, that food, water and a place to sleep or a quiet area are available for continued functioning of nurses. In order to ensure an effective response, nurses need to build functional partnerships with physicians, to support one another and to express a sense of responsibility and empathy for colleagues and patients (7,25,39). For future disaster responses, the performance of nurses during a disaster needs to be evaluated and the most frequently used skills need to be identified for further training (13).

Discussion

Concerning the general role of nurses in disasters, different attributions are observed. On the one hand, there is international consensus that nurses are key players in emergency response is somehow contemporary. On the other hand, it does not seem finally clear which expectations are cherished towards nurses. Is it only the continuation of the provision of care in different circumstances or is the assumption of medical tasks, in fact? Of course, not every nurse needs to be able to fulfil every role, but medical tasks during a disaster might be mandatory to undertake. It does not become finally clear from the literature review which medical tasks most certainly are needed in general and particularly for specific disasters. Moreover, heterogeneity about the field of application of nurses exists in the literature. In some it is described, that nurses will work on-site of the disaster area in others nurses will be deployed in their own hospital or in a hospital in the proximity of the disaster area and yet in others nurses will work in the community. These heterogeneities surely are due to the different healthcare systems and professional qualifications in the different countries, a diversity that is remains unanswered in this review. However, it seems convincing that preparedness for a disaster as well as an effective response are expectations of the public towards nurses in all countries. Special attention is given to the roles of nurses before and during a pandemic influenza and biological terrorism. Nurses have a share in the identification, management and treatment of

infectious outbreaks. Again, the specific tasks during such an event are dependent on the professional education of the nurses.

The professional roles during a disaster might be in conflict with the personal duties in the family and in the community. Such conflicts can undermine supply of work force during a disaster immensely.

The definition of disaster is perceived differently by nurses than from the officially used definitions. Officially used definitions mainly focus on the cause of a disaster. Thereby, the passage between a mass casualty event and a disaster is fluent. For nurses, a disaster is mainly considered through the impact it has for their daily work, the persons who they care for and their own life. Thus, the unpredictability and suddenness as well as the number of victims, their injuries and clinical picture play a greater role in the perceptions of nurses. Furthermore, terrorism does not explicitly appear in the disaster classification of the CRED; yet, nurses do think that terrorism might be a threat for their country (2).

In order to be prepared for a disaster, it is important to define core competencies applicable to the different professional qualifications of nurses. A comprehensive list might be the WHO and ICN in their Framework of Disaster Nursing Competencies (8). This supranational framework has to be broken down into national core competencies for nurses and a list of competencies for undergraduate and continuous nursing education, at the end, because it may very well be the case that some knowledge and skills acquired through basic nursing curricula already equip nurses for disaster response. On the other hand, some disaster nursing competencies might be highly specialized, and thus uncommon in practise as well as unlikely to be retained. Thereby, a careful choice between specialization and generalization of skills and knowledge for undergraduate and continuous nursing education should be made.

Both, undergraduate education and continuing education programmes have to raise awareness and preparedness for a disaster adequately. By tailoring education to the local needs, such as the likelihood of specific disasters or existing disaster plans, and the needs of the nurses, such as the requirements for general disaster management knowledge or specialized medical skills, all nurses should be able to respond to a disaster appropriately. It remains unclear which strategy for the education of nurses in disaster management is the most effective. The collaboration with medical communities and other medical response teams, as well as the dissemination of information materials on the topic seem to be promising, not only for education but also for drills and training. Emergency response drills and disaster training are important elements of individually and professionally preparing nurses for disaster and evaluating existing disaster plans. Again, emergency response drills and disaster training need to be tailored according to the local needs and the needs of the nurses, leading to an improvement of the nurses' willingness to respond to a disaster and the response as such.

Being prepared for a disaster as a nurse means being personally and professionally prepared. Nurses are considered to be personally prepared, when they are able to protect their family as well as when they know their obligation to report to duty during a disaster and have all their essential personal supplies standing by. Professional preparedness of nurses means the registration in a relevant disaster registry, knowing the disaster plans and being trained. Furthermore, special preparedness is needed for nurses' working areas with special needs populations and specific disaster types.

The work environment of a nurse during a disaster will likely be challenging and chaotic. Nurses need to know beforehand what they might expect; therefore, preparing them through education and training is essential. Furthermore, a need for a good disaster plan, where chains of command and effective alternatives in communication are described, arises considering the high possibility of an adverse work environment. For nurses, it has to be clear, that care dur-

ing a disaster differs from the routine work. Interdependence in a team will become even more important as well as advocacy for patients, the allocation of resources and ethically challenging decisions (for example, during triage).

During a disaster, negative feelings, such as guiltiness, disgust, anger or fear, are dominant in descriptions of nurses' experiences, besides positive feelings of excitement or being challenged. No information is given on the impacts of those feelings on working capacity and mental health. Nurses also experience specific stressors during a disaster, likely leading to emotional distress and possibly to personal trauma. These stressors can either have a personal character, such as uncertainty about the safety of the family or themselves, an organizational character, such as being cut-off from support sources, and an occupational character, such as hazards, lack of equipment or high workload.

The willingness to respond to a disaster is dependent on the level of concern, responsibilities and the medical knowledge of nurses. Concern may exist for example due to property damage or own and family's safety, responsibilities may be towards children, elderly or another employer. It is important that nurses are educated and trained on the expectations of the hospitals and that they have their own disaster plan.

Disaster experiences importantly should lead to impacts for the future, the so-called lessons learned. Often, these lessons learned refer to optimizing communication systems, nurses' determinants of reporting for work, controlling the hospital environment during a disaster and the knowledge and skills of nurses. Nurses themselves will acquire experience, and might rethink their commitment to nursing. In summary, it can be stated that, after a disaster is, with all probability, before a disaster and it is therefore inevitable to prepare anew.

Conclusions and implications

It seems self-evident that nurses are key players in emergency response. In order to prepare nurses for disasters, clear roles should be defined according to the professional education of the nurses, which should be communicated beforehand. These roles of nurses during a disaster should be realistic in relation to their skills and practical experiences. In order to raise the availability of nurses during a disaster, roles should be adjusted to each nurses' personal duties in the family and in the community, in the best case. Roles should also be tailored according to the characteristics of the different disaster types, with special attention to pandemic influenza and biological terrorism. In order to satisfy public expectations towards nurses, national directives and concepts for disaster nursing should be developed, where nonexistent, and nurses have to be called attention to their duties. Moreover, distinctions towards roles of physicians and nurses during a disaster are needed in order to define the medical tasks of nurses clearly, which have to be trained and performed during a disaster.

Existent definitions of disasters seem not to be appropriate for the working environment of nurses. Defining disasters out of the experience of nurses could help to give a better understanding for such a sweeping event. A definition from the perspective of a nurse could be an unpredictable, sudden event that is hardly but urgently manageable with serious consequences to the population and environment demanding an extensive need for professional health services personnel.

In order to develop national disaster nursing core competencies, the Framework of Disaster Nursing Competencies from the WHO and ICN (8) should be interpreted for the needs of each professional group of nurses. National disaster nursing core competencies then should be adjusted to the demands formulated in the undergraduate nursing curricula in order to meet the national criteria. Nurses should receive education and training tailored to the local needs and their actual competencies. Collaboration with relevant national institutions and organiza-

tions is indicated for making education and training in disaster nursing more efficient, precisely if nursing educators are not knowledgeable in the field of disaster nursing.

For personal and professional preparedness and in order to raise willingness to respond, nurses need to pack their essential personal supplies standing by for emergencies, need to know that their families are protected and need to be registered in a disaster registry as well as know their relevant disaster plan. A personal disaster plan will help to arrange personal matters when responding to a disaster.

In order to counteract the high possibility of challenging and chaotic working conditions during a disaster, nurses need to be prepared for many situations and hospitals need to develop or improve their disaster plans. It has to become a given for every nurse, that nursing care during a disaster will change from its routine way, including all consequences, such as the allocation of resources.

Not much is known about the feelings of nurses responding to a disaster and their resistance to stressors. In order to be able raise the willingness to work in a disaster, it is imperative that possible distressing situations during a disaster are identified and reduced, and nurses become prepared for coping. It is central to learn from a disaster experience and to prepare anew. Not only will the optimizing of processes during a disaster written down in a disaster plan have to be evaluated, but the performance of the nurses who were on duty and the reasons of the nonperformance of the nurses who were not able or not willing to respond to the disaster, as well. An overview of the implications and the relevance to nursing practice, nursing education and research is presented in Table 5.

Table 5. Relevance to nursing practice, nursing education and research

Relevance to nursing practice:

All nurses, regardless of their professionalization, need to receive disaster preparedness education in their undergraduate and continuous nursing education, in order to have a great pool of nurses during a disaster.

All nurses should periodically take part in emergency response drills and disaster training in order to be prepared for disasters.

For being prepared for a disaster and willing to respond, nurses need to be personally and professionally prepared. A personal disaster plan will help to arrange personal matters.

Hospitals need to have a disaster plan, wherein chains of commands, alternative communications and task descriptions for groups of nurses during disasters are described.

During a disaster, the routine way of nursing care changes and nurses need to be prepared to make ethically challenging decisions.

Relevance to nursing education and research:

Nursing educators should prepare nurses for disasters, by adjusting the curricula and by meeting the increased need for education and training in disaster nursing for all groups of nurses.

Nursing research should find definitions of disasters appropriate for the working environment of nurses. Research should be done in order to review the appropriateness of theoretical and practical preparation of disaster nursing competencies in undergraduate nursing courses and continuing education programmes.

Disaster preparedness of nurses needs to be evaluated regularly in order to maximise safe conditions, decrease vulnerability and minimise risk to individuals during a disaster.

Distressing situations for nurses during a disaster should be identified and reduced, nurses should be prepared by equipping them with possible coping strategies through education and post-disaster psychosocial care should be ensured.

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ORIGINAL RESEARCH

Socio-demographic inequalities in satisfaction with primary health care and utilization of chosen doctors' services: a cross-sectional study

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Abstract

Aim: The aim of the study was to examine socio-demographic inequalities in user satisfaction with PHC and utilization of chosen doctors' services.

Methods: This cross-sectional study was conducted in 2016 among 232 respondents who participated in PHC user satisfaction survey in PHC center Valjevo, Serbia. Inclusion criteria were an age of at least 20 years, sufficient skills of Serbian language to fill in questionnaires and consent to participation. Two hundreds and six patients completed an anonymous questionnaire about the user satisfaction with PHC.

Results: The chosen doctor was seven times more often visited by the elderly (OR=7.03) and almost three times more often by the middle-aged (OR=2.66) compared to the youngest category of respondents. Those with low education and poor financial status of the household visited a doctor four (OR=4.14) and almost nine times (OR=8.66) more often, respectively, compared to those with high education and good socioeconomic status. A statistically significant higher level of PHC satisfaction was recorded in the rural population (p<0.001) and among respondents with poor socioeconomic status of the household (p=0.014).

Conclusion: The chosen doctor was more frequently visited by respondents with low education and those with poor socioeconomic status of the household, while a higher degree of satisfaction with PHC was recorded in the rural population as well as in those with poor socioeconomic status of the household.

Keywords: cross-sectional study, inequalities, primary health care, Serbia, service utilization, user satisfaction.

Conflicts of interest: None declared.



Introduction

Health inequalities are "systematic differences in health or distribution of health resources between different population groups" and mainly produced by different socio-demographic determinants such as education, material status, employment, gender, type of settlement, age and ethnicity (1). Sociodemographic inequalities in health pose a major challenge for health policy makers in a country because they are unfair, unjust and avoidable. They are also a persistent and widespread public health problem, both in the countries of the European region and worldwide (2,3). Serbia is no exception in this respect, as the presence of health inequalities between different population groups (4), as well as in the domicile population has been documented (5-7).

Primary health care (PHC) represents the first contact and entry into a country's health system and most health problems that occur in the population have been addressed at the PHC level (8). A good PHC system in a country ensures a more equitable distribution of health services and better health outcomes for the entire population (9) and this can be to some extent done by continuous testing and analysis of user satisfaction as a valid and comprehensive indicator of quality in health care (10,11).

Satisfaction with PHC is the users' response to provided primary care services and also implies users' attitude towards the doctor, other healthcare personnel, and health care system in general (12-14). It is natural for different persons to have different perceptions and experiences regarding provided health services, relationship with physicians and other healthcare personnel, availability of health care and other quality indicators (14). Data from 2013 Serbian health survey (15) showed that 53.8% of citizens were satisfied with public health services. The less educated, the poorest, as well as the residents of rural settlements were the most satisfied with the provided health care services.

Speaking about utilization of health care it refers to obtain the necessary services from the health service in the form of contact. More illustratively, it is the point where patients' needs meet the health care system and are satisfied (16). One measure of PHC use is the average number of visits to chosen physician per capita per year. According to the latest health survey of the Serbian population (15), approximately two thirds of the population aged 14 years and older (65.5%) visited the chosen doctor or pediatrician in 2013. Each adult visited its chosen physician 4.8 times in average (17). Despite the fact that Serbia has a comprehensive universal health care system with free access to primary care services, inequalities in the utilization of health care services are present (6,15). Men and women belonging to the poor and men with lower education were less likely to visit general practitioners (GPs), regardless of their health status (6). The aim of the study is to examine the influence of demographic (gender, age, type of settlement) and socioeconomic determinants of health (education, socioeconomic status of the household) on the users' satisfaction with PHC and the utilization of chosen doctors' services.

Methods

Study population and setting

The cross-sectional study was conducted in the Primary Health Care Center Valjevo, Serbia. A total of 232 patients were enrolled during a 6-week period in June and July 2016. The sample size was calculated based on the number of total and first visits in the previous year. Assuming a standard error of 2%, the minimum sample size was 180 patients. To allow for no respondents at least 200 patients were enrolled. To diminish selection bias, patients were selected consecutively from the medical charts of patients waiting to be seen. Inclusion criteria were an age of at least 20 years, sufficient skills of Serbian language to fill in questionnaires and consent to participation. We excluded patients coming to the practice only for picking up a prescription, who did not aim to see the physician, or who needed immediate emergency care. All eligible consecutive patients visiting the Primary Health Care Center Valjevo and its branches in Brankovina and Gola Glava were informed about the purpose of the study and invited to participate. Written informed consent was obtained from all participants prior to beginning the testing. The study was approved by the Ethical Board of Primary Health Care Center Valjevo, Serbia (number of approval: DZ-01-1656/1, date of approval 8 June 2016).

Research instrument

The user satisfaction with the primary health care (PHC) was examined according to the professionalmethodological manual from the Institute of Public Health of Serbia (IPHS) "Dr. Milan Jovanovic Batut" (18). A modified anonymous questionnaire about the user satisfaction of the work of the general medicine department was used. The validity and reliability of the questionnaire was tested during the prior study conducted in Valjevo (19). The original questionnaire was slightly shortened in order to achieve higher consistency, to avoid asking similar questions, and with the goal of an easier, faster and more effective



filling out of the questionnaire by the respondents. The original questionnaire about user satisfaction was constructed based on the questionnaire recommended by WHO for the evaluation of the use, availability, coordination and comprehensiveness of the health care. At the consensus workshop in 2009, the IPHS questionnaire was adapted for chosen doctors in Serbia (13). The users of Valjevo Primary Health Care Center services, as well as the ambulance services in Brankovina and Gola Glava, were given anonymous questionnaires upon completing their visit to the chosen doctor. The respondents were filling them out on their own, consulting with the interviewers only about the questions they were not sure about. Upon completion of the questionnaires, they were put in the sealed boxes, so the total anonymity was guaranteed.

Variables

The demographic determinants used in this study were: age, sex (male and female), and type of settlement (urban and rural). The age was categorized into three age groups: 20 to 39, 40 to 64, and 65+ years. The socio-economic characteristics were the level of education and self-assessed socioeconomic status of the household. Education was defined as low, middle and high, while self-assessed socioeconomic status as poor, average and good. The outcome variables selected in the present study were the number of visits to a chosen doctor per year and the customer satisfaction with the primary health care. The number of visits was dichotomized into two categories: up to 5 visits to the doctor per year and 5 or more visits in the same period. For items "Skipped check-ups due to financial constraints" and "Wait too long for check-up" two answers were offered: yes or no. To examine patient satisfaction with the nurses and doctors in PHC we were interested to know how they felt about the following statements: "Nurses at the counter are kind". "Nurses at the interventions are kind", "Nurses offer all information", "Doctor is familiar with the previous diseases", "Doctor takes enough time for conversation", and "Doctor gives clear explanations about the diseases and the medicines" (the offered answers were: yes, partly and no). The general assessment of customer satisfaction with the primary health care was grouped into three categories: satisfied, partly satisfied and unsatisfied.

Statistical analysis

The data was analyzed using the methods of descriptive statistics, as well as bivariate and multivariate linear and logistical regression analysis.

To find statistically significant differences between socio-demographic (sex, age, type of settlement, level of education and self-assessed socioeconomic status of the household) and outcome variables, the chi-squared test was used. Bivariate and multivariate logistic regression analyses were performed to estimate the association between the use of chosen doctors' services and socio-demographic variables. To assess the association between user satisfaction with the primary health care and socio-demographic variables, methods of bivariate and multivariate linear regression analyses were used. The results of logistic regression analyses were reported with odds ratios (ORs) and 95% CIs, and with unstandardized regression coefficients (B) and probability in linear models. Statistical significance was set at 2-sided p<0.05. All statistical analyses were performed using the statistical IBM package SPSS V.20.0 (SPSS Inc., Chicago, Illinois, USA).

Results

Of the 232 enrolled primary care patients, 206 completed the questionnaire, yielding a response rate of 88.8%. Out of 206 patients, 135 (65.5%) patients were from the urban area and 71 (34.5%) from the rural area. Most of the patients were woman (54.9%). The mean age of the patients was 54.5 years (SD = 17.0; age range 20 to 86 years). 26 patients (most of them from the youngest age group and from the urban area) refused to participate, typically because of lack of time or unwillingness to fill in the questionnaire. Distribution of socio-demographic characteristics and user satisfaction indicators with the primary health care by type of settlement is shown in Table 1. The largest percentage of respondents belonged to the middle age group (45.8%), finished middle education (51.0%) and rated their socioeconomic status as average (52.9%). Slightly over a half of patients (54.7%) visited their chosen doctor five and more times per year, and most of them did not skip their check-ups due to financial constraints (80.1%). More than one-third of patients (37.4%) were not satisfied with the kindness of the nurses at the counter, 14.1% considered that the doctor was not familiar with their previous diseases, and 17.0% stated that the doctor did not take enough time for conversation with the patient. More than half of the respondents (55.1%) were satisfied with the primary health care, while approximately every eighth respondent was unsatisfied (12.7%). Concerning type of settlement, people residing in rural area were older (45%), with low education (52.2%), and with an average socioeconomic status (53.5%), whilst urban



respondents were mainly with middle educational attainment (56.3%). Around two-thirds (66.2%) of the respondents from the rural area visited their chosen doctor five or more times per year, compared to 48.5% of those in the urban area. Rural patients compared with their urban counterparts had lower level of "waiting too long for check-up", and higher levels of "nurses at the counter and at the interventions are

kind", "information provided by nurses", "doctors being familiar with the previous diseases", "doctor taking enough time for conversation" and "doctor providing clear explanations about the diseases and the medicines". A general satisfaction with the primary health care was expressed by 78.8% patients from the rural area, and 42.2% from the urban area.

V	Total (206)		Urban (135)		Rural (71)		D
variables	Ν	%	Ν	%	Ν	%	P*
Age categories							0.005
20 - 39	46	22.0	37	27.4	9	12.7	
40 - 64	94	45.8	64	47.4	30	42.3	
65+	66	32.2	34	25.2	32	45.0	
Sex							0.756
Male	93	45.1	62	45.9	31	43.7	
Female	113	54.9	73	54.1	40	56.3	
Education							< 0.001
High	33	16.0	28	20.7	5	7.0	
Middle	105	51.0	76	56.3	29	40.8	
Low	68	33.0	31	23.0	37	52.2	
Socioeconomic status of the household							0.988
Good	70	34.0	46	34.1	24	33.8	
Average	109	52.9	71	52.6	38	53.5	
Poor	27	13.1	18	13.3	9	12.7	
Number of visits to a chosen doctor per year							0.016
< 5	92	45.3	68	51.5	24	33.8	
\geq 5	111	54.7	64	48.5	47	66.2	
Skinned sheets une due to financial constraints							0.313
Skipped check-ups due to infancial constraints							
ies No	41	19.9	31	23.0	10	14.1	
100	165	80.1	104	77.0	61	85.9	
Wait too long for check-up							< 0.001
Yes	110	53.4	85	63.0	25	35.2	
No	96	46.6	50	37.0	46	64.8	
Nurses at the counter are kind							< 0.001
Yes	83	40.3	50	37.0	51	71.9	
Partly	46	22.3	30	22.2	16	22.5	
No	77	37.4	55	40.8	4	5.6	
Nurses at the interventions are kind							< 0.001
Yes	92	44.9	55	41.0	54	76.1	
Partly	58	28.3	44	32.9	14	19.7	

Table 1. Distribution of socio-demographic characteristics and user satisfaction indicators with primary health care by type of settlement

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No	55	26.8	35	26.1	3	4.2	
Nurses offer all information							< 0.001
Yes	84	41.0	49	36.6	49	69.0	
Partly	55	26.8	40	29.9	15	21.1	
No	66	32.2	45	33.6	7	9.9	
Doctor is familiar with the previous diseases							0.028
Yes	125	60.7	73	54.1	52	73.2	
Partly	52	25.2	40	29.6	12	16.9	
No	29	14.1	22	16.3	7	9.9	
Doctor takes enough time for conversation							< 0.001
Yes	102	49.5	52	38.5	50	70.4	
Partly	69	33.5	53	39.3	16	22.6	
No	35	17.0	30	22.2	5	7.0	
Doctor gives clear explanations about the							< 0.001
diseases and the medicines							
Yes	109	52.9	58	43.0	51	71.8	
Partly	60	29.1	47	34.8	13	18.3	
No	37	18.0	30	22.2	7	9.9	
Customer satisfaction with the primary health							< 0.001
care							
Satisfied	113	55.1	57	42.2	56	78.8	
Partly satisfied	66	32.2	55	40.8	12	16.9	
Unsatisfied	26	12.7	23	17.0	3	4.2	

* χ^2 test.

The distribution of user satisfaction with the primary health care and visits to the chosen doctor per year by socio-demographic variables is shown in Table 2. The oldest users were the most satisfied ones (65.2%), compared to the middle-aged (57.5%) and the youngest (34.1%). In the rural type of settlement, patients were more satisfied (78.8%) compared to those from the urban area (42.2%). There were no

statistically significant differences in user satisfaction according to education and socioeconomic status of respondents. Regarding visits to the chosen doctor, respondents with low education (83.2%), the poorest (88.5%), the elderly (78.5%) and those from the rural area (66.2%) visited their doctor more frequently, that is five and more times in the year preceding the survey.



]	Level of satis	sfaction		Number of visits to the chosen doctor (per year)			
Variables	Unsatisfied	Partly satisfied	Satisfied	P*	< 5	≥5	Р*	
	N (%)	N (%)	N (%)		N (%)	N (%)		
Age categories								
20-39	7 (14.9)	24 (51.1)	16 (34.1)	0.015	36 (78.3)	10 (21.7)	<0.001	
40 - 64	10 (10.7)	30 (31.9)	54 (57.5)	0.015	43 (46.2)	50 (53.8)	<0.001	
65+	9 (13.6)	14 (21.2)	43 (65.2)		14 (21.5)	51 (78.5)		
Sex			•					
Male	15 (16.2)	31 (33.3)	47 (50.6)	0.323	45 (48.9)	47 (51.1)	0.349	
Female	11 (9.6)	36 (32.5)	66 (57.9)		48 (42.9)	64 (57.1)		
Type of settlement								
Urban	23 (17.0)	55 (40.8)	57 (42.2)	< 0.001	69 (51.9)	64 (48.1)	0.016	
Rural	3 (4.2)	12 (16.9)	56 (78.8)		24 (33.8)	47 (66.2)		
Education								
High	5 (15.2)	11 (33.3)	17 (51.6)	0.210	22 (66.7)	11 (33.3)	<0.001	
Middle	11 (10.4)	42 (39.6)	53 (50.0)	0.218	60 (58.3)	43 (41.7)	<0.001	
Low	10 (14.7)	15 (22.1)	43 (63.3)		11 (16.2)	57 (83.2)		
Socioeconomic status								
of the household								
Good	6 (8.4)	19 (26.8)	46 (64.8)	0.175	46 (64.8)	25 (35.2)	< 0.001	
Average	16 (14.7)	37 (33.9)	56 (51.4)		44 (41.1)	63 (58.9)		
Poor	4 (14.80)	12 (44.4)	11 (40.70)		3 (11.5)	23 (88.5)		

Table 2. Distribution of user satisfaction with primary health care and visits to the chosen doctor per year by socio-demographic variables

* χ^2 test.

The results of the bivariate and multivariate logistical regression analyses related to the correlation between socio-demographic variables and visits to the chosen doctor per year are shown in Table 3. The oldest respondents visited their doctor seven times more (OR = 7.03), while those in the age group between 40 and 64 years did it about three times more (OR = 2.66) than The results of the bivariate and multivariate linear regression analyses related to the correlation between user satisfaction with primary health care and socio-demographic characteristics are presented in Table 4.

the youngest ones. The respondents with a low education had four times more visits to the doctor per year (OR = 4.14) compared to those with high education, while patients with poor self-assessed socioeconomic status of the household used their doctors' services almost nine times more (OR = 8.66) than those with a good socioeconomic status.

The respondents from the rural area were more satisfied with primary health care (p<0.001), as well as those with the poor socioeconomic status of the household (p=0.014).



Table 3. Odds-Ratios (ORs) and 95% Confidence Intervals (CIs) for the number of visits to the chosen doctor per year by socio-demographic characteristics

Variables	N 0/		OR (95% CI)			
variables	IN	70	BLR	MLR		
Age categories						
20 - 39	45	22.2	1.00	1.00		
40 - 64	93	45.8	4.07 (1.81-9.17)	2.66 (1.11-6.36)		
65+	65	32.0	12.75 (5.09-31.95)	7.03 (2.56-19.34)		
Sex						
Male	92	45.3	1.00	1.00		
Female	111	54.7	1.30 (0.75-2.27)	1.33 (0.68-2.59)		
Type of settlement						
Urban	132	65.0	1.00	1.00		
Rural	71	35.0	2.08 (1.14-3.79)	1.27 (0.61-2.66)		
Education						
High	33	16.3	1.00	1.00		
Middle	102	50.2	1.46 (0.64-3.32)	1.22 (0.48-3.07)		
Low	68	33.5	10.36 (3.93-27.33)	4.14 (1.36-12.61)		
Socioeconomic status of the household						
Good	70	245	1.00	1.00		
Average	/0	54.5 52.7	1.00	1.00		
Poor	107	52.7	2.58 (1.38-4.80)	2.27 (1.10-4.67)		
	26	12.8	13.80 (3.77-50.57)	8.66 (2.06-36.37)		

BLR – bivariate logistic regression; MLR – multivariate logistic regression; Referent category – number of visits to the chosen doctor (up to 5 per year).

Table 4. The relationship between the level of user satisfaction with primary health care and sociodemographic characteristics – results of linear regression analyses

	Bivariate	Multivariate
Variables -	B *(P)	B *(P)
	D (1)	D (1)
Age	0.150 (0.025)	0.107 (0.111)
Sex	0.143 (0.150)	0.146 (0.114)
Type of settlement	0.495 (<0.001)	0.458 (<0.001)
Education	0.065 (0.368)	-0.011 (0.889)
Socioeconomic status of the household	-0.169 (0.025)	-0.185 (0.014)

*Unstandardized regression coefficient

Referent category - unsatisfied with primary health care.



Discussion

Socio-demographic inequalities in the utilization of chosen doctors' services

Our results showed significant inequalities in the utilization of chosen doctors' services. Respondents aged 65 and over visited their doctor seven times, while middle-aged patients (40-64 years) did it three times more frequently than the youngest (20-39 years), which may be explained by the increased needs of the elderly for health services within the natural process of aging and its biological manifestations. More frequent visits to GPs by older patients have been linked to their rather poor health, as shown by a systematic review of European studies from UK, Sweden, Germany, Denmark, Italy, and Slovenia (20). The authors concluded that the main reason that older people are more likely to use PHC services is their real need for medical treatment.

Respondents with a low level of education in this study were four times more likely to visit their physician than those with university degree, which is in line with the results of the 2013 Serbian Health Survey (15) showing that 71.9% people (aged 14 years and more) with the lowest educational attainment visited a GP general practitioner or pediatrician in the year preceding the survey. Our finding is also in accordance with the studies conducted in Sweden (21) and Denmark (22) which showed a significant negative correlation between the level of education and the number of visits to the GP, indicating that a higher level of education was associated with fewer visits to PHC. Research by Chinese authors (23) showed that lower level of education as well as poorer socioeconomic status also implied lower health literacy rate, which might explain the more frequent visits of this population to the chosen doctor. Namely, due to low health literacy, the population does not distinguish serious from ordinary health problems, and minor health problems are often the reason why they go to the doctor. Conversely, more educated respondents have more capacity (cognitive, communicative), they are better informed and make more effective decisions for their health, reflecting their high health literacy rate (24). Accordingly, they visit a doctor less frequently. The poor, and thus the low-educated, in Serbia had a significantly higher prevalence of chronic diseases than the rich (7). This implies their greater health care needs, and might explain the more frequent utilization of the chosen doctors' services in our study.

The results of this study also showed that people with poor financial status of the household visited their doctor almost nine times more per year (OR = 8.66)

compared to better-off. This result is in contrast to the 2006 Serbian health survey and study by Janković et al. (7), according to which GPs were less frequently visited by poor people and those with lower educational attainment (7,25), but in agreement with the last national health survey conducted in 2013, in which the least educated and the poorest population had the highest percentage of visits to the GP(15). The use of GPs services in Bosnia and Herzegovina was much lower for the uninsured, who are most often unemployed and most likely to be poorer, than for the insured (26). Also, in Montenegro, access to PHC health services is lower for people with lower household incomes and mainly for Roma population (27). The prevalence of chronic diseases is higher among the poor population in Serbia and they also have a high risk of infectious diseases, lower life expectancy at birth, high prevalence of smoking, alcohol and drugs, as well as a higher incidence of mental health problems (5,28). More health problems imply greater need for health care, which is the reason why the poor in our study used more frequently the services of their chosen doctor. This practice is in line with the Health Insurance Law that made PHC more accessible to certain groups in the Republic of Serbia (29), that is, socially disadvantaged groups are exempted from paying official out-of-pocket payments (30). In this way, PHC has become more economically accessible to them, which is confirmed by the greater number of their visits to the chosen physician.

Socio-demographic inequalities in user satisfaction with PHC

The results of our study regarding the association of socio-demographic variables with user satisfaction showed a significantly higher degree of satisfaction with PHC in rural areas (p<0.001) and among respondents who self-assessed their socioeconomic status as poor (p=0.014).

Regarding type of settlement our findings are in accordance with 2013 Serbian Health Survey (15) where the most satisfied people with state health services were those from rural areas.

Higher satisfaction with the PHC as a whole among respondents who live in rural area could be explained by their better scoring in the items (indicators) of partial satisfaction (such as waiting time and doctorpatient interaction), but also by their lower health expectations related to the fact that the population with a low level of education and, consequently, poorer health literacy lives in the rural area. Often, these individuals do not recognize or minimize their health



problems because they are not sufficiently aware of their own health needs. Also, there is a lack of knowledge about patients' rights, as well as obligations in the health care system (31). For this reason, they are satisfied with basic health services such as medical check-up and/or prescribing medicines while preventive services such as influenza vaccination or screening for early detection of colon cancer made them more than satisfied. If we take into account that there are exempt from official payments on the basis of legal regulations (29), their satisfaction becomes easy to explain, even rational. A study of user satisfaction conducted in Croatia (10) showed results opposite to ours, that is, respondents in rural settlements were less satisfied with PHC compared to those in urban and suburban settlements. The reasons for this were non-respect of working hours by healthcare professionals and dissatisfaction with the manner in which patients' confidential information was stored. A cross-sectional study from Germany (32) also showed that respondents from rural areas were less satisfied with PHC and the reason was lower accessibility of PHC to them.

The higher level of satisfaction with the PHC among people with poor socioeconomic status of the household, recorded in our paper, was also found in a study conducted in Spain (33). A possible explanation might be high expectations of wealthier users, whose unmet health needs lead to dissatisfaction. On contrary, the results of the study by Vojvodić et al. (34) showed that people with estimated good socioeconomic status were significantly more satisfied with PHC (84.9%), and this is probably due to their

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general satisfaction with socio-economic status and life.

Study limitations

This research has some limitations. A methodological weakness of this study is a relatively small sample size which made the study results difficult to generalize for all outpatient service consumers. Also, some study participants were not willing to respond. Age, gender and socioeconomic differences of eligible patients refusing participation were not documented consistently and we have not all data for few nonrespondents. Yet, given the low non-response-rate of about 11%, it is very unlikely that study participants are a strongly biased sample. Also, the cross-sectional study design does not allow us to establish causal relationships among variables. We measured users' utilization of chosen doctors' services and satisfaction with PHC during a single visit, and so were unable to examine outcomes longitudinally. One of the limitations is patient subjectivity in response ,which is not avoidable and is present in all similar studies.

Conclusion

Taking into consideration all limitations, this study showed the presence of inequalities in the utilization of chosen doctors' services as well as in the satisfaction with PHC. The chosen doctor was more frequently visited by respondents with low education and those with poor socioeconomic status of the household, while a higher degree of satisfaction with PHC was recorded in the rural population as well as in those with poor socioeconomic status of the household. More research on larger samples is needed.

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ORIGINAL RESEARCH

National disaster preparedness and emergency response of nurses in Germany: An exploratory qualitative study

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Abstract

Aim: This study aimed to explore the German nurses' perceptions of their knowledge, roles and experience in the field of national preparedness and emergency response.

Methods: An exploratory qualitative design was used with open-ended questions during semistructured interviews with qualified nurses currently working in hospitals. The setting of the study consisted of wards of different hospitals in three northern federal states of Germany. The data analysis was done by summarizing analysis of the contents. From a convenient sample of n=31hospitals, n=13 nurses were included in the study.

Results: The median age of the participants was 45 years and 38% were female. Within the three professional socialization fields, knowledge, roles and experience, 17 themes were clustered.

Conclusion: Within the themes of knowledge, role and experience in national disaster preparedness and emergency response, similarities and differences were explored in comparison to international literature.

Keywords: disaster management, disaster planning, disasters, emergencies, emergency preparedness, experience, knowledge, nurses, qualitative research, roles.

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Conflict of interest: None declared



Introduction

Disasters have always been a challenge and disasters are to happen all over the world, including Europe and Germany. In the future, disasters will be likely to happen again all over the world. The situation in Germany may serve as an example for other European countries, when reviewing European disasters in past years and comparing the preceding situation to the current health and climatic situation.

A concrete current example is the COVID-19 pandemic that lead to disasters globally, including Europe.

Nurses already play a central role in disaster preparedness and management, as well as in emergency response, in many countries all over the world (1). All nurses, regardless of their level of professionalization, need to receive disaster preparedness education in their undergraduate and continuous nursing education, in order to have a great pool of nurses during a disaster. In Germany, the law on health care explicitly mentions that the training of nurses has to qualify to be actively involved in disaster preparedness and emergency response (2).

However, involvement in disaster preparedness and emergency response is neither a particular part of the formal qualification nor the regular professional practice of nurses in Germany (3).

Care providers are considered important protagonists of disaster preparedness and emergency response (4). In the literature, an essential role is allotted to nurses for integrating communicating efforts and for having role competencies in disaster preparation (5). Nurses are able to reduce premature death, impaired quality of life, and altered health status, which can be caused by disasters (5). Health care professionals, including nurses, are feeling responsible for responding to disasters. However, nurses' intention to respond to disasters, the needs of nurses who respond to disasters and other health emergencies, as well as the influence of the nursing shortage and the lack of education preparing nurses for disaster response are scarcely known (6).

In order to prepare for emergency response, education within the field of disaster nursing is essential. In the USA, before 2001, few nurses received any formal education in the areas of emergency preparedness or disaster response, unless they served in the military, worked as pre-hospital providers, were employed in a hospital emergency department, or participated in humanitarian disaster relief work (7). Occasionally, disaster nursing education is seldom provided at the basic nursing education level (8). It has become apparent, that there is a distinct need for disaster nursing curricula and for preparation of nursing faculty members to teach disaster nursing in order to adequately prepare nursing students for possible disaster situations in future (9). According to the World Health Organization and the International Council of Nurses, nurses, as the largest group of health care practitioners, need to develop competencies in disaster response and recovery, but training is often fragmented or not available (10). In order to understand the essence of national disaster preparedness and emergency response for and of nurses as well as the meaning they give to this topic in Germany, the following research questions were formulated for providing nursing practice and nursing research with valuable information: 'How do German nurses perceive the educational system in the field of disaster nursing?', 'How do German nurses describe their role in the field of national preparedness and emer-



gency response?' as well as 'What is the experience of German nurses in the field of national preparedness and emergency response?'. Therefore, the aim of this study was to explore the knowledge, role and experience in national disaster preparedness and emergency response of German nurses.

Methods

An exploratory qualitative design was used with open-ended questions during semistructured interviews with qualified nurses currently working in hospitals.

Research design

The field of nursing care might be well described by lived experiences of nurses working in this field. In order to reach insight in these lived experiences, a careful description of ordinary conscious experience of everyday life is necessary. Based on the pre-formulated research aim, it was essential to identify preconceived beliefs and opinions to bracket out any presuppositions to confront the data in pure form (11). For not violating the induc-

tive assumption of qualitative research, theory was used to focus the inquiry and to give it boundaries for comparison in facilitating the development of the theoretical or conceptual outcomes. This means that the conceptual framework of this research was used as a template, with which results will be compared and contrasted (Figure 1) (12). The conceptual framework consists of the three relevant fields of professional socialization: knowledge, roles and experience (13). According to the conceptual framework, knowledge in disaster nursing supports necessary roles during a disaster and having roles during a disaster leads to experience. Based on a literature review, sub-topics for each field have been identified (14). Basic interpretivist research was followed, in fact to gather qualitative data and to analyse their content in a way that experiences, as well as perceived general roles, tasks and responsibilities as well as knowledge of nurses in the topic under research can be best described and interpreted.

Figure 1. Conceptual framework [based on: Grochtdreis et al. (14)]





Setting and sample

The setting of the research was different wards of hospitals in three northern federal states of Germany (Bremen, Hamburg, Lower Saxony). Based on experience, for gathering enough data for a sufficient analysis, at least twelve qualified nurses were considered to participate in the study. In order to have a comparable gender distribution between the participants and qualified nurses in general, at least two male nurses were considered to take part in the research. In Germany, approximately 14% of qualified nurses were male in the year 2010 (15) and it was anticipated that the interpretation of experience of men and women is somehow different. Eligible participants were qualified nurses currently working in the field of nursing care. Furthermore, it was anticipated to select participants with different lengths of work experiences. The participants were not selected randomly, since it was more important to select people who will make good informants. Good informants were defined as knowledgeable, articulate, reflective, and willing to talk at length with the researcher (11). The basic approach of the sampling was a convenient approach, based on a volunteer sample out of all hospitals. The volunteer sample was put together from nursing managers of cooperating hospitals. In total, a convenient sample of n=31 hospitals was asked for participation. Of those, n=4 hospitals provided access towards potential participants (n=5 hospitals were willing to participate, n=9 hospitals were unwilling to participate, n=13 hospitals did not respond). Finally, n=13 nurses were included in the study.

Data collection

In order to elicit data in the study, nurses working in hospitals were asked identical open-ended questions during an interview.

The specific questions were developed out of a literature review on nurses' roles. knowledge and experience in national disaster preparedness and emergency response (14). Based on relevant topics extracted from the literature review, a semi-structured interview guideline with open-ended questions was developed and pretested (11,16,17). During the interviews (male interviewer, TG), it was given as much time as needed to narrate to the questions of the interview guideline. All interviews were audio taped with a digital recording device and transcribed using the computer software f4 (dr. dresing & pehl GmbH, Germany) (18).

Ethical considerations

The ethical review committee of University of Bremen ascertained no reason for an objection of the study. All interviewees gave written informed consent. A description of the purpose of the study was made available during recruitment, reiterated in writing within the consent form and verbally before each interview. Withdrawal of consent without personal consequence was possible at any time point and participants were aware of their freedom. Confidentiality of participation was secured and participants were made aware of the anonymization of personal information.

Data analysis

The data analysis was accomplished by using summarizing analysis of the contents of semi-structured interviews using Mayring's method (TG) (19). Therefore, the interviews have been open coded as a first step, using the computer software MaxQDA 11 (VER-BIGmbH, Germany) (20,21). Out of these coded text parts paraphrases have been created. In a next step, these paraphrases were abstracted. Synonymous paraphrases were



deleted. These two last steps were repeated until a satisfactory level of abstraction was reached (19). Based on these abstracted statements, themes were developed, which were validated by the original text passages. All analyses were based on texts in its original language, translation into English took place while the first abstraction of paraphrases. As all interviews were conducted in German, presentation of original quotations in the results was waived.

Results

Participant characteristics

Characteristics of the participants are presented in Table 1. The median age was 45 years (interquartile range 5) and 38% were female. The specialty areas of nurses were emergency care (n=5), intensive care (n=4), internal medicine (n=3) and orthopaedics (n=1). The median practical nursing experience was 21 years (interquartile range 9). The majority of participants (n=11) reported one or two job specializations, including specialization as head nurse (n=8) as well as in anaesthesia care and intensive care (n=5). Participation in disaster nursing-related continuing education programs was reported by five participants with a mean participation number of six education programs. Volunteer involvement in an aid organization was reported by two participants.

Disaster preparedness and knowledge

Within the first professional socialization field, knowledge, seven themes were clustered (Table 2).

Characteristics	Median (IQR)	N (%)**
Age: years	45 (5)	-
Work experience: years	21 (9)	-
Female sex	-	5 (38.5)
Specialty area		
Emergency care	-	5 (38.5)
Intensive care	-	4 (30.8)
Internal medicine	-	3 (23.1)
Orthopaedics	-	1 (7.7)
Job specialisation*		
Head nurse	-	8 (61.5)
Anaesthesia care and intensive care	-	5 (38.5)
Disaster-related continuing education	-	5 (38.5)
Volunteer involvement: n (%)	-	2 (15.4)

 Table 1. Participant characteristics (n=13)

IQR: interquartile range

*Multiple response allowed

**Absolute numbers and their respective percentages (in parentheses)



Торіс	Themes
(I) Disaster preparedness and knowledge of	Definition of a disaster
German nurses	Knowledge and skills
	Undergraduate nursing education
	Continuing education programs
	Disaster drills
	Willingness to help
	Disaster preparedness
(II) Roles of German nurses during emergency	General roles of nurses
response	Expectations of society and the hospital
	Role conflicts
	Assignments of medical tasks
	Special roles during a pandemic influenza
(III) Disaster experiences of German nurses	Work environment
	Nursing care
	Feelings
	Burdens and stressors
	Call of duty
	Impacts

Table 2. Identified themes	OI 1	relevant	topics
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A dominant definition of a disaster was that disasters are man-made and technical. Furthermore, terror attacks, meteorological and natural disasters as well as biological and chemical disasters were described as possible disaster sub-groups. A majority of participants defined a disaster as a mass casualty incident, which is hardly controllable without external assistance and accompanied by severe personal and material damage. Alternatively, disasters were defined as a situation with a large number of affected and/or killed people as well as an unpredictable, sudden and challenging event, lasting for a longer time.

Knowledge and skills were perceived as highly necessary regarding disasters. Knowledge about the hospital emergency action plan and the corresponding roles during a disaster was considered essential. Additionally, knowing the hospital structures such as the hospital alarm system, the triage system and the supplies maintenance as well as knowing the federal state law for disaster control and about the duty to report to work were assumed important. Emotional skills, communicative and organizational skills, and professional skills were considered important for disaster preparedness.

According to the participants, undergraduate nursing education did not address disaster nursing, yet emergency care and trauma care nursing has been addressed. However, communicative and organizational skills as well as certain professional skills are well trained in undergraduate nursing education. A future need for an explicit disaster nursing education for undergraduate nurses was addressed. A need for nurses to be continuously educated and trained in disaster nursing has been made clear. A minority of participants affirmed that training and education in disaster nursing would be existent in their own hospital.

The plurality of the participants stated that disaster drills had not been performed in their hospitals yet. However, nearly every partici-



pant saw advantages in regular and mandatory disaster drills, such as experiencing disasters in hospitals, recognizing roles and emotions during a disaster and practising and optimizing alerting, assembly, the hospital emergency action plan, communications and triage.

Willingness to help during a disaster was taken for granted and as an ethical obligation by almost all participants. Willingness and unwillingness to help were influenced by several factors, such as preparedness, prior disaster experience, the scope and type of the disaster or being personally affected by a disaster.

Professional disaster preparedness was perceived by barely half of participants, as they already had training in psychosocial emergency care, long-term caring experience or knowledge of the hospital emergency action plan and medical care. Furthermore, aspects of disaster preparedness were receiving regular education in disaster management and knowing the own roles during a disaster. Half of the participants felt personally prepared, due to volunteer activity in a disaster relief organisation, knowledge about behaviour during disasters or information of the own family.

Roles during emergency response

Within the second professional socialization field, roles, five themes were clustered (Table 2).

Most of the participants defined the following general roles during disasters: patient care, assistance during triage, on-scene command, setting priorities, communication, public relations, clearing of space for additional patients, recruitment and deployment of personnel. According to the participants, patient care will be reduced to psychological care and emergency care. According to the majority of the participants, nurses are expected by society and the hospital to be willing to help and to stay able to cope during a disaster. Furthermore, nurses are expected to be prepared, knowledgeable and skilled and to give quick and high quality aid. In particular, the hospital was believed to expect professional care, psychological care, organizational capabilities, teamwork, courage and versatility during a disaster.

Participants identified conflicts between their professional and private, either when they would be personally hit by a disaster or when they were single parents, have an infant or were responsible for the care of relatives.

The assignment of medical tasks, such as triage or tracheal intubation, was perceived as "realistic" by the majority of participants. However, others stated that they could not imagine performing medical tasks, such as diagnosis or the administration of drugs, during a disaster.

For the case of a pandemic influenza, participants identified that nurses were responsible for infection protection, hygiene, disinfection and of the correct use of personal protective equipment. Furthermore, nurses needed information about the course of epidemics, conduct case investigations and educate colleagues, patients and relatives about epidemics in order to calm their fears.

Disaster experiences

Within the third professional socialization field, experience, five themes were clustered (Table 2).

Almost all participants described a (potential) work environment in hospital during a disaster as being tense, chaotic, rushed, panicky as well as crowded with patients and relatives. Moreover, a disaster was described an exceptional situation for a hospital, accompanied



by an overwhelmed capacity. The work environment was also described as being disturbed by the military or the press.

Nursing care was described as possible to a limited extend and controlled by priorities. According to the participants, different nursing tasks were attributed to different groups of nurses during a disaster (Table 3).

Participants described six domains of feelings they may experience during a disaster: Excessive demands, fear and panic, feeling of horror, feeling of terror, feeling of incapability, as well as positive feelings, such as feeling of security and a good feeling of being able to help. Furthermore, the larger part of the participants agreed that disasters are or might be physically and psychically burdensome. Nurses described four domains of disaster burdens: disgusting conditions, work environment-related burdens, care-related burdens and disaster impact-related burdens. The majority of the participants took it for granted to get to the hospital and to work beyond regular working hours when they would be called for duty during a disaster. In addition, there was almost no doubts that other nurses would get to the hospital, as well.

Groups of nurses	Nursing tasks and characteristics
Nurses in general	Be on call for duty during a disaster
	Perform delegated medical tasks
	Support each other and work together
	High flexibility
	Ready to work for extended periods of time
Emergency nurses	Triage
	Emergency care dependent on triage section
Clinical nurses	Expansion of capacity by discharging patients
	Assurance of the availability of supplies
	Assurance of the availability of medicines and medical equipment
	Professional care for present and additional patients
Head nurses	Ensure readiness of nurses
	Organisation and decision-making
	Deploy nurses according to their qualifications

Table 3. Nursing tasks during disasters for different groups of nurses

A specific part of the participants considered debriefing and giving feedback to the team after a disaster important in order to identify needs of colleagues. In addition, the evaluation of the disaster response and the processing of problems were considered important. The following professional impacts of a disaster were described: disaster experience, improving skills and knowledge as well as identification with the team and as a nurse. The following personal impacts of a disaster were described: strengthening personality, achievement of success, gratitude for life, nevertheless, also not wanting to experience another disaster anymore.

Discussion

Participants of the study were able to find definitions of disasters corresponding to the definition of Centre for Research on the Epidemiology of Disasters (22). Both definitions emphasized unpredictability, the sudden onset and the great personal and material damage. It is noteworthy that participants of the



current study mentioned that disasters are challenging local capacity, but not overwhelming it. Another study about nurses' perception of disaster identified similar attributes to disasters as the current study (e.g. being unpredictable, sudden, unexpected or unpreventable) (1).

Existing disaster nursing curricula set other priorities for education and training than the participants of the current study (23,24). Those curricula did not address the topics duty to work and hospital structures. However, there is strong consent in the need for disaster nursing undergraduate nursing education and continuing education programs among the current study and international studies (1,25-28). In the literature, regular and mandatory disaster drills were demanded (29,30), as they were expected to improve emergency response capabilities (31-33).

According to international studies, requirements for disaster preparedness were pre-registering in a disaster registry, having experience in disaster nursing and continuingly taking part in trainings and drills (1,31,33-37). Indeed, those requirements were in line with requirements stated in the current study. The requirements for personal disaster preparedness, however, deviated largely. In the literature, for instance, the following requirements were described: having a go-pack containing essential personal supplies, preparing and protecting the family and having a personal plan for times of disaster (31,32,34,37-40).

However, the majority of the nurses who participated in the current study did not feel personally prepared. And those who did, thought they were personally prepared, if they merely informed their families about their role in hospital during a disaster. For personal and professional preparedness and in order to raise willingness to respond, nurses need to pack their essential personal supplies standing by for emergencies, need to know that their families are protected and need to be registered in a disaster registry as well as know their relevant disaster plan. A personal disaster plan will help to arrange personal matters when responding to a disaster.

In contrast to the responses of the participants of current study, it has been occasionally described in international studies that nurses will definitely be assigned medical tasks (34,41). Furthermore, different roles special roles during a pandemic influenza, such as contact tracing, engaging in surveillance and reporting, collecting specimens or administering immunizations, were described elsewhere (32).

The disaster experiences described, for instance the descriptions of the (potential) work environment during a disaster, were in line descriptions from other studies with (33,42,43). However, potentially hazardous work environments due to inferred security or potentially lethal situations were not described by any participant of the current study (33). No other study did describe feelings potentially experienced during a disaster, as the current study did. One study described guilt when taking leave, concern about causing pain to patients, being overwhelmed by the tragedy, disgust and distress as feelings of nurses experienced during a disaster. Other studies described fear, stress and confusion (34), uncertainty, hopelessness, abandonment (44) and vulnerability (45) as feelings of nurses experienced during a disaster.

The participants of the current study described disgusting conditions as a dominant domain of burdens and stressors during a disaster. In the literature, however, excessive demands (e.g., due to lack of satisfaction of basic needs, due to decline of infrastructure) were the dominantly represented domain of



burdens and stressors during a disaster (33,44-49). In the aftermath of a disaster, both, positive and negative consequences of disaster experiences, such as improvement of professional competency and rethinking of the commitment to nursing, play an important role in the current study as well as in the international literature (50).

Limitations of the study

First, the gathering of qualitative data and the analysis of their content were based on texts in its original language to best describe and interpret their content. Translation of descriptions and interpretations of the content might have leaded to a distortion or transformation of their true meaning. Second, this study is not representative of the German nursing population, but it explored the field of the role, experience and knowledge in national disaster preparedness and emergency response. The results of this study may not be representative for healthcare systems and educational systems in other countries. Last, different from expectation, a majority of nurses who participated in the study were male. It is possible that experiences of women were not adequately reflected. Furthermore, participant characteristics have to be distinguished for its overly large number of nursing specialists in emergency care and intensive care.

Conclusion

The results of this exploratory qualitative study implied similarities but also differences

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in the knowledge, role and experience in national disaster preparedness and emergency response of German nurses, compared to other countries. There is a need of further research in order to further explore the knowledge, role and experience in a broader sample of nurses in Germany. The results of this explorative qualitative study can be used to design a national survey with representative samples in order to expand and validate its findings. Nurses need to get involved in all aspects of disaster management and need to receive proper education and training. It is imperative that nurses know about their duties and their roles, especially within the execution of medical tasks, before and during disasters and epidemics. Hospitals and federal states of Germany need to organize regular and mandatory disaster drills for nurses. Nurses themselves need to get informed about their possibilities for personal and professional disaster preparedness.

Close attention is needed on ethical aspects and the assumption of responsibility by nurses during disasters.

It is necessary that nurses know about feelings which can be created during disasters and have coping strategies for stressful and burdensome situations, which are applicable in exceptional circumstances and in the aftermath, as well. Hospitals and the Federal State Offices for Civil Protection and Disaster Control need to be aware that not every nurse will anticipate getting to the hospital and having longer working hours during a disaster for self-evident.

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REVIEW ARTICLE

A practical and applied approach to assessing the cross cutting nature of child injury prevention as a basis for policy making at the local level

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Abstract

Aim: Risk factors for child injury are multi-faceted. Social, environmental and economic factors place responsibility for prevention upon many stakeholders across traditional sectors such as health, justice, environment and education. Multi-sectoral collaboration for injury prevention is thus essential. In addition, co-benefits due to injury prevention initiatives exist. However, multi-sectoral collaboration is often difficult to establish and maintain. We present an applied approach for practitioners and policy makers at the local level to use to explore and address the multi-sectoral nature of child injury.

Methods: We combined elements of the Haddon Matrix and the Lens and Telescope model, to develop a new approach for practitioners and policy makers at the local level.

Results: The approach offers the opportunity for diverse sectors at the local level to work together to identify their role in child injury prevention. Based on ecological injury prevention and life-course epidemiology it encourages multi-disciplinary team building from the outset. The process has three phases: first, visualising the multi-sectoral responsibilities for child injury prevention in the local area; second, demonstrating the need for multi-sectoral collaboration and helping plan prevention activities together; and third, visualising potential co-benefits to other sectors and age groups that may arise from child injury prevention initiatives.

Conclusion: The approach and process encourages inter-sectoral collaboration for child injury prevention at the local level. It is a useful addition for child injury prevention at the local level, however testing the practicality of the approach in a real-world setting, and refinement of the process would improve it further.

Keywords: co-benefits, inter-sectoral collaboration, prevention and control, wounds and injuries.

Introduction

It is far from trivial to reiterate how devastating child injury is to the individual, family and society. Among the measurable costs, are loss of life, long and short-term disability, psychological consequences, and financial costs (1). In addition, child injury remains the leading cause of death and a major cause of disability for children aged 5–19 in the European Region (2). Despite this varied and heavy burden, funding for prevention is comparatively low (3), and capacity and leadership resources, in terms of adequate numbers of personnel and availability of the relevant skills set, are limited (4).

The determinants of child injury are multiple, broad, and not limited to the health sector (2,5). Thus, in order to efficiently direct and fund child injury prevention, one must account for the cross-cutting, multi-sectoral determinants that result from a complex interplay between human factors and those in the physical and socio-cultural environments.

Since the multiple determinants of child injury cannot be addressed by the health sector alone, a whole-of-government approach is required—vertically, from international politics to local decision makers, and horizontally, across policy fields such as health, transport, housing, justice and education. Preventive action must also work across society, employing a whole-of-society approach engaging actors and stakeholders within government, civil society, and the private sector (2,6).

Though inter-sectoral co-operation is essential, it is notoriously challenging (7,8). It is often difficult to engage relevant stakeholders and maintain their co-operation throughout the process from policy making through to implementation and evaluation. Additionally, the complexity of government systems, where roles and responsibilities are divided into traditional silos (e.g., health, transport, education), and where responsibility and power are split between national, regional and local levels, can further hinder cooperation (9). Thus, due to its complexity, child injury is one of the so-called 'wicked' problems of public health (7). However, its cross-cutting nature offers broad scope for interventions to result in or contribute to multi-sectoral co-benefits (10).

In this paper we focus on the role of regional or local level decision makers and propose a model to facilitate the decision making process for the cross cutting issue of child injury prevention.

Existing models for injury prevention

Several models to guide injury prevention have been proposed, including those addressing the multiple determinants of injury (11,12) intervention planning (13,14) and inter-sectoral collaboration (15). These models provide useful theoretical frameworks to address injuries and their prevention. However, they do not address the specific nature of child injury and in some cases may be challenging for use at the local level.

Child injury prevention requires specific, directed attention. Children participate in environments largely designed for adults where their physical and cognitive characteristics make them more vulnerable to injury. Physical and cognitive developmental stages precipitate different periods of injury susceptibility. Age is therefore an important factor in child injury prevention and models used must have the flexibility to address this heterogeneous group. Children are also highly dependent upon the care and protection of adults, so factors affecting an adult's capacity to supervise children can directly affect them (16,17). General injury prevention initiatives, designed for adults, do not always protect children to the same extent (18,19).

In terms of governance for child injury prevention, a lack of leadership and capacity at the national level such as dedicated government departments or ministries or a lack of a specific

focal point within key departments for child safety has been identified (20). It is likely that if this is the situation at the national level that there is an even greater potential for lack of capacity at the regional or local level where much decision making for health lies (21).

To our knowledge, no existing model or approach adequately addresses child injury, while simultaneously providing a practical, multi-sectoral process for practitioners and policy makers at the local level to use to guide prevention efforts. In order to adequately assess the specificities of child injury and its cross-cutting nature, as well as incorporate the potential co-benefits into prevention planning, practitioners and policy makers should be able to:

- Examine the issue and visualise the multi-sectoral responsibilities for child injury prevention in the local area
- Demonstrate the need for inter-sectoral collaboration and collective planning of prevention activities
- Identify the scope for co-benefits for other sectors, age groups or health issues arising from child injury prevention initiatives

In this paper we propose a model based upon aspects of the Haddon Matrix (22) and the Lens and Telescope model (23) providing a practical approach and process to meet these requirements for the local level.

The local level child injury prevention assessment approach

The traditional Haddon matrix depicts a time element in the first dimension (vertical axis), dividing factors associated with what Haddon termed the pre-event, event and post-event phases of an injury event. In the second dimension (horizontal axis), of the simplest form of the matrix, are the three vertices of the epidemiological triangle the host (human), the agent (vehicle/vector) and the environment, with environment often divided into social and physical. The Haddon matrix fits well into the traditional public health approach of primary, secondary and tertiary prevention and has been used to explore a variety of aspects of the public health process for injury prevention including assessing risk factors (5,24), identifying preventive strategies and assisting the decision making process (13) and for public health readiness and planning (25,26).

The traditional, nine cell, Haddon Matrix maybe less suited to child injury prevention due to the separation between environment, host and agent. Children's dependence upon adult supervision to secure their environment and their lack of control over the environment is difficult to capture in this version of the Haddon Matrix. Therefore, when developing our approach, we sub-divided the columns, host and agent into factors for human, social and physical environment. This allows the table to capture more detail that maybe particularly relevant for preventing child injury such as factors affecting parental supervision.

The temporal element of injury prevention is well represented in the Haddon Matrix, however circumstances preceding the injury are limited to the pre-event phase. This makes it difficult to differentiate between long standing risk factors such as socio-economic status, and short-term factors such as bad lighting. A further reality of child injury is that the determinants of injury change with age. The inclusion of the life course approach developed in the Lens and Telescope model (23) is intended to provide a visual cue regarding the needs of the different age groups, encouraging one to think of enduring injury determinants such as socio-economic status and parental factors.

The life course aspect of our tool is divided into five specific age groups relevant to child injury, 0-1, 2-4, 5-9, 10-14, and 15-19; with general phases for the foetal phase, adulthood, previous and the next generation. The slices representing age get larger towards older age groups to illustrate the breadth of influence preventive measures could have.

The resulting approach (Figure 1) can be used to examine a specific injury event (e.g., a specific car - pedestrian collision) or a group of injuries (e.g., child pedestrian injuries). Further, in order to include and examine all relevant factors, the matrix (or matrices, if a separate matrix is needed to provide more space) should be completed with factors relevant to each affected person in the injury event. For example, in the case of a car – pedestrian collision, a matrix should be completed accommodating the perspectives of the injured child, the driver, passengers in the car and any other relevant people.



Figure 1. Local level child injury prevention assessment approach

Using the local level child injury prevention assessment approach and process

The approach and resulting process are intended for use by practitioners and policy makers at the local or regional level. They can be used in three ways: first, to examine and visualise the multi-sectoral responsibilities for child injury prevention in the local area; second, to demonstrate the need for inter-sectoral collaboration and collective planning of prevention activities and third to identify the scope for co-benefits for other sectors, age groups or health issues arising from child injury prevention initiatives.

Phase one – Examining the issue and visualising multi-sectoral responsibilities

The approach and process are designed for use in a collaborative setting from the outset. Relevant partners and stakeholders from multiple sectors should contribute throughout the process to map each of the factors that contribute (or could contribute) to the injury event for each person involved in the injury. In line with concepts of life-course epidemiology, the factors should not be confined to the moment the injury occurred but should also include pre-existing factors. The process of eliciting each of these factors aims first, to draw all of the stakeholders together to come to a common understanding of the problem and potential

solutions (7) and second, to identify the many sectors implicated within child injury prevention.

Phase two - Demonstrating the need for multi-sectoral cooperation

Once factors and involvement of sectors coming out of the injury analysis are identified, users can reflect on them and propose specific evidence based interventions and policies that address these factors and identify the appropriate sectors that would need to be involved. These specifics can then be used to make the case for investment and/or engage additional stakeholders. The integrated life course approach serves as a prompt to ensure age is being taken into consideration as interventions are considered. Potential interventions can then be inserted into an empty matrix in the same way as the factors were placed in phase one.

Phase three – Visualising the scope for co-benefits

The third phase is designed to help identify potential co-benefits of child injury prevention strategies for other age-groups and issues within and outside the health sector. Co-benefits can be achieved as a result of child injury prevention measures in three ways. First are the physical, economic and societal benefits for the child, family and community as a result of a reduction in intentional and unintentional injury (1,3). Second are co-benefits for the target population or other groups arising as a result of injury prevention initiatives (e.g., the health benefits of swimming lessons or environmental and health benefits of a safer walking environment in terms of a reduction in car use); these are not dependent upon a reduction in injury incidence but are derived from the intervention itself. Third are co-benefits for other groups that can be achieved as a result of the *implementation* of injury prevention strategies (e.g., providing training and employment to distributers of safety equipment).

By reflecting on the age group segments of the approach, users are encouraged to consider the impact on other age-groups and identify which groups might directly and indirectly benefit from child injury prevention interventions and elaborate on these co-benefits. For example, an intervention to improve the walkability of an area surrounding a school would directly benefit age groups 5-9, 10-14 and 15-19 years, but may also benefit the elderly population of that area by providing a safer walking environment.

Discussion

Much responsibility for injury prevention lies with local practitioners and policy makers in terms of choice of intervention and process of implementation. However, for complex 'wicked' problems such as child injury, the key stakeholders at the local level are often unaware of their responsibilities for public health and the potential impact of their participation (27). Local government officials have been found to lack awareness of the link between health and non-health sectors, and their experience of inter-sectoral collaboration is often limited (8). A key determinant of success for inter-sectoral collaboration, is the development of a multi-disciplinary team of multiple stakeholders (28,29) to first reach a common understanding of the problem and then, on that basis, to collaboratively design evidence based interventions that are specific and relevant to the needs of the target population (7).

A significant difference between our approach and process and other existing models for child injury prevention is its interactive and collaborative nature. Our approach provides a practical framework to engage diverse stakeholders from the outset. It has been designed to provide a comprehensive approach to child injury prevention in a simple (and familiar) format to maximise output at the local level of governance. The exercise of mapping factors using a matrix that addresses the specific physical and social environments for host and agent

separately helps identify the potential involvement for many sectors and the identification of roles and responsibilities as interventions are selected. A limitation of this approach is that it is unable to quantify the comparative or cumulative impact of the identified risk factors in the local setting. Local knowledge of their relative importance in the target setting is therefore required to weight them appropriately, in terms of importance and prevalence, and to develop a suitable intervention. Additionally, the approach does not help planners/researchers identify what interventions or policies are already in place or how to choose an intervention. However the third dimension of the Haddon Matrix as proposed by Runyan (13) could be used in conjunction with this model to aid intervention choice.

The opportunity to identify the potential co-benefits of injury prevention initiatives offered by this approach is particularly important in the context of advocacy and efforts to secure funds for prevention activities. A lack of funding is a common barrier to adoption and implementation of public health interventions, particularly for complex or wicked problems. (8) If co-benefits of prevention activities outside the target group or injury domain can be demonstrated, the chances of securing funding may be higher, particularly if the co-benefit addresses a priority area (e.g., obesity or healthy ageing). Our proposed approach and process provide a way of demonstrating the interconnectivity between sectors and therefore the secondary impact child injury prevention strategies may have beyond childhood or outside the injury domain. However, it must be noted that when identifying co-benefits this approach does not offer any quantification of economical or health benefits associated with a given strategy.

The use of a life course model is a central element of our approach. There are several advantages to this: first, it emphasises the importance of a child's age for injury susceptibility and acts as a lens through which to consider relevant factors, particularly when looking at an overall injury issue (e.g., child drowning); second, it accommodates age in the design or choice of preventive interventions; third, it allows analysis of risk factors related to parents or carers and underlying causes; and, fourth, it provides a frame to reflect upon potential cobenefits for other age groups arising from child injury prevention interventions.

Additionally, some interventions in child injury prevention include longer timeframes between intervention implementation and results, especially when addressing the more complex risk factors such as substance abuse and mental health. These are often incompatible with the short-term pressures on policy makers (30). Visualisation of co-benefits using a life-course approach could provide policy makers with solid arguments for the implementation of such interventions.

Conclusion

This approach and three phase process to child injury prevention, based on combining Haddon's matrix with a life course model facilitates stakeholders identification of risk factors and solutions across policy sectors. When done collectively, engaging multiple stakeholders, it should result in a better understanding of the multi-sectoral nature of child injury prevention and the potential roles and responsibilities for the stakeholders at the local area. This, in turn, should assist in the planning of tailored inter-sectoral child injury prevention activities. Further the broadened frame helps identify potential co-benefits across sectors, within and outside the injury domain, which may assist in gaining support for child injury prevention.

This approach and process have been designed to provide a practical and user-friendly methodology to address the inter-sectoral issue of child injury prevention at the local level.

However it is yet to be tested in a real world setting and a study of its efficiency would be a useful addition to this research.

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Contributorship: BS developed the idea for the approach and process and all authors contributed to the design. BS led the drafting of the paper and all authors were involved in revising it and approving the final version.

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ORIGINAL RESEARCH

Assessment of knowledge, attitudes and practices about public health nutrition among students of the University of Medicine in Tirana, Albania

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Abstract

Aim: the aim of this survey was twofold: (i): to assess medical students' knowledge, attitudes and practices regarding nutrition in general, in order to identify their level of competences in the field of nutrition which will be useful in their future role of providers/health care professionals, and; (ii) to assess the knowledge, attitudes and practices regarding the discipline of public health nutrition in order to identify the needs for improving the curriculum of this subject in all the branches of the University of Medicine in Tirana.

Methods: A cross-sectional study was conducted in June-July 2013 including a representative sample of 347 students at the University of Medicine in Tirana, Albania (61% females and 39% males; overall mean age: 23±2 years; response rate: 87%). A nutritional questionnaire, adopted according to the models used in previous international studies, was used to assess the level of knowledge, attitudes and practices among the university students.

Results: Overall, about one third of the students was not satisfied with the quality and quantity of nutritional education and demanded a more scientifically rigorous curriculum. In general, students' knowledge about infant feeding practices was adequate. However, there were gaps in the students' knowledge regarding the commencement of breastfeeding, or the duration of exclusive breast-feeding. Furthermore, there was evidence of an insufficient level of knowledge among students regarding diet and nutrition in general and their health impact, especially on development and prevention of chronic diseases.

Conclusion: This survey identified significant gaps in the current curriculum of public health nutrition at the University of Medicine in Tirana. Our findings suggest the need for intervention programs to improve both the quantitative and the qualitative aspects of nutrition curricula in all the branches of the University of Medicine Tirana, in accordance with the professional expectations of this teaching institution, as well as the urge for a movement towards a more integrated curriculum and problem-based learning approach.

Keywords: Albania, diet, knowledge, nutrition, students, university of medicine.

Introduction

It is argued that the amount of nutritional education in the teaching curricula of different medical schools remains inadequate and does not meet the needs of this important area of health sciences (1,2). Hence, many studies show that family physicians generally have little training in nutrition (3-5). Furthermore, several studies have shown that the vast majority of medical students and incoming interns are dissatisfied with their education in medical nutrition and feel unprepared to counsel patients on nutritional topics (6-8). Therefore, it is largely recognized that there is a critical need for improvements of teaching programs related to nutrition in medical schools and public health schools along with an increased education of the general population at large (9-11).

Public health nutrition is a discipline introduced already in all branches of the University of Medicine in Tirana, the Albanian capital. However, there is no scientific evidence regarding the level of attitudes and knowledge in this field among the students at all levels and branches of this teaching institution in Tirana, which is the only Medical University in Albania.

In this context, the aim of this survey was twofold: (i): to assess medical students' knowledge, attitudes and practices regarding nutrition in general, in order to identify their level of competences in the field of nutrition which will be useful in their future role of providers/health care professionals, and; (ii) to assess the knowledge, attitudes and practices regarding the discipline of public health nutrition in order to identify the needs for improving the curriculum of this subject in all the branches of the University of Medicine in Tirana.

Methods

A cross-sectional study was conducted in June-July 2013 including a representative sample of 347 students at the University of Medicine in Tirana, the capital of Albania.

Study population

The study population consisted of a simple random sample of 347 students (out of 400 invited; response rate: 86.7%) of the University of Medicine in Tirana pertinent to the following branches: Medicine (26.8%), Nursing (32.9%), Pharmacy (21.9%) and Dentistry (18.4%). The sampling frame consisted of a list of all students who had undertaken a course on public health nutrition (280 medical students; 110 dentistry students; 108 pharmacy students; 312 nursing students). The response rate was somehow lower among the medical students (81.5%) compared with students from the other branches. On the other hand, the overall response rate was similar among male and female students.

Data collection

A nutritional questionnaire, adopted according to the models used in previous international studies, was used to assess the level of knowledge, attitudes and practices among the university students.

The first part of the questionnaire concerned the attitudes of the students about nutritional education in their respective faculties/schools. The attitudes were measured by means of an indicative scale from 1 to 5 regarding students' concordance with several statements (1= strongly disagree; 5= strongly agree) (7).

The second part of the questionnaire concerned the level of knowledge of the students about nutrition in general (4,5).

Data analysis

SPSS (Statistical Package for Social Sciences) version 19.0 was used for data analysis. Data were presented as frequency tables (for categorical variables) and as measures of central tendency (mean scores) [for numerical variables].

Results

Overall, the survey sample included 136 (39.2%) male students and 211 (60.8%) female students (overall mean age: 22.8 ± 2.1 years).

Students' attitudes about their education in the discipline of nutrition

Overall, the students were somewhat satisfied with the quantity (mean score: 3.3; range from 1 [lowest] to 5 [highest]) and quality (mean score: 3.2) of the nutritional education in the course of their studies (Table 1). Students reported that more time should have been dedicated to the topic of nutrition at the University of Medicine in Tirana (overall mean score: 3.5), especially including more material relevant to the personal health and wellbeing (mean score: 3.8). Conversely, students were quite neutral regarding the scientific rigor of the teaching curriculum (overall mean score: 2.9).

Students' attitudes	Total (N=347)	Medicine (N=93)	Dentistry (N=64)	Pharmacy (N=76)	Nursing (N=114)
I am satisfied with the <u>quantity</u> of my nutrition education.	3.26	2.69	2.81	3.47	3.83
I am satisfied with the <u>quality</u> of my nutrition education.	3.18	2.71	2.84	3.22	3.71
My medical school nutrition curriculum should have had more time specifically dedicated to the topic of nutrition (independent of organ system-based studies).	3.46	3.67	3.42	3.70	3.17
My medical school nutrition curriculum should have had more nutrition content formally integrated into the organ system-based courses.	3.38	3.91	3.36	3.21	3.07
My medical school nutrition curriculum should have included more online materials available for independent study.	2.90	3.32	2.52	3.05	2.67
My medical school nutrition curriculum should have included more material relevant to my personal health and wellbeing.	3.80	4.31	3.81	3.37	3.68
My medical school nutrition curriculum should have been more scientifically rigorous.	2.89	3.32	3.39	2.58	2.46

Table 1. Students' attitudes about their education in the discipline of nutrition

Students of the Faculty of Medicine were the most unsatisfied group with regard to the <u>quantity</u> (mean score: 2.7) and <u>quality</u> (mean score: 2.7) of the information obtained in the nutrition course, considering that:

- More time should be dedicated to the topic of nutrition in the course of their studies (mean score: 3.7);
- More nutrition content should be formally integrated into the organ system-based courses (mean score: 3.9);
- The curriculum should include more material relevant to personal health and well-being (4.3);

• In addition, medical students felt that the teaching curriculum should be more scientifically rigorous (mean score: 3.3) [Table 1].

However, almost similar attitudes were encountered among the students of the Faculty of Dentistry, but their mean scores were slightly higher compared to the students of the Faculty of Medicine.

Unlike the students of the Faculty of Medicine and Dentistry, students of the Faculty of Pharmacy appeared to be more satisfied with the <u>quantity</u> (mean score: 3.5) and the <u>quality</u> (mean score: 3.2) of the nutritional education; nonetheless, they considered that more time should be dedicated to the topic of nutrition in the course curriculum (mean score: 3.7), but were generally satisfied regarding the scientific rigor of nutrition curriculum (mean score: 2.6). Conversely, students of the Faculty of Nursing were the most satisfied group with regard to the <u>quantity</u> (mean score: 3.8) and <u>quality</u> (mean score: 3.7) of the nutritional education in their branch. Their most obvious demand, however, was that more material relevant to personal health and wellbeing should be included in the teaching curriculum (mean score: 3.7) [Table 1].

Overall, about one third of the students was not satisfied with the quality and quantity of nutritional education and demanded a more scientifically rigorous curriculum.

Three out of four students demanded a more practical and useful curriculum regarding personal health and well-being; more than half of the students demanded an integrated curriculum into the organ system-based; and half of the students suggested that more time should be dedicated to the teaching curriculum independent of organ system-based studies (Table 1).

Students' knowledge about infant feeding practices

Overall, the level of students' knowledge about infant feeding practices was satisfactory, as the percentage of correct answers for every question was in the range from 70%-92% (Table 2).

Correct	Wrong	Don't know
71.8%	21.30%	6.0%
/1.0%	21.370	0.970
1 10%	071%	1 10%
1.470	97.170	1.470
01.00%	1 60%	2 50%
91.9%	4.0%	5.5%
_	Correct 71.8% 1.4% 91.9%	Correct Wrong 71.8% 21.3% 1.4% 97.1% 91.9% 4.6%

Table 2.	Students'	knowledge	on infant	feeding	practices
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The percentage of wrong answers was higher among the students of the Faculty of Pharmacy, followed by the students of the Faculty of Dentistry (29.7% and 7.8% respectively).

About 82% of the students knew "the most appropriate age to introduce other foods in the infant's diet", whereas one out of three students of the Faculty of Dentistry gave a wrong answer (data not shown).

Regarding the "*commencement of breastfeeding*", 70% of the students did not know the recommended initiation of breastfeeding, which was especially apparent for students of the Faculty of Nursing and Medicine (80% and 76%, respectively), although the nutrition curriculum of these two faculties regarding infant feeding practices is much more expanded than the other two faculties (data not shown in the tables).

Most of the students (about 77%) stated that exclusive breast feeding is important because "breast milk is the ideal food", 10% of the students considered that "breastfeeding creates a

physical/spiritual bond between mother and baby", and 9% of the students believed that "breastfeeding protects the mother from pregnancy".

Regarding the duration of exclusive breastfeeding, the opinion of the students was divided between the period of 6-9 months, and only 1.3% of the students considered that *"breastfeeding should not be extended more than 1 month"* (not shown).

Students' knowledge on the health impact of diet and nutrients

Regarding the questions that aimed at assessing the students' general knowledge about the health impact of diet and nutrients, students of the Faculty of Medicine, generally, exhibited the highest level of knowledge compared to the other branches (Table 3).

Especially, medical students reported correctly on the following: "the nutrient that helps prevent thrombosis" (100%); "the nutrient closely related to the prevention of neural tube defects" (97%); "zinc is not an antioxidant" (87%); and "potassium has protective effect against hypertension" (75%). However, none of them knew that "excess proteins promote loss of Ca"; "Albanians are advised not to consume more than 30% fat" (8%); and "fruits and vegetables have a preventive role in the development of some types of cancer" (10%) [Table 3].

Item	Total [*]	Medicine [*]	Dentistry [*]	Pharmacy [*]	Nursing [*]
A nutrient believed to help prevent thrombosis is:	omega-3 fat	100	28.1	50	28.9
Excess of which nutrient may increase body calcium loss?	proteins	0	4.7	7.9	14
What is the type of dietary fiber helpful in lowering the blood cholesterol level?	soluble fiber	67.7	42.2	28.9	15.8
The major type of fat in olive oil:	monounsaturated fat	54.8	31.2	22.4	16.7
Compared with unprocessed vegetable oil, hydrogenated fats contain:	more trans fats	37.6	9.4	42.1	16.7
The nutrient is protective against hypertension	potassium	75.3	14.1	44.7	45.6
If a person habitually consumes 10 tablets a day of vitamin mineral supplements, which nutrient is least likely to cause toxicity	vitamin E	66.7	21.9	39.5	24.6
The most concentrated source of vitamin B12 is	Meat	43	6.2	18.4	31.6
Which substance raises the blood HDL- cholesterol level	alcohol	41.9	9.4	17.1	22.8
Nutrition Recommendations for Albanian recommends that the diet should contain the following percentage of energy as fat	under 30% of daily energy	7.5	9.4	25	21.9
Nutritional recommendations for Albanian recommends that the diet should contain the following type and percentage of salt	no more than 6 g iodized salt	44.1	3.1	19.7	37.7
A type of food believed to have a preventive effect on varioustypes of cancer is	Fruits and vegetables	9.7	34.4	57.9	41.2
The number of kilocalories in one gram of fat is	9 kkal	100	96.9	96.1	94.7
Which of the following is not an antioxidant nutrient	Zinc	86	46.9	80.3	48.2
The nutrient strongly associated with the prevention of neural tube defects is	Folate	96.8	73.4	77.6	71.1

Table 3. Students' knowledge about diet and health

* Percentages of correct answers.
Hyska J, Mersini E, Mone, I, Bushi E, Sadiku E, Hoti K, Bregu A. Assessment of knowledge, attitudes and practices about public health nutrition among students of the University of Medicine in Tirana, Albania (Original research). SEEJPH 2014, posted: 13 January 2014. DOI 10.12908/SEEJPH-2014-01.

Discussion

Our findings indicate that students of the University of Medicine in Tirana are not sufficiently satisfied with the quantity and quality of the knowledge obtained on public health nutrition, demanding more time to be dedicated to the topic of nutrition in the undergraduate curriculum including especially more material relevant to personal health and wellbeing. Such requirements and demands were more pronounced among students of the Faculty of Medicine and Dentistry.

Students' knowledge about infant feeding practices were relatively satisfactory among the students of the Faculty of Medicine, and less so among students of the other faculties. However, there were also apparent gaps in the knowledge of medical students regarding the commencement of breastfeeding, or the duration of exclusive breastfeeding. Our findings in this regard are compatible with previous reports from studies conducted elsewhere (12-14).

Regarding students' general knowledge about diet and its impact on the development or prevention and treatment of diseases, especially of chronic diseases, it was often encountered an overrated concept about the role/influence of the dietary fat and individual health, suggesting insufficient knowledge among students regarding the specific role and impact of carbohydrates and proteins. Similar findings have been previously reported in the UK (13,14), Canada (15,16) and the USA (17).

On the other hand, students included in the current survey did not have updated information regarding the "Albanian Recommendations for a Healthy Nutrition", which points to the need for case-based teaching, and updated scientific rigor.

Overall, the current survey identified gaps in the current curriculum of public health nutrition which suggests the need for appropriate changes and amendments to the curriculum in all the branches of the University of Medicine in Tirana (General Medicine, Public Health, Nursing, Pharmacy and Dentistry). From this perspective, our study provides useful baseline information which should be eventually used to close the knowledge and competence gaps in the current teaching and training programs offered by the University of Medicine in Tirana.

In addition, the assessment of knowledge, attitudes and practices of the students on nutritional aspects in general is a basic precondition for understanding their competences and roles as future health care providers and health professionals, hence, evaluating healthy nutrition as an important element in the prevention and treatment of a number of non-communicable diseases which are currently highly prevalent in Albania (5,18). From this point of view, our study makes a useful contribution in the Albanian context.

In conclusion, our study suggests the need for intervention programs to improve both the quantitative and the qualitative aspects of nutrition curricula in all the branches of the University of Medicine Tirana, in accordance with the professional expectations of this teaching institution, as well as the urge for a movement towards a more integrated curriculum and problem-based learning approach.

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Conflicts of interest: none declared.

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ORIGINAL RESEARCH

Health and health status of children in Serbia and the desired Millennium Development Goals

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Abstract

Aim: Children represent the future, and ensuring their healthy growth and development should be a prime concern of all societies. Better health for all children is one of the leading objectives of the National Plan of Action for Children and a key element of the tailored Millennium Development Goals for Serbia.

Methods: Our analysis was based on relevant literature and available information from the primary and secondary sources and databases. We analyzed health status of children that can be illustrated by indicators of child and infant mortality, morbidity, and nutritional status.

Results: There has been a significant reduction in the mortality rates at the national level, particularly with regard to infants and children under five years of age. However, the current mortality rate of Roma children is still three times as high as the Millennium Goal set at the national level for Serbia. Most deaths of children under the age of five are due to preterm birth complications, congenital anomalies, birth asphyxia and trauma, pneumonia and sepsis. The rate of malnourished children among the poor and in Roma settlements is twice as high as in the general population of Serbian children. A growing number of obese children was also noted in the Roma population.

Conclusion: Political awareness, commitment and leadership are required to ensure that child health receives receive the attention and the resources needed to accelerate the progress of Serbia.

Keywords: children, health status, Millennium Development Goals, Serbia.

Conflicts of interest: None.

Introduction

A comprehensive understanding of the children's and women's health as a state of complete physical, mental and social wellbeing (1) is essential to the health of current and future generations. Almost every culture holds that a society has a responsibility to ensure a nearly equal start in life for children, which implies developing their full health potential (2). However, there are still significant ethnical and regional differences that need to be considered while developing the global health policy framework. The differences in people health are determined by their exposures to health risks, which are, in turn, the social determinants of health (3). The prevention of disease requires overall investment in the social determinants of health and reduction of inequalities and unfairness in health.

The foundations for adult health and, indeed, the health of future generations are laid in early childhood and even before birth. Therefore, better health for all children is one of the leading objectives of the National Plan of Action for Children (4) and a key element of the tailored Millennium Development Goals for Serbia.

Progress in the reduction of child mortality is one of the leading public health challenges in all countries (1). Reducing child mortality is also one of the Millennium Development Goals, and the first of the total of 27 goals adopted at the World Summit for Children. It has also been incorporated into many national plans of action for children. In spite of major improvements, national reports on progress in attaining the Millennium Development Goals, even in countries in which child mortality has been reduced by two thirds on the average, highlight that the problem is still present in rural areas, among people living below the accepted poverty line and - as regards Southeastern Europe - in particular, among Roma subpopulations (1,5). Child mortality due to preventable causes is further compounded by poverty, unfavorable living conditions, low educational level of mothers, social exclusion, neglect, violence against children and insufficiently accessible antenatal and postnatal health care (6,7). Deaths among children under the age of five years represent one of the most serious challenges currently faced by the international community. To address this challenge, it is necessary to measure accurately the levels and causes of mortality among this population group (8). Major causes of under-five mortality remain the same globally; their relative importance varies across regions of the world. While in low-income countries infectious diseases account for a large proportion of under-five deaths, the main killers of children in high-income countries are non-communicable diseases such as congenital anomalies, prematurity, injuries and birth asphyxia (9). Monitoring of the nutritional status plays an important role in the analysis of the health of children, particularly when health risks and preventive actions need to be assessed and considered. Irregular and insufficient nutrition during infancy and later can significantly impair the growth and development of children and have adverse health effects (physical fitness, mental functions, immune system). At the same time, excessive food intake and an imbalanced diet may also result in obesity and negative health consequences (10).

The aim of our study was to analyze children mortality rates in Serbia, leading causes of death, differences in mortality rates between the average population of children and Roma children and diet and nutritional status of children under the age of five years.

Methods

This situation analysis has been done on the basis of relevant literature and available information from the following primary and secondary sources and databases:

- Published documents including strategies, policies, programs, plans, laws and other regulations of the Government of the Republic of Serbia, health regulations and guidelines of the Ministry of Health, published reviews, scientific and professional articles on health and health status of the Serbian population in national and international journals, national surveys and project reports of international organizations (UNICEF, WHO, EU, World Bank) that deal with issues of children's and women's health in Serbia;
- Publications in the area of routine health statistics, national e-databases (Institute of Public Health of Serbia, Dr. Milan "Jovanović Batut", Statistical Office of the Republic of Serbia and international e-databases (WHO/Eurostat) for comparison purposes.

This statistical information often is only available in aggregated sets of data which do not allow for detailed analyses.

Health outcomes and health status of children are illustrated by the following indicators: infant mortality rate (deaths of children in the first year of life), perinatal mortality rate (fetal deaths from the 22nd week of gestation or achieved 1000g in intrauterine development and deaths by the seventh day of life), neonatal mortality rate (deaths in the first 27 days of life only), and morality of children under five years of age (deaths before children turn five years); morbidity, nutritional status and comparisons with relevant national and international benchmarks and objectives. A special focus was placed on disparities and social inequalities in health among population groups within Serbia, which are considered unfair, unjust, avoidable and unnecessary.

The results were presented in tables and graphs.

Results

In Serbia, there has been a significant reduction in the mortality rates at the national level, particularly with regard to infants and children under five (Figure 1), while the reduction of the mortality rate in the prenatal period was somewhat more limited.



Figure 1. Children mortality rates in Serbia: Situation analysis and the desired Millennium Goal by 2015

I-infant mortality rate; II-perinatal mortality rate; III-neonatal mortality rate; IV-children under 5-year mortality rate.

Mortality among Roma children remains high, the rate has almost halved over the last five years bringing the number closer to the national Millennium Goal of reducing Roma under-five child mortality to 14 and infant mortality to 12. However, the current mortality rate of Roma children is still three times as high as the Millennium Goal set at the national level for Serbia (Figure 2).

Figure 2. Differences in mortality rates between the average population of children and Roma children in 2005 and 2010 in Serbia



Figure 3 presents the leading causes of death in Serbian children under-five years. Most deaths of under-five children are due to preterm birth complications, congenital anomalies, birth asphyxia and trauma, pneumonia and sepsis.



Figure 3. Distribution of the leading causes of death of children under-five in Serbia

The indicators of diet and nutritional status of children under-five years of age are presented in Table 1. The rate of malnourished children among the poor and in Roma settlements is twice as high as in the general population of Serbian children. Surprisingly, a growing number of obese children were also noted in the Roma population, from 6.7% to 12.8%, which points to irregular nutrition. The corresponding Millennium Development Goal in Serbia aims to bring the share of obese children down to 9.1% by 2015. Breastfeeding habits have not substantially changed, except in the Roma population where the number of exclusive breastfeeding up to the age of six months has decreased. The rate of exclusive breastfeeding is still only half of the desired Millennium Development Goal in Serbia (30% of exclusively breastfeed children from birth until the six month of age).

Indicator	Serbia		The poor		Roma settlements		MDG
	2005	2010	2005	2010	2005	2010	2015
Live births with low birth weight	4.9	4.8	8.6	8.3	9.3	10.2	
Percent of children first breastfed within a day after birth	68.8	61.9	71.7	69.1	72.5	70.3	
Percent of children with exclusive breastfeeding for the first six month	14.9	13.7	15.4	19.5	18.0	9.1	30.0
Percent of children 6-23 months who receive the minimum number of meals	Na	84.3	na	80.0	na	71.9	
Prevalence of malnourishment among children under-five (body weight for the given height \leq - 2SD)	3.2	2.3	3.8	5.2	4.1	5.2	
Prevalence of obesity among children under-five (body weight for the given height ≤- 2SD)	15.6	12.7	15.5	12.5	6.7	12.8	9.1

Table 1. Diet and nutritional status of children under five years of age in 2005 and 2010 in Serbia

Discussion

This situation analysis covers the health status of Serbian children that can be illustrated by indicators of child and infant mortality, morbidity and nutritional status which are compared with relevant national and international benchmarks and objectives. A special focus was placed on disparities and social inequalities in health among population groups within Serbia, which are considered unfair, unjust, avoidable and unnecessary since they open a systematic burden on vulnerable population groups. It is believed that the unfair differences in health of children result from social structures and political, economic and legal relations: they are derived from the system, and are result of the social system (so that they can be changed) and they are unjust (11). Marmot insists that they are not a natural phenomenon by any means; instead, they are a combination of poor conditions and low standards of living, poverty, risky life-styles, social exclusion, scarcely formulated, inappropriate health programs and sometimes toxic national and local policies (12).

Infant mortality is generally regarded as a basic indicator of population health and a measure of long-term consequences of perinatal events. This parameter is particularly

important for monitoring and assessing health outcomes in high risk groups such as pre-term children and children with developmental difficulties. Trends show that Serbia has made significant progress towards the Millennium Development Goal relating to infant mortality (13,14).

An analysis of routine statistical data, although infant mortality is still above the European Union–27 average (for example, in 2010, the EU-27 infant mortality average was 4.1 vs. 6.7 in Serbia), suggests that Serbia may achieve the proposed national Millennium Goals in 2015: an infant mortality rate of 4.5 and an under-five mortality rate of 5 per 1000 live births. Earlier comparisons of infant mortality revealed rates in Serbia two times higher than the EU rates, but this difference has been substantially reduced to date (15,16).

Recent studies conducted by UNICEF and other organizations indicate that the majority of the Roma population face social disadvantage and exclusion, and most of them live in poverty (17). Many Roma individuals are also unemployed, have limited education, as well as insufficient access to information, which combined with a lack of trust in institutions often prevent them from using healthcare services in case of need. The Multiple Indicator Cluster Surveys (MICS), which have been conducted periodically in Serbia since 1996 with the help of UNICEF, have been extremely valuable in gaining a better understanding of the challenges involved. From 2005, these surveys have provided assessments of child mortality in the Roma population using the Brass method for estimating child mortality taking into account the risk of death to which the children are exposed to (18). Although mortality among Roma children remains high, the rate has almost halved over the last five years bringing the number closer to the national Millennium Goal of reducing Roma under-five child mortality to 14, and infant mortality to 12. However, the current mortality rate of Roma children is still three times as high as the Millennium Goal set at the national level for Serbia (15).

According to the World Health Organization, most deaths of children under the age of five years are due to a small number of diseases and conditions. Forty-three per cent of these deaths occur among babies aged 0-28 days (newborns) and are mainly due to preterm birth complications, birth asphyxia and trauma, and sepsis. After the first 28 days until the age of five years, the majority of deaths are attributable to infectious diseases such as pneumonia (22%), diarrhoeal diseases (15%), malaria (12%) and HIV/AIDS (3%) (8,9).

While international efforts to address mortality among children under the age of five have resulted in significant reductions globally, persistent inequities between and within countries exist. These are not only driven by poverty, but are intrinsically linked to social exclusion and discrimination. Therefore, continued efforts to eliminate under-five mortality must take into consideration both direct causes and underlying determinants. This requires a comprehensive and holistic approach, which must explicitly recognize human rights' standards as essential and integral elements.

Also, poor nutritional status in children is strongly correlated with vulnerability to diseases, delayed physical and mental development, and an increased risk of dying. While, between 1990 and 2011, the proportion of children under the age of five years who were underweight declined by 36%, under-nutrition is still estimated to be associated with 45% of child deaths worldwide. In 2011, there were 165 million children under the age of five years who were stunted, and 52 million who were wasted (10,19,20). Low birth weight is closely associated with increased risks of neonatal mortality, cognitive problems and chronic diseases in later life (20). Our

analysis shows that the national average share of live births with low birth weight (under 2,500 grams) has remained constant in Serbia in the last decade. The share of low birth weight is significantly higher for Roma and poor children.

More preventive approaches and consistent efforts for improvement are needed in Serbia, to ensure that child health receives the attention and resources needed and secure the benefits that children and families require.

Identifying the health outcomes that matter most for the children, and set out the contribution that each part of the health system needs to make in order that desired health outcomes are achieved, would be an effective way to reach progress.

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ORIGINAL RESEARCH

Dietary patterns and physical activity among Palestinian female schoolchildren in East Jerusalem

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Abstract

Aim: This study aims to assess the Palestinian girls' dietary habits and physical activity patterns as a baseline for intervention.

Methods: A cross-sectional study of grade 4 and 5 pupils (mean age: 11 years) in 14 all-girl schools in East Jerusalem, of four different types of school ownership (overall N=897), was conducted, using self-administered questionnaires and height and weight measurements. Logistic regressions were conducted to determine predictors of healthy behaviours.

Results: Only 36.6% of the pupils reported eating breakfast daily, with UNRWA schools having the highest rate of daily breakfast consumption (42.6%). About 28% reported eating the recommended daily quantity of five portions of fruits and vegetables. Only 15% of the pupils reported being active at least five days a week and more than one third of the schoolchildren viewed TV for \geq 4 hours a day. The prevalence of overweight and obesity was 22.2% and 7.6%, respectively, with private schools having the highest rates, 29.6% and 12.8% respectively (P=0.001). Additional predictors of overweight and obesity were: being the first child in the family, watching TV for more than four hours a day, always eating while watching TV and being physically active less than five days a week.

Conclusions: Most Palestinian pupils miss breakfast, eat less fruits and vegetables than recommended and have sedentary behaviours. These findings raise serious concerns and point to the urgent need for tailored interventions.

Keywords: dietary and physical activity behaviour, obesity, Palestinian female schoolchildren.

Conflicts of interest: None.

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Introduction

Healthy nutrition and physical activity are the key factors in preventing and reducing obesity in children (1). Additionally, adapting such a healthy lifestyle throughout one's life span is essential for optimal physical growth and intellectual development (1). Obesity is known to be a significant risk factor for chronic diseases including type II diabetes mellitus, cardiovascular disease and certain types of cancer (2,3), and imposes a substantial economic burden (4). The obesity trend is especially alarming considering the increasing prevalence in children and adolescents. The need for effective preventive measures to control obesity has therefore become a major public health issue.

In Palestine, rapid urbanization, modernization and sedentary lifestyle have contributed to the increasing prevalence of overweight and obesity in all age groups (5). However, there are few local studies focusing on eating habits and physical activity patterns. One study was part of the Health Behaviour School Children survey (HBSC) conducted in 2004 in the West Bank and Gaza strip. This survey acknowledged problems such as skipping breakfast particularly among girls, low consumption of vegetables and fruits and low intake of milk (6). Such data is lacking for female schoolchildren from East Jerusalem. The current study is done to fill this gap and is part of a baseline study of a school-based intervention programme in East Jerusalem to promote healthy eating and physical activity among schoolchildren, their mothers and teachers.

The purpose of this paper is to describe nutritional and physical activity habits and their socio-demographic determinants among Palestinian girls in East Jerusalem schools of different types of ownerships.

Methods

Study design and population

A cross-sectional study was performed in April-June 2011 to provide the baseline data in a randomized controlled programme trial, before allocating schools into intervention and control groups. The primary target population was girls in grades 4 and 5, as those elementary schoolchildren are old enough to be able to answer the questions, however, they are not yet close to puberty when hormonal changes could have altered the results.

All schoolgirls from the different types of ownership in East Jerusalem were eligible for the study. This included 31 Jerusalem Municipality (JM) schools with 2,759 students, 23 Palestinian Authority (PA) schools with 2167 students, 40 Private schools with 820 students and eight United Nation Relief and Works Agency (UNRWA) schools with 1218 students. Average number of students per class is 34, with different numbers according to school type of ownership.

Sampling was done in two stages: i) stratified sampling of schools according to their ownership; ii) a random selection of classes (by lottery). All students in the selected classes were included.

Sample size calculation was based on the estimated prevalence of healthy behaviours relating to physical activity (>5 days per week), which was estimated at 25% among girls in grade 6 in the HBSC study (6). Assuming that this behaviour will increase among the intervention schools to 40%, and will remain at 25% in the control group, with a significance level of 5%, a power of 90%, intra-class correlation of 0.001 and a cluster size of 34, a sample of 14 schools was needed in order to provide 13% of the eligible population (952/6962). A random sample of schools was drawn in each of the four strata. This corresponded to six schools from the Jerusalem Municipality, four PA, two Private and two UNRWA schools, with 28 classes

and 935 students.

Data collection

A structured self-administered anonymous questionnaire was given to the pupils based on the HBSC questionnaire (6),which in turn was based on the WHO format (7). It focused on dietary assessment (eating breakfast, drinking before leaving for school, consumption of fruit and vegetables, milk consumption), physical activity (mode of transport to and from school, days per week active in sport for at least one hour per day), physical inactivity (watching TV) and knowledge (recommended daily consumption of fruits and vegetables).

The class teacher supervised filling the questionnaire by reading out aloud each question and then asking for an immediate response. The main researcher (MH) was present during administration of the questionnaires to clarify questions if required.

Respondents were informed that answering was voluntary and that information would be treated confidentially.

The height and weight of each student were measured after they completed the questionnaire, Students' weights were measured in their lightweight clothes (schools' uniform with no jackets) and without shoes before 10 o'clock break according to a standard protocol and instrument. Care was taken to ensure that the measurements were done sensitively and separately in a private room with the presence of the class teacher's supervisor.

Mothers' level of education and occupation was based on the mothers' self reported questionnaire and school files of the children for missing data.

Measures

Eating breakfast was assessed based on the question "Do you always eat breakfast before you leave for school?" with response options (1) yes, every day, (2) yes, sometimes, (3) never. Whereas drinking in the morning: (1) yes, always, (2) yes, sometimes, (3) never. Next, both questions were categorized into Yes (yes, every day) or No (sometimes or never). Daily consumption and quantity of fruits and vegetables were calculated and converted to two categorized into: (1) physical activity >5 days a week; (2) \leq 5 days a week. BMI-for-age was computed for each child using the WHO software AnthroPlus 2007 program. This program deduced z-score and percentiles using the exact age in days (8). Overweight was determined if a child's z-score fell between \leq + 1SD and +2 SD (85th percentile). Obesity was determined if the child's z-score fell below minus 2 SD (3rd percentile). Mothers' education was divided into three categories; (1) less than secondary, (2) secondary, (3) diploma and higher. Employment was divided into two categories; (1) yes, (2) no. Crowding index (the ratio between number of residents at home and number of rooms) was used as a proxy for socio-economic status and divided into (1) less than one; (2) 1-2, (3) more than 2.

Statistical analysis

Data analysis was performed using SPSS version 20. Chi-square tests were used to calculate associations between categorical variables by school ownership, grade, sociodemographic/economic variables. A stepwise forward logistic regression model was built for identifying independent predictors of eating breakfast daily, eating the recommended quantity of fruits and vegetables, physical activity and overweight and obesity. The variables in the final model of the stepwise forward logistic regression were tested again by entering them into the logistic regression models.

Ethical considerations

Approval from the Israeli Ministry of Education, Palestinian Ministry of Education, UNRWA Office of Education Department and private school principals was obtained. The research program was approved by the Hebrew University of Jerusalem/Authority for Research Students Committee.

Results

Sample characteristics

All 14 selected schools agreed to participate in the study. Of the 935 eligible schoolchildren, 897 (95.9%) participated (49.9% children were from grade 4 and 50.1% were from grade 5). Non-response was due to absence from school on the day of data collection. Table 1 presents the socio-demographic characteristics of the study population by school ownership.

	School Type							
Variable	Municipality	PA	UNRWA	Private	Total			
	(n=400)	(n=236)	(n=136)	(n=125)	(n=897)			
Grade (%):								
4 th Grade	49.8	50.0	49.3	51.2	49.9			
5 th Grade	50.3	50.0	50.7	48.8	50.1			
Age:								
Mean	11.02	11.00	11.10	10.98	11.02			
SD	0.70	0.78	0.87	0.71	0.71			
Order in the family (%):								
1	19.2	19.1	16.9	29.6	20.6			
2-3	39.0	30.9	37.5	51.2	38.4			
4	15.6	16.1	15.4	9.6	15.2			
≥5	24.8	33.9	30.1	9.6	25.9			
Sibling (%):								
0-2	14.5	6.8	5.9	43.2	15.2			
3-4	44.8	42.4	38.2	46.4	43.4			
≥5	40.8	50.4	55.9	10.4	41.4			
Crowding index (%):								
<1	9.0	6.4	8.1	17.6	9.4			
1-2	54.5	66.1	51.5	62.4	58.3			
>2	36.5	27.1	40.4	20.0	32.3			
Religion (%):								
Muslim	100.0	100.0	100.0	59.2	94.3			
Christian	0.0	0.0	0.0	40.8	5.7			
Mother education (%):								
Less than secondary	45.6	49.0	52.7	7.1	42.2			
Secondary	40.0	34.3	36.4	38.1	37.7			
Diploma & higher	14.4	16.7	10.9	54.9	20.1			
Mother employment (%):								
Yes	16.6	15.9	14.5	33.9	18.5			
No	83.4	84.1	85.0	66.1	81.5			

Table 1. Socio-demographic characteristics of the study population by school ownership

The age of students ranged between 9-14 years (mean: 11.02, SD±0.71). About 94% were Muslims and 6% were Christians, all attending private schools. The mean family size was

7.1; Schoolchildren from Municipality, P.A and UNRWA had more siblings compared to those in Private schools. Schoolchildren from Municipality and UNRWA schools lived in higher crowding index (residents per room) compared to PA and Private Schools. About 81% of the mothers did not work and 20% had a diploma or higher education.

Dietary habits

The percent of schoolchildren who reported having breakfast was 36.6%. There was a significant difference between school ownership with UNRWA schools having the highest rate of daily breakfast consumption (42.6%), compared to Municipality, PA and Private (P=0.032) (Table 2). More Muslim schoolchildren (29.7%) consumed breakfast compared to Christian schoolchildren (25.5%) in Private schools.

Table 2. Dietary pattern, physical activity, knowledge perception, overweight and obesity (%)by school type and crowding index

		School	ownership	Crowding index			
BEHAVIOURAL CHARACTERISTICS	JM	PA	UNRWA	Private	<1	1-2	>2
	N=400	N=236	N=136	N=125	(n=84)	(n=522)	(n=290)
Dietary pattern							
Always eating breakfast	38.3	34.7	42.6	28.0^*	56.0	33.3	33.6 [†]
Always drinking in the morning	46.0	42.0	51.5	47.0	52.2	48.8	45.2
Always eating vegetable at 10 o'clock break	18.3	8.5	22.8	16.0 [‡]	23.8	15.7	14.5
Always eating fruits at 10 o'clock break	18.3	11.4	20.6	16.1	16.7	15.9	17.6
Eating \geq 5 serving of vegetables and fruits/day	35.8	22.1	14.0	27.2 [‡]	29.8	27.2	27.2
Eating vegetables once or more per day	21.3	27.5	13.2	23.2^{*}	26.2	21.5	21.4
Eating fruits once or more per day	23.3	19.6	16.9	23.2	29.8	22.2	17.0^{*}
When thirsty water is the most used drink	69.5	90.3	79.0	68.0^{\ddagger}	78.6	74.7	78.3
Drinking milk every day	43.3	40.7	27.2	52.0 [‡]	59.5	41.8	35.5 [‡]
Lunch is the main meal at home	74.2	77.5	61.0	77.6^{*}	76.2	73.9	72.3^{*}
Eating with family or at least one parents	79.5	77.0	77.2	72.8	77.4	78.1	76.6
Eating while watching TV	27.0	21.7	20.6	32.0 [‡]	28.6	24.9	25.3
Eating while using computer	5.3	1.70	8.1	4.80^{\dagger}	3.6	4.6	5.2
Eating when bored/angry/stressed/frustrated	6.5	4.2	4.4	1.6^{\dagger}	4.8	5.2	4.5
Physical activity pattern							
Walking to school in the morning	65.3	71.6	93.4	39.2 [‡]	57.1	64.4	76.2 [‡]
Walking back after school	73.3	76.3	97.1	40.0^{\ddagger}	61.9	70.3	80.7^\dagger
Physically active ≥ 5 days a week	16.8	13.6	8.1	16.0	20.2	16.5	9.30
Sedentary behaviours							
Using computer >4 hours	20.0	14.0	7.4	17.6^{\dagger}	22.6	14.9	16.2
TV viewing ≥4	33.0	36.0	38.2	38.0 [‡]	33.3	33.5	34.5
Knowledge							
Acknowledge importance of breakfast	91.7	94.5	94.0	94.4	94.0	93.7	92.0
Acknowledge importance of fruits & vegetables	97.7	97.0	95.6	100.0	96.4	98.1	96.9
Acknowledge importance of water	98.0	95.8	100.0	99.2 [*]	97.6	98.1	97.9
Know recommended serving vegetables/fruits	12.5	12.0	10.3	14.4	25.0	21.3	23.5
BMI							
Overweight	24.8	14.4	21.3	29.6	29.8	19.3	25.2
Obese	7.5	3.4	10.3	12.8‡	7.1	8.4	6.2
	-	-				-	

* P<0.05; * P<0.01; * P<0.001.

Eating breakfast daily was associated with the socio-economic status of the family, measured by crowding index. Those living in a house with fewer than one person per room had a 2.4-

fold increase in the likelihood of eating breakfast (OR=2.38, 95%CI=1.36-4.18), controlling for school type (logistic regression, Table 3). UNRWA schoolchildren were more likely to eat breakfast (OR=1.75, 95%CI=1.07-2.88) compared to other school types of ownership. If mothers always prepared breakfast for their daughters, there was a 4-fold increase in the likelihood of the child eating breakfast (OR=3.83, 95%CI=0.82-17.96), although this finding was not statistically significant. These three determinants contributed independently to having breakfast daily (logistic regression, Table 3). The mother's level of education and employment status, beliefs, and knowledge regarding the importance of breakfast meals and birth order were found to have no effect on eating daily breakfast. "Not feeling hungry" was the main reason for skipping breakfast (78.6%).

Variable	Number	OR	P-value	95%CI
Crowding index:			<0.001 (2) [†]	
<1	73	2.38	0.003	1.36-4.18
1-2	432	0.75	0.099	0.53-1.06
>2	230	1.00	-	reference
School ownership:			0.004 (3)	
JM	341	1.00	0.640	0.62-1.34
PA	193	0.91	0.030	1.07-2.88
UNRWA	86	1.75	0.018	0.34-0.90
Private	115	0.55	-	reference
Mother preparing breakfast to her daughter:			<0.001 (2)	
Never	13	1.00	-	reference
Sometimes	235	1.41	0.67	0.29-6.76
Always	487	3.83	0.089	0.82-17.96

Table 3. Determinants of eating breakfast – logistic regression models^{*}

* The last variables left of the stepwise forward logistic regression were entered into the logistic regression model.

[†]Overall p-value and degrees of freedom (in parentheses).

The most commonly consumed food for breakfast was za'ater and oil with bread. This choice varied widely between school ownership type (P<0.001), where UNRWA schoolchildren consumed the most (61.6%). Other relevant variables were Muslim religion (P<0.001) and mothers who had not attained secondary education (P<0.001).

The proportion of schoolchildren who reported drinking in the morning before leaving for school was 46.2%. This was not found to be associated with school ownership, grade, or with socio-economic variables.

About 28% of the schoolchildren reported consuming the recommended number of daily servings of fruits and vegetables (five servings a day), with a significant difference between school types of ownership (P<0.001) and the mother's level of education (P=0.01). Only 12.3% of schoolchildren reported the correct answer for the daily recommended consumption of fruits and vegetables. Children of mothers with a diploma or higher level of education had a higher proportion of consuming the recommended number of servings (47.9%). School type of ownership and the mother's level of education remained statistically significant in the final multilevel logistic regression model. Being in a JM school increased the probability of consuming the recommended quantity of vegetables and fruit by 1.55 times (OR=1.53, 95%CI=0.76-1.96). Having a mother with a diploma or higher education increased it by 1.8

times (OR=1.80, 95%CI=1.25-2.60). The mother's employment status, religion, and crowding index were found to have no effect.

School ownership had a significant effect (P<0.001) on daily milk consumption, with private schools having the highest consumption (52%). Another predictor was the crowding index, which was inversely associated (P<0.001).

Most of the schoolchildren had lunch as the main meal which they ate with at least one parent.

Physical activity

The majority of schoolchildren reported walking to and from the school (67.6% and 72.9%, respectively). There was a significant difference between school ownership type (Table2), with UNRWA schools having the highest level (93.4% and 97.1%, respectively, P<0.001).

The overall reported physical activity in schoolchildren showed that pupils were only slightly active in sport. About 14% of schoolchildren reported being active at least five days a week (Table 2). This proportion was significantly inversely associated with the crowding index (20.2%, 16.5%, and 16.5% for up to one, between 1-2, and more than two, respectively, P=0.006). A positive significant association was also found with mothers' level of education (12.9%, 13.4% and 21.5% for less than secondary, secondary and diploma or higher education, respectively, P=0.027). No other tested variables were associated with physical activity.

Sedentary behaviours

One-third of the students (33.9%) viewed TV for \geq 4 hours a day and this was significantly associated with the school ownership (P<0.001). The highest percentages reporting viewing television were found in UNRWA and Private Schools (38.2% and 38.0%, respectively). (Table 2). Sedentary behaviour was not associated with the crowding index, mothers' education or employment. No correlation was found between television viewing and being physically active.

Body weight

The overall prevalence of overweight and obesity was 22.2% and 7.6%, respectively. The difference between school ownership types was statistically significant (P<0.001), where the highest proportion was among Private schoolchildren (42.4%). More Christian schoolchildren in the private schools (47.1%) were overweight and obese compared to Muslim schoolchildren (39.2%). About 1% of schoolchildren were underweight, with highest rates among PA schoolchildren (3%) (Table 2). A significant higher prevalence of overweight and obesity was noticed with the first child in the family. The other independent determinants of overweight and obesity (logistic regression) were: watching TV more than four hours a day (OR=4.13, 95%CI=2.93-5.82); being physically inactive (less than five days a week) (OR=1.95, 95%CI=1.17-3.24) and always eating while watching TV (OR=3.42, 95%CI=2.27-5.13) (Table 4).

No association was found with crowding index, mothers' level of education or employment. About 75% of overweight/obese children considered their weight as normal, whereas 66% of those who perceived themselves as "high weight for their age" were actually overweight/obese children (data not shown).

Variable	Number	OR	P-value	95%CI
Family order:	1 (unit) (1	U	$0.003(3)^{\dagger}$	<i>ye n</i> er
	195	1.00	0.005 (5)	rafaranaa
1	185	1.00	-	reference
2-3	343	0.48	0.001	0.31-0.74
4	136	0.91	0.74	0.54-1.56
≥5	231	0.57	0.024	0.35-0.93
School ownership:			<0.001 (3)	
JM	399	1.00	-	reference
PA	235	0.38	< 0.001	0.24-0.59
UNRWA	136	0.90	0.660	0.56-1.45
Private	125	1.71	0.026	1.07-2.75
Physical activity:				
<5 days/week	761	1.95	0.010	1.17-3.24
≥5 days/week	135	1.00		Reference
TV viewing:				
≤4 hours/day	597	1.00	< 0.001	2.93-5.82
>4 hours/day	299	4.13		Reference
Eating while watching TV:			<0.001 (2)	
Never	315	1.00	-	reference
Several times a week	534	0.71	0.010	0.48-1.07
Every day	266	3.42	< 0.001	2.27-5.13

Table 4. Determ	inants of over	weight and	obesity _]	logistic r	egression	models
Table 4. Determ	manus or over	weight and	obcarty 1	logistic i	cgression	moucis

* Overweight and obesity were combined. The last variables left of the stepwise forward logistic regression were entered into the logistic regression model.

[†]Overall p-value and degrees of freedom (in parentheses).

Discussion

The aim of this study was to provide baseline information of schoolchildren living in East Jerusalem as the first stage of a randomized controlled intervention programme. The results showed that most children fail to meet the international dietary and physical activity recommendations. There was a significant independent difference between school ownership and socio-economic groups, measured by the crowding index, but no significant difference was observed between grades for all the studied variables.

Approximately one third (36.6%) of female schoolchildren ate breakfast before school. This finding is consistent with the finding of dietary habits among Palestinian adolescents where 34.7% ate breakfast (9). Most of the schoolchildren reported "not feeling hungry" as the main reason for skipping breakfast, which is a growing concern worldwide, especially among females (10). In private schools, although the pupils come from higher social classes and are assumed to be in a better position to provide good food for their children, the level of skipping breakfast was the highest.

Za'ater and olive oil with bread is the most commonly consumed breakfast meal. This could be because of its prominent role in cultural heritage, due to the widely held belief that za'ater helps to keep mind alert especially prior to exams or school. Olive oil is known to be a main component of the Mediterranean diet, a rich source of monounsaturated fatty acids and an antioxidant agent, which has several beneficial biological functions for health (11). Studies also have proved that olive oil intake is associated with the reduced risk of cardiovascular disease and mortality in individuals at high risk (12).

Drinking milk was reported only by 40% of schoolchildren. Adequate calcium intake for children is essential for the development of bone mass and mineral density (13) and in the maintenance of health and prevention of chronic diseases (14). Strategies to encourage milk consumption by schoolchildren need special attention.

The reported fruit and vegetable intake was lower in our study than that found in the 2004 Palestinian HBSC survey (6). This could be due to rapid and progressive shifting among Palestinian adults to Western-style food patterns (9). Less than one third of schoolchildren reached the recommended daily dietary intake of five servings of fruits and vegetables (1). This means that these children may fail to obtain appropriate nutritional intakes of vitamins, mineral and fiber to protect them from diet-related chronic diseases (15), including overweight and obesity (16,17), despite the fact that Palestinian markets have a wide variety of vegetables and fruits at low prices. Therefore, the need to promote the consumption of more vegetables and fruits is viable and a public health priority.

Regular physical activity plays an important role in improving the quality of life. Although more than two thirds of schoolchildren reported walking in the morning to and from school, respondents did not engage in regular sport and physical activity in leisure time. Therefore, they do not achieve the recommended level of being one hour or more physically active per day (18). In Arab countries, including Palestine, women are prohibited by the socio-cultural norms from participation in outdoor sports activities. Therefore, there is a need to develop good physical education practices (e.g. skipping, which can be performed at home) to increase physical activities among girls.

In parallel, there is an increase in sedentary behaviours among schoolchildren, which is due mainly to time spent watching television, as in many other countries (15). This is because television is so accessible and available. Current recommendations are that children should spend no more than two hours watching television a day (19).

The problem of obesity

The prevalence of overweight and obesity is high among Palestinian schoolchildren, associated with lack of physical activity and increased sedentary behaviours. Childhood obesity is an increasingly worldwide problem. This study found that the prevalence of overweight is 22.2% and obesity is 7.6% which is higher than adolescents in the Gaza strip (17.0% and 5.45%, respectively) (20), Ramallah (18.9% and 3.3%, respectively), Hebron (14.9% and 2.0%, respectively) (9), but slightly lower than a previous study conducted in East Jerusalem in 2002 (24.3% and 9.9%, respectively) (21).

The overweight/obese schoolchildren were found more likely to watch television for more than four hours. This is in accordance with several cross-sectional and longitudinal studies showing very strong associations between television viewing and childhood obesity (22,23). Significant positive associations were found between eating while watching television and the risk of becoming overweight/obese. Watching television for many hours may lead to a snacking while watching (24), which is independently associated with overweight/obesity among children (25).

Schoolchildren in private schools have higher standards of living. Several studies have demonstrated that socioeconomic status is directly related to childhood obesity in developing countries (26), which is higher in urban areas (27,28). The discussed culture restrictions placed on girls which results in their staying at home with easy access to food, contribute to their increased risk of overweight and obesity. Evidence suggests that measures should be introduced as early as possible, so that healthy lifestyle habits are learnt from childhood (29).

Study limitations

The study involved a cross-sectional design, and therefore cannot address causality. Another limitation is using a self-reported questionnaire from schoolchildren in grades 4 and 5 which could have influenced its validity and reliability. However, studies show that results from self-administered questionnaires tend to minimize social desirability bias compared to interviewer-administered questionnaires (30).

Conclusion

This study shows that Palestinian girls miss breakfast, eat less fruits and vegetables than the recommended requirements, and have sedentary behaviours, which is associated with high prevalence of overweight and obesity. There is a need for developing effective intervention programmes to promote healthy eating and physical activity among Palestinian schoolchildren.

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ORIGINAL RESEARCH

An educational initiative for Mexican school-aged children to promote the consumption of fruit, vegetables and physical activity

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Abstract

Aim: To present the results of a community initiative focused on strengthening physical activity and the consumption of fruits, vegetables and natural water while discouraging the use of highly energetic food and sugary drinks in public schools of Morelos.

Methods: A quasi-experimental study with an educational initiative focused on the school community of two primary schools and two junior high schools. Pre- and-post initiative measurements were made. The study took place in the municipality of Yautepec, Morelos, Mexico, in a rural area and an urban area, from August 2010 to July 2011.

Results: Water consumption among school-aged children increased from 15.1% to 20.1% and soda consumption decreased from 21.4% to 13.2%. A slight increase in the consumption of fruits and vegetables was also measured (oranges, jicamas, bananas, tomatoes, prickly pear pads, lettuces), that are accessible in the region. It was found that the supply of fresh food is limited and that high energy density foods have an oversupply in both study areas. Physical activity increased with actions such as football and dancing, in accordance with the baseline measurement. No changes were observed in the nutritional condition of school-aged children (n=150; 13.3% with overweight and 7.3% with emaciation), or in adults who presented a body mass index higher than normal, 60.2% to 88.4%.

Conclusion: In addition to educational activities, schools need to implement strategies to improve the access and availability of fresh foods while limiting the access of high energy-density foods.

Keywords: diet, educational initiative, Mexico, nutritional condition, school-aged children.

Conflicts of interest: None.

Introduction

Currently, the number of Mexican children and adolescents with overweight and obesity (O/O) is a public health problem (1), which has increased in school-aged children aged from 5 to 11 years. According to The National Nutrition Survey (ENN in Spanish) in 1999, the increase was of 19.5%. The National Survey of Health and Nutrition (ENSANUT in Spanish) in 2006 reached 26%, and the ENSANUT 2012 went up to 34.4%, representing an increase of over 80% (1-3).

The "Health in the World 2002" report of the World Health Organization (WHO), has pointed out health risks in different continents. In Latin America, addictions, blood pressure, low weight, together with overweight and obesity, represent one sixth of the morbidity burden. In this report, different cost-effective actions are mentioned to reduce the risks, such as decreasing salt and saturated fats intake to diminish the risks associated with cardiovascular diseases. It also states that one of the priority actions is to promote healthy environments for children (4).

Strategies for healthy communities and schools consider that cities, towns and schools are the most adequate spaces to promote healthy lifestyles for the entire population and specifically for school-aged children. Since children and young people are in a formative stage of life, schools become an ideal place for educational initiatives, so that they can incorporate knowledge, skills and health practices that not only circumvent risk behaviours, but improve health (5).

Various studies report educational initiatives aimed at school-aged children in their educational atmosphere. Some of these studies focus on increasing the knowledge of school-aged children in relation to healthy food (6,7). There are also researches about school-aged children's food intake preferences, which indicate that vegetables are not the food of their choice (8). Other initiatives are aimed at increasing school-aged children consumption of fruits, vegetables and reduce the consumption of beverages and high-energy density products and increase physical activity (9-13). Some authors mention that in the educational initiatives they have carried out, they focus on the entire school community (school-aged children, parents and teachers) in order to obtain better results and because parents and teachers help shape school-aged children behaviour (9-11).

The objective of this manuscript is to present the results of an educational initiative focused on strengthening physical activity and the consumption of fruits, vegetables and natural water, while discouraging the intake of highly energetic food and sugary drinks in the school community of public schools in Morelos, Mexico.

Methods

A quasi-experimental study through an educational initiative focused on the school community of elementary and junior high schools was implemented. Previous and post-initiative measurements were made. The study was conducted in the municipality of Yautepec, Morelos, in a rural area and an urban area, from August 2010 to July 2011. We employed a convenience sampling (n=150 students and n=178 adults) across rural and urban areas, and applied a pre-post test design based on quantitative and qualitative data. The educational initiative was carried out with students of the 4th, 5th and 6th grades of elementary school, and the 1st, 2nd and 3rd grades of junior high school located within the localities. In addition to school-aged children, teachers, managers and administrative staff of the schools,

as well as parents were included in order to strengthen the changes proposed for school-aged children and make them sustainable (9-11).

Tools and techniques for data collection

School-aged children

The following measurements were taken at the beginning and at the end of the study: weight and height using a standardized anthropometric methodology (14). The weight was measured with an electronic scale (Tanita brand, model 1583, Tokyo, Japan) with capacity of 140 kg and accuracy of 100g. Height was measured using a wooden stadiometer with capacity of 2 meters and precision of 1 mm. The ages and dates of birth were provided by the school-aged children and corroborated by their teachers or mothers. Anthropometric measurements were taken by the research team, which was previously trained according to standard techniques (15). The anthropometric indicators used to assess the nutritional condition of school-aged children were weight/height and height/age. Length and weight data were transformed into *z*scores by using the WHO/ANTHROPLUS (16). A cut-off of -2.0 SD was used for classifying children as stunted based on individual height-for-age z-scores. A cut-off of +2 SD was used to classify children as overweight or obese, based on individual weight-forheight- age-z-scores (BMI)-for-age, according to international standards, sex- and agespecific.

Questionnaires applied at the beginning and at the end of the study included (17): i) *dietary information:* Food Frequency Questionnaire (FFQ). This questionnaire was taken from the school-aged children section of the 2006 National Health and Nutrition Survey, which is validated and was applied in all the regions of Mexico. The information was obtained using a 7-day semi-quantitative FFQ. For each food item, the number of days of intake per week, times-a-day, portion size (very small, small, medium, large, and very large), and number of portions consumed were asked. The food groups were as follows: milk and dairy, fruits, vegetables, sugar sweetened beverages and sugar-free beverages, water and sweets and candy, as well as consumption of fruits and vegetables; ii) *physical activity* questionnaire for school-aged children.

Adults

Initially, measurements of weight, height and waist and hip circumferences were made. The applied technique was in agreement with Lohman and Martorell and standardization was according to Habicht (6,7). Weight and height were measured with the same instruments used with school-aged children. Adults' waist was measured at the midpoint between the lower rib and upper margin of the iliac crest; it was taken with a rigid tape brand "Seca" with capacity of 2 meters and precision of 1mm. Hip circumference was measured horizontally at the widest portion of the buttocks. The indicators used to assess the nutritional status of adults were the Body Mass Index (BMI) and waist-to-hip ratio (WHR) circumference index. The classification used to categorize the BMI was taken from the WHO standards (18), which identifies four categories: malnutrition (<18.5kg/m²) normal BMI (18.5 to 24.9kg/m²), overweight (25.0 to 29.9 kg/m²), and obesity (\geq 30.0kg/m²). The classification of the International Diabetes Federation was used as a reference for the waist circumferences, which defines as cut-off waist circumference of >80 cm for women and >90 cm for men (19). WHR was calculated as waist circumference divided by the hip circumference, and a WHR \geq 0.90 in men or a WHR \geq 0.85 in women was classified as that representing abdominal obesity (20).

Schools and communities

In schools and communities there were carried out: i) observation guides for the ethnographic record; ii) guided focus-group interviews, and; iii) community mapping.

Description of educational activities

The educational initiative was based on the Paulo Freire's empowerment education theory, which departs of the knowledge, practices and circumstances of the population involved, and secondly is enriched with theory (new knowledge), so that people can make changes in their environment later on (21-23).

During the educational sessions with school-aged children, participatory and playful techniques were used to promote collective reflection. The sessions were coordinated by facilitators previously trained and lasted 50 minutes. Overall, 15 sessions were held once a week, in each of the school grades (4th, 5th and 6th grades of elementary school and 1st, 2nd and 3rd grades of junior high school). The sessions were divided into two axes: diet and physical activity.

Under the first axis, the following topics were addressed: *a*) the healthy eating plate (24); *b*) the importance of eating fresh fruits and vegetables; *c*) drinking natural water; *d*) the damage caused to the human body by high energy density foods and sugary drinks; *e*) personal commitments to increase the intake of fruits, vegetables and natural water, and; *f*) actions within their family, school and community for healthy eating.

For the second axis, the following topics were addressed: a) the importance of physical activity; b) the damage caused when being sedentary; c) personal commitments to carry out physical activity, and; d) actions within their family, school and community to perform physical activity.

School-aged children carried out a series of activities (mural newspaper, school radio, health fairs, community tours, poster competitions, murals, sports tournaments and races within the school and their community) to spread their knowledge and make practical actions, both in their school and in their community.

At the end of the educational sessions, a school committee was established in each school in order to address nutrition and physical activity issues. It also carried out advocacy actions with the schools' directors and local authorities to improve the type of food and beverages that are offered within the educational institutions and the community, as well as various other actions to promote physical activity. Workshops with parents were conducted in eight weekly sessions (two hours per week). With teachers and school staff, the workshops were held in four monthly sessions, where each session lasted five hours long. At the end of each workshop, the groups of parents and teachers made commitments to carry out actions aimed at improving diet and physical activity in various fields such as: personal, family, school and community.

Data analysis

Quantitative component: for the anthropometric analysis, anthropometric indexes based on the measurements of weight, height and age were used. The indicator used for children, adolescents and adults was the BMI. For the classification of children in various categories, BMI distributions were used as well as the criteria proposed by the International Obesity Task Force (IOTF). This system identifies specific BMI breakpoints for each age and gender. The Anthroplus program and the Stata v13 statistical package were used. Univariate and bivariate analyses were obtained from the questionnaires' data. Measures of central tendency were used for numerical variables, whereas frequency distributions were used for categorical variables. Percentages were analyzed and described at the beginning and at the end of the

initiative. The following statistical programs were used for the analysis: Stata v13, Excel 2007 and WinEpi.

Qualitative component: systematization of community mapping, ethnographic records and focus groups.

Results

The analysis was performed with 159 school-aged children with complete questionnaire data: food intake frequency, anthropometry, socio-demographic characteristics, and physical activity (pre- and post-intervention). Mean age was 12.3 ± 1.9 years. Anthropometric data were presented with 150 school-aged children. There were no substantial changes in the nutritional condition (Table 1).

		Ru	Urban		
Parameter	Total	Men	Women	Men	Women
	(n=150)	(n=17)	(n=19)	(n=59)	(n=55)
Overweight					
Pre	13.3	17.7	21.1	6.8	16.4
Post	13.3	17.7	15.8	11.9	12.7
Obesity					
Pre	1.3	5.9	0.0	1.7	0.0
Post	2.0	5.9	0.0	1.7	1.8
Emaciation					
Pre	7.3	11.8	15.8	3.4	7.3
Post	7.3	11.8	15.8	3.4	7.3

Table 1. School-aged children anthropometry: Body Mass Index (BMI) by community
according to gender (percentages)

The mean BMI in the pre-intervention phase was 19.4 ± 3.8 , whereas in the post-intervention phase it was 20.5 ± 4.0 . It was found that most of the adult population was above the normal range of the BMI. In the rural community (n=121), it was found that BMI was between 60.2% (community groups) and 85% (parents) above the cut-off that is considered adequate. In the urban community (n=77), BMI ranged from 69.8% (community groups) and 91.7% (parents). The results for teachers in rural schools were: BMI above normal in 88% of them. In urban schools it was 57.1% above the normal BMI.

In 87% of rural schools parents, a WHR \geq 0.85 was found and 90.5% of them had a >80 cm waist circumference. Parents in urban areas showed 83.3% WHR \geq 0.85 and a >80 cm waist circumference (data not shown).

Consumption changes of drinks, fruits, vegetables and highly energetic food

Natural water consumption increased (not significantly) in school-aged children (from 15.1% to 20.1%) in a 2-4 day range per week. Soda consumption significantly decreased in school-aged children who consumed it daily (from 21.4% to 13.2%) and significantly increased in those who never consumed it or did it once a week (from 8.2% to 9.4% for the first case and from 30.8% to 42.2% for the second case) (Table 2).

The consumption for at least once a week of some fruits and vegetables, increased regarding products that are common in the area, or inexpensive in certain periods of the year (jicama, apples, pineapples, lettuces, prickly pear pads, cucumbers, squashes and chayote). The intake of oranges, mangos and melons increased from once a week to 2-4 times per week. There was no increase in the consumption of broccoli, cauliflower, cabbage or green beans (Figures 1 and 2). No significant gender differences were found in the consumption analysis of water, soda, fruits and vegetables.

	Τα	Total		Rural		ban
Type of beverage	Pre	Post	Pre	Post	Pre	Post
	(n=	159)	(n=	:38)	(n=	121)
Natural water consumption per	week					
Never	3.8	0.6	7.9	0.0	2.4	0.8
1 day	13.8	10.7	21.1	7.9	11.6	11.6
From 2 to 4 days	15.1	20.1	7.9	29.0	17.4	17.4
From 5 to 6 days	15.1	15.7	7.9	18.4	17.4	14.9
7 days	50.9	51.0	52.6	42.1	50.4	53.7
Did not answer	1.3	1.9	2.6	2.6	0.8	1.6
Soda consumption per week						
Never	8.2	9.4	2.6	10.5	9.9	9.1
1 day	30.8	42.2	42.1	42.1	27.3	42.1
From 2 to 4 days	30.8	23.9	34.2	34.2	29.8	20.7
From 5 to 6 days	8.8	11.3	5.3	7.9	9.9	12.4
7 days	21.4	13.2	15.8	5.3	23.1	15.7

Table 2. Beverages' consumption of school-aged children per community according to intervention phase (percentages)

The frequency of fried food consumption decreased slightly (81.2% vs. 79.3%), as well as the intake of industrial pastries.

Figure 1. School-aged children's fruit consumption percentage per week days (n=159)



In schools, teachers promoted the accessibility of natural water for school-aged children, and also made modifications (increased the consumption of fresh food and decreased the intake of high energy density food) in the type of food offered to school-aged children.

Focus groups with school-aged children reported that they increased natural water and fruits intake. Simultaneously, they pointed out that they decreased their sugary drinks and junk food intake.



Figure 2. School-aged children' vegetables consumption percentage per week days (n=159)

In addition, drinking natural water sweetened with fruits and the absence of soft drinks was observed in the ethnographic record of the rural community:

"According to what was taught, did you do any changes?"

-"I drink more water and eat more fruits".

-"We hardly eat junk food now".

-"*I barely use Valentina sauce and I add less sugar to my coffee or tea*" (junior high school and rural elementary school focus group: 33-44).

Differences were observed in focus groups with teachers, who reported positive changes for the urban elementary school and the rural junior high school:

- "Did you notice any changes in the children?"

-"No doubt there were changes in the children and the school in general. Although, as you just said, only 4th, 5th and 6th graders participated in the educational activity, and now the children who were in 4th grade are in 6th grade. There were changes in the school: we no longer sell candy or soft drinks. There has been a change in the food that the school offers to students because of the advices and information that you gave us at the beginning of this project, along with the directions that have been implemented by the Basic Education Institute of the State of Morelos" (urban elementary school teachers' focus group).

In community mapping exercises of all groups, it was identified that there is a limited offer of fresh food, fruits and vegetables in both communities, while there is an oversupply of high energy density food and sugary drinks.

Physical activity and sedentary lifestyle

The calculation results of the metabolic rate measurement units (MET's) of the students were as follows: mild MET: mean (SD)=17.8 \pm 13.7, corresponding to cleaning, games, board games, chats, music, reading and working; moderate MET: 18.2 \pm 20.2 corresponding to games or sports with a moderate wear out (skating, gym, swimming, riding bikes or motorcycles); vigorous MET: 64.4 \pm 48.1 including high physical performance activities (soccer, basketball, dancing, running, tennis, and the like). Weekly hours dedicated to each of the activities were as follows: mild activities: mean (SD): 6.3 \pm 5.2 hours; moderate activities: 3.96 \pm 5.1 hours; vigorous activities: 8.5 \pm 7.1.

There was a significant increase in the school-aged children's physical activity like playing soccer (14% vs. 27%), and dancing (3% vs. 7%), among other activities, regarding the baseline.

Sedentary activities decreased: the percentage of students who did not watch movies increased (from 23.9% to 30.8%), or played videogames (from 40.9% to 44.0%), and the hours per week children used to watch movies decreased from 6 to 7 hours per week (from 3.8% to 0.6%).

Discussion

This study fostered changes in the eating habits of school-aged children, drinking natural water and eating more fruits and vegetables, while diminishing sedentary activities from the actions taken by the educational initiative.

There were no significant changes between the two anthropometric measurements carried out at the beginning and at the end of the initiative, which happens to be consistent with a study carried out with schoolchildren in Hawaii, who showed no significant changes between the measurements of BMI (25). Bayer et al. have reported similar results in a longitudinal study

in which no significant changes were obtained in the BMI (26). In a literature review of research carried out in Brazil, it was reported that there was an increase in the level of knowledge and food choices in school-aged children, but there were no changes in the nutritional status (27).

It was found that parents and teachers have high percentages of O/O, similar to the percentage reported by ENSANUT in 2012. This aspect is relevant since it points out that one of the factors associated with school-aged children O/O is the high BMI of their parents (28). Due to the above, it is important to incorporate parents and teachers into educational initiatives aimed at school-aged children so that dietary changes can be sustainable. In fact, the incorporation of parents and teachers has been reported in several studies (9-11), and in a study carried out in Mexico, the integration of parents and teachers was recommended since the beginning of the study in order to obtain better results (29).

The post educational initiative data showed an increase in water consumption and the elimination of sugary drinks at school, which is consistent with the findings of James et al. (30), who reported an increase in water consumption and a reduction of sugary drinks.

Other studies have reported an increase in healthy eating knowledge but without showing any changes in the nutritional condition, which is similar to the results of this research (6,31), but differs in that school-aged children made changes in their eating habits with the intake of fruits, vegetables and natural water, which was the main objective of the educational initiative. The results obtained in our study are similar to those reported in other studies (9,11-13).

Changes in the nutritional condition of school-aged children require the link between the educational initiative and structural social actions such as public policies addressing the type of food that is sold at schools and community environments, the production and manufacture of high-energy food and the strict regulations on food advertising aimed at this population. Wijesinha-Bettoni et al. have reported that, in Mexico, educational and health authorities do not have strategies or actions to provide vegetables and fruits to school-age children in food programs carried out in schools (32).

The information gathered from the teachers' focus groups showed that they appreciated the changes in school-aged children involved with the educational initiative, as well as their commitment and concern for school's diet, which is similar to what Schetzina et al. have previously reported (33).

Sedentary activities dropped after the initiative, which coincides with Veugelers et al. (34), and Lawlor et al. (11), who reported similar results in their studies.

The limitations of this study were: the educational initiative was targeted for the 4th, 5th and 6th graders; the implementation time was short and did not include another school for comparison. Other limitations of this study are related to the context of schools and communities, since the supply of fruits and vegetables is low in contrast to the oversupply of products and drinks of high energy density, and there are no spaces to perform physical activity. Due to the size of the population included in the study, the results cannot be extrapolated to other regions of the country.

Conclusions

This study shows that, although moderate, it is possible to achieve a change in behaviour with a specific educational initiative. This study should be expanded to increase the number of

educational sessions with school-aged children and with all members of the school community, to strengthen scientific evidence with diet and physical activity subjects that must be part of the school curriculum, to make progress on the health of this population group.

Educational activities that modify school-age children's behaviours are not enough for reducing overweight and obesity. The implementation of diverse and simultaneous actions is needed, such as an increase in the supply access and availability of fresh and healthy foods. This is why the promotion of policies and regulations regarding the type of food and diet at schools and communities is essential.

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ORIGINAL RESEARCH

Trajectories of life satisfaction during one-year period among university students: Relations with measures of achievement strategies and perception of criteria for adulthood

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Abstract

Aim: The aim of this study was to examine how university students' achievement strategies in an academic context and perceptions of criteria for adulthood relate to life satisfaction trajectories across one year.

Methods: A convenience sample of 143 young adults 18-28 years (mean age: 20.9 ± 2.7 years; 109 females and 34 males) attending the University of Turin in northwest Italy completed questionnaires at three points with a six-month interval between each measurement. Latent Growth Curve Modelling and Latent Class Growth Analysis were used to assess longitudinal changes in life satisfaction and the related heterogeneity within the current sample.

Results: Three trajectories of life satisfaction emerged: high stable (37%), moderate decreasing (57%), and low stable (6%). At every time point high success expectations were related to a high stable life satisfaction trajectory. In turn, those adopting achievement avoidance strategies were more likely to have low-stable or moderately decreasing life satisfaction trajectories. The perception of the criteria deemed important to be defined as adults did not change across time points or across life satisfaction trajectories' groups.

Conclusion: These findings suggest that self-reported measures of achievement strategies among university students relate longitudinally to life satisfaction levels. Positive and optimistic dimensions of personal striving may be protective factors against the risk of decrease of life satisfaction among university students.

Keywords: achievement strategies, criteria for adulthood, developmental trajectories, life satisfaction, person-oriented approach.

Conflicts of interest: None.

Note of the author: Some results of the present paper have been previously presented at the 7^{th} Conference of the Society for the Study of Emerging Adulthood in Miami, Florida, October 14-16, 2015.

Introduction

According to Diener, Emmons, Larsen, and Griffin (1) life satisfaction (LS) is defined as an individual's overall appraisals of the quality of his or her life. In the social and psychological sciences this construct has become a key variable for analyzing individuals overall subjective well-being (2). Longitudinal studies have shown that after adolescence the majority of people experience stability in LS over long periods of times (3). However, depending on the length of time, one may observe short-, intermediate- and long-term influences on LS (4). Indeed, in the field of life-span research, the development of LS over time has become a very important baseline through which more variegated trajectories of individual development are observed (5). Especially among older cohorts (i.e., aged 18 and above), given the relative stable differences in LS between observed latent growth groups in comparison with the more turbulent adolescence years, many have adopted a person-oriented approach (6,7) to describe which other characteristics unite individuals of a certain developmental trajectory of LS. For example, Ranta, Chow, and Salmela-Aro (8) have associated trajectories of LS among young adults to their self-perceived financial situation, concluding that positive LS trajectories relate to being in a positive self-perceived financial situation. Röcke and Lachman (3) observed how to maintain stable trajectories of positive LS individuals need intact social relations as well as a high sense of control. In addition, Salmela-Aro and Tuominen-Soini (9) and Salmela-Aro and Tynkkynen (7) found that education achievement during and after secondary education positively correlated with high stable LS.

Emerging adulthood research proposes that the growing acquisition of maturity regarding adulthood-related duties and roles such as the commitment to life-long relationships or the importance attributed to forming a family are parallel to a stable LS path (10). In general, in the age range 18-30 years, perceiving oneself as an adult correlates to higher levels of LS and positive affect (11). Such findings contributed to give credit to the theoretical assumption stating that among young adults the increasing acquisition of an adult identity and the endorsement of adulthood-related criteria are concurrent factors in determining positive outcomes at the individual level, as for example higher LS. At the same time, if we adopt a person-oriented approach to look at this issue, we might expect that others characteristics may define those young adults proceeding through transitions while exhibiting a mature adult identity and high LS. In an academic context, for example, the kinds of cognitive and attributional strategies individuals deploy provide a basis for their success in various situations (12), as well as for the positive development of their well-being (13). Accordingly, in the present study we aimed at integrating the research literature on the relationship between the attainment of adult maturity and well-being with indicators of individual achievement strategies typical of life-span studies. More specifically, through a longitudinal approach, we questioned whether university students' LS changes during a one year period and what kind of trajectories can be found. Secondly, we examined young adults' perception of the criteria deemed important for adulthood and achievement strategies in the academic context in relation to LS trajectories.

The Italian context

University students account for a good proportion of the population aged 18-30 years in Italy, although Italian national statistics show a steady decrease in the overall university enrolment rates (14). Moreover, Italy reports one of the highest rates of university withdrawals among OECD members (15), with some regional differences between north and south (with dropout rates being higher in the latter), but overall widespread across the country (16). Despite the considerable high social cost related to dropout rates during tertiary education and the interrelation between motivation, education attainment and well-being among young adults

(17), very few studies have examined from a longitudinal and psychological perspective how self-reported measures of well-being such as LS interact with motivational strategies in an academic context in Italy (18). Accordingly, the present study aimed to test the specific research hypothesis that positive motivational attitudes in an academic context relate to higher LS levels among young adults attending university and, possibly, to a higher acquisition of adulthood maturity.

Methods

Sample

The empirical data of the present study were collected through the submission at three time points of an online questionnaire to a convenience sample of university students in the northwestern Italian city of Turin. Participants were reached in various university settings of the Faculty of Psychology, including libraries, canteens, cafeterias and public leisure spaces. The criteria to take part in the study were being enrolled as a full-time university student, being Italian and aged between 18 to 30 years. Students provided their email contacts if they were interested in taking part in the study. Then, they received a link to the online questionnaire through email. At Time 1, 645 individuals (76% females; mean age: 22.1 years) completed the questionnaire. At Time 2, six months afterwards, 252 individuals (79% females; mean age: 22.3 years) completed again the same questionnaire. Finally, at Time 3, twelve months after Time 1, 150 individuals (77% females; mean age: 22.1 years) filled in the questionnaire. The very high dropping rate from Time 1 to Time 2 and Time 3 can be explained by the total absence of an incentive for the participants to take part in the study (e.g., money, or school credits). Therefore, it is reasonable to imagine that only those personally interested in the topic or in the research itself were willing to fill in the questionnaire. In fact, while the dropping rate from Time 1 to Time 2 was equal to 61%, from Time 2 to Time 3 it was equal to 41% (of the total number of participants at Time 2), indicating a significant decline in the number of people dropping out. This may be explained by the fact that at Time 2 the proportion of participants interested in the research was higher than at Time 1. Moreover, only the participants who filled in the questionnaire at Time 2 were contacted again at Time 3.

Measures

- Life satisfaction

LS was measured using the Satisfaction with Life Scale (1). Participants rated five items (for example, "I am satisfied with my life", and "The conditions of my life are excellent") on a 7-point Likert-type scale ranging from 1 (totally disagree) to 7 (totally agree). A mean score was calculated for all items. Cronbach's alphas ranged from 0.69 to 0.79 across the three measurement points, indicating a good level of internal consistency with respect to the LS variable.

- Achievement strategies

Four different types of achievement strategies in an academic context were assessed: success expectation, (Cronbach's alphas ranged from 0.68 to 0.73), measuring the extent to which people expect success and are not anxious about the possibility of failure (4 items, e.g., "When I get ready to start a task, I am usually certain that I will succeed in it"); task-irrelevant behaviour (α from 0.76 to 0.82), measuring the extent to which people tend to behave in a social situation in ways which prevent rather than promote involvement (7 items, e.g., "What often occurs is that I find something else to do when I have a difficult task in front of me"); seeking social support (α from 0.73 to 0.77) measuring the extent to which

people tend to seek social support from other people (6 items, e.g., "It is not worth complaining to others about your worries"); and avoidance (α from 0.77 to 0.76), measuring the extent to which people have a tendency to avoid social situations and feel anxious and uncomfortable in them (6 items, e.g., "I often feel uncomfortable in a large group of people"). The scales belong to the Strategy and Attribution Questionnaire (19).

- Criteria for adulthood

Participants rated the importance of 36 criteria for adulthood (20) on their degree of importance on a scale of 1 (not at all important) through 4 (very important). Based on previous research (10,20), these criteria were grouped into six categories: *interdependence* (α from 0.60 to 0.65; 5 items; e.g., "Committed to long-term love relationship"), *role transitions* (α from 0.84 to 0.86; 6 items; e.g., "Have at least one child"), *norm compliance* (α from 0.77 to 0.82; 8 items; e.g., "Avoid becoming drunk"), *age/biological transitions* (α from 0.70 to 0.74; 4 items; e.g., "Grow to full height"), *legal transitions*(α from 0.81 to 0.86; 5 items; e.g., "Have obtained license and can drive an automobile") and *family capacities* (α from 0.75 to 0.77; 8 items; e.g., "Become capable of caring for children").

Analysis

The analyses followed three steps. First, to examine how LS changes during a one-year period, Latent Growth Curve Modelling (LGCM) (21) estimated the average initial level and slope of LS among the participants. The following indicators assessed the goodness-of-fit of the estimated LGCM: γ^2 -test, the Comparative Fit Index (CFI) with a cut-off value of ≥ 0.95 , and the Standardized Root Mean Square Residual (SRMR) with a cut-off value of≤0 .09. Subsequently, to evidence whether different types of LS trajectories emerge from the total sample, the analyses of this longitudinal data set extended into Latent Class Growth Analysis (LCGA) (22). LCGA examines unobserved heterogeneity in the development of an outcome over time, by identifying homogeneous subpopulations that differ with respect to their developmental trajectories within the larger heterogeneous population. LCGA is exploratory by nature, which means that there are no specific a priori assumptions regarding the exact number of latent classes. When testing LCGA models, different class solutions are specified. The best-fitting model is then selected based on the goodness-of-fit indices and theoretical considerations. Here, the following goodness-of-fit indices evaluated the models: Akaise's Information Criteria (AIC), Bayesian Information Criteria (BIC) and Adjusted Bayesian Information Criteria (aBic) of the alternative models. Entropy values were also examined, with values close to 1 indicating a clear classification. Following Marsh, Lüdtke, Trautwein, and Morin (18), groups of $\geq 5\%$ of the sample were considered the smallest to give an acceptable solution.

Practical usefulness, theoretical justification and interpretability of the latent group solutions were also taken into consideration (23). The analyses were controlled for age, gender and self-perceived socio-economic status (participants were asked how they would rate their actual socio-economical position on a scale from $1 - not \ good \ at \ all \ to \ 5 - very \ good$).

Both LGCM and LCGA analyses were conducted with the Mplus 5.0 statistical software program.

At last, One-Way Analysis of Variance (ANOVA) examined if the LS trajectory groups differed in terms of their achievement strategies and importance attributed to criteria for adulthood. Post-hoc comparisons using the Games-Howell test examined differences between groups.

Results

Development of life satisfaction

The specified LGCM with a linear slope for LS change across the three time points fits the data well, $\chi^2=3.99(1)$, p<0.05; CFI=0.98; SRMR=0.04. In particular, while the intercept indicating the initial level of LS was statistically significant, the linear slope was not (Intercept M= 3.02, *SE*=0.05, p<0.001; Slope M = -0.11, *SE*=0.02, p>0.05). In addition, while the variance of the intercept was significant the variance of the slope was not (Intercept variance =0.15, p<0.001; Slope variance 0.01, p>0.05). Together these results indicate that first, on average, there was no significant longitudinal change in LS across the three measurement points, and second, that there was a significant individual variance in the initial levels but not in the rate of change. Thus, the significant heterogeneity among individuals was analyzed further adopting the person-oriented approach of Latent Class Growth Models. More specifically, these results suggest that, rather than investigating different rates of longitudinal change in LS within the overall sample, it would be more plausible to observe latent groups exhibiting stable trajectories of LS across time while being concurrently significantly different between each-other from baseline to the last follow-up.

Identifying life satisfaction trajectories

LCGA identified three sub-groups of individuals according to their levels of LS across measurement points. Table 1 shows the fit indices and class frequencies for different latent class growth solutions. The four-class solution was unacceptable given the presence of a group with zero individuals. The three-class solution was thus the most optimal given the numerical balance of the observed groups and its higher entropy value with respect to the two-class solution (i.e., values closed to zero are indicative of better fit). Figure 1 displays the estimated growth curves for the different latent trajectories of LS, whereas Table 1 reports LCGM results.



Figure 1. Life satisfaction trajectories (mean values in a scale 1-7)

Table 1. Fit indices and class frequencies based on estimated posterior probabilities for latent class growth models of life satisfaction with different numbers of latent trajectory groups

Number of groups	BIC	aBIC	AIC	Entropy
1	766.94	751.12	752.13	-
$2 (n_1 = 69\%, n_2 = 31\%)$	684.93	659.62	661.23	.747
$3 (n_1 = 37\%, n_2 = 6\%, n_3 = 57\%)$	652.44	617.64	619.85	.827
$4 (n_1 = 6\%, n_2 = 58\%, n_3 = 0\%, n_4 = 36\%)$	667.33	623.03	625.85	.863

Note. BIC = Bayesian Information Criteria; aBIC = Adjusted Bayesian Information Criteria; AIC = Akaike Information Criteria. The chosen option is marked in bold.

The latent trajectories of LS were labelled *high stable* (37%), *moderate decreasing* (57%), and *low stable* (6%). LS mean levels of the high and the low stable trajectory groups remained stable over time. On the other hand, the moderate decreasing group exhibited a significant decrease in LS mean levels over time (see Table 2). ANOVA and chi-square tests evidenced how the three sub-groups did not differ according to age, F(2, 150)=0.01, p>0.05, gender, X^2 (2, 150)=1.56, p>0.05, and self-perceived socio-economic position, X^2 (2, 150)=8.13, p>0.05.

 Table 2. Estimation results of the final Growth Mixture Model with five latent classes

 (unstandardized estimates; standard errors in parentheses)

	High stable (n=52; 37%)	Moderate decreasing (n=82; 57%)	Low stable (n=9; 6%)
Mean structure			
Level	3.42 (0.05)**	2.83 (0.05)**	1.91 (0.11)**
Change	09 (0.06)	25 (0.05)**	14 (0.20)

Note. Variance is kept equal across the different latent groups. $p \le .001$

Differences in achievement strategies and criteria for adulthood

The second analytical step consisted of testing whether the three observed LS trajectory groups were significantly different at each time point concerning self-reported achievement strategies outcomes in the academic context and the importance attributed to criteria for adulthood. Table 2 reports all effects and pairwise mean comparisons between LS groups. Since we did not observe any significant effect of LS trajectory group membership on the mean levels of the importance attributed to the criteria for adulthood, we decided not to report in a table such results for parsimony reasons. On the other hand, it appears clear how the three developmental trajectories groups consistently differed across time points regarding the types of achievement strategies they adopted in their academic activities. More specifically, from Time 1 to Time 3, the high stable group showed the highest levels of success expectation and the lowest levels of task irrelevant behaviour and avoidance. Diametrically opposite was the performance of individuals in the low stable group who consistently showed the lowest levels of success expectation and the highest levels of task irrelevant behaviour and avoidance. Finally, the moderate decreasing group reported a stable success expectation over time, but a slight increasing in avoidance. In fact, while at Time 1, the avoidance did not differ between the moderate and the high stable group, from Time 2 to Time 3, individuals in the moderate decreasing group showed the same level of avoidance as the individuals in the low stable group.

Ta	ble 3. Mean	differences	n achievem	ient strate	gies betweer	ı life satisf	action classes		
	Moderate d	ecreasing	High st	table	Low s	table	F	р	η^2
	Μ	SD	Μ	<i>SD</i>	Μ	SD			
T1 Achievement strategies									
Success expectation	2.38 _a	38	2.64 _b	37	1.93_{e}	.43	F(2, 140) = 16.22	000	19
Task irrelevant	2.20 _a	.52	1.96 _a	<u>59</u>	2.47 _b	.46	F(2, 140) = 4.91	600	.07
Seeking social support	3.01 _a	.49	3.00 _a	.55	2.54 _b	.32	F(2, 140) = 3.64	.029	<u>.</u> 05
Avoidance	2.26 _a	.54	2.11 _a	.56	2.94 _b	.62	F(2, 140) = 8.79	000	.11
T2 Achievement strategies									
Success expectation	2.36 _a	.35	2.56 _b	33	1.96 _a	.47	F(2, 140) = 12.87	000	.16
Task irrelevant	2.09 _a	.43	1.82 _b	.47	2.36 ₈	.40	F(2, 140) = 8.64	000	.11
Seeking social support	3.11 _a	.47	3.13 _ª	.47	2.44 _b	.33	F(2, 140) = 8.79	000	.11
Avoidance	2.22 _a	09.	1.92_{b}	.49	2.87 _a	.70	F(2, 140) = 11.97	000	<u>15</u>
T3 Achievement strategies									
Success expectation	2.40 _a	.34	2.62 _b	.35	1.94_{c}	.40	F(2, 140) = 16.51	000	19
Task irrelevant	2.02 _a	.43	1.75 _b	.47	2.44 _a	.71	F(2, 140) = 10.99	000	.14
Seeking social support	3.10 _a	.51	3.14 _a	.52	2.63 _b	.33	F(2, 140) = 4.02	.020	<u>.05</u>
Avoidance	2.22ª	-59	1.88 _b	.47	2.89 _a	.85	F(2, 140) = 14.28	000	.17
<i>Note</i> . Class means in a row	with different:	subscripts are st	atistically diff	erent at the p	<0.05 level acc	cording to the	e Games-Howell test.		

Piumatti G. Trajectories of life satisfaction during one-year period among university students: Relations with measures of achievement strategies and perception of criteria for adulthood (Original research). SEEJPH 2017, posted: 20March 2017. DOI:10.4119/UNIBI/SEEJPH-2017-140

Overall, these results indicate that the types of achievement strategies in the current sample are linked to different LS development trajectories. Furthermore, such measures of personal agency did not relate to different perceptions of the criteria deemed important for adulthood, nor the latter seem to correlate with LS developmental trajectories.

Discussion

The current research focused on a longitudinal convenience sample of young adults attending university in the north-western Italian city of Turin. The person-oriented model tested here provided theoretical evidence of the overtime interconnection between motivational strategies in an academic context and well-being among university students. The main contribution of the present study was the adoption of a person-oriented approach (6) to focus on the issue of the perception of adulthood among young adults. Indeed, to date, very few studies (24) have opted not to focus entirely on the relations between singular variables but instead to look at more elaborated systems of individual characteristics to draw a 'picture' of different 'types' of emerging adults in Western societies. Moreover, the longitudinal nature of the trajectory analysis contributed to test whether for emerging adults the perception of what it means to be considered adults nowadays is a stable construct over time, even if just across only one-year period. In particular, the latent curve growth analysis implemented here has represented a more fruitful way for examining young adults' individual development (22). Indeed, a single growth trajectory would have oversimplified the heterogeneity of the changes in emerging adults' life satisfaction over time, as some experience an increase and some a decrease in life satisfaction, although the majority seem to experience a significant stability (7). In this study, it was possible to identify meaningful latent classes of individuals according to the initial levels and the longitudinal changes in their life satisfaction across the three measurement points. Adopting this multiple trajectories approach resulted in a model of three developmental trajectories. Overall, two major conclusions can be drawn from the present study. First, starting from the non-significant findings, it appeared that the perception of the most important criteria for adulthood (i.e., family capacities, interdependence, norm compliance) are not correlated to life satisfaction trajectories, either low or high. Second, achievement strategies reflecting notions of agency were closely linked to life satisfaction, both about initial level and development. The first findings can reasonably be the result of the limited time span across which we aimed at observing developmental changes. Indeed, we already know that emerging adults are more prone to change their perception of adulthood especially in correspondence with crucial life events, such as getting married, experience of parenthood, finishing the studies and start working (10,11). Therefore, the impossibility to control for such events in the present study or simply the fact that the very small sample did not include a sufficient number of people going through specific transitions' thresholds, can explain why we did not observe significant differences across developmental groups who instead remained stable in their opinions over the curse of one year. However, we were not just interested in looking at changes, but we argued for stable differences across developmental trajectory groups. Again, despite the fact that we observed trajectory groups that showed significant differences in motivational strategies across time, these did not relate to adulthood self-perception. These results might confirm how the major sources of adulthood identity variation over time are significant experiences related to it.

The significant differences between groups in terms of achievement strategies suggest that these measures of motivation and life satisfaction are strictly related. Specifically, individuals with a high level of positive achievement approach strategies demonstrated high levels of life satisfaction. On the contrary, high levels of avoidance and irrelevant behaviours mostly

related to low levels of life satisfaction. A closer look revealed that individuals in the moderate decreasing life satisfaction trajectory maintained a more stable level of avoidance over time than the other two groups that both showed instead a decreasing in avoidance. Thus, personal strivings and strategies may be protective factors against a decrease in life satisfaction.

In summary, the findings from the current study are aligned with previous research work focusing on samples of young adults attending university and evidencing how individuals' achievement strategies measured during university studies affect subjective well-being outcomes (25,26), including life satisfaction (27,28). In particular, in accordance with our results, success expectations are positively associated with higher satisfaction (29) and poor engagement relate to low well-being (27). These evidences should guide future research with the aim of further investigating the role of different types of agentic personality traits among university students in relation to positive life outcomes and health behaviours as factors strongly related to subjective well-being outcomes.

Study limitations and conclusions

It is important to point out the main limitations of the current study. Firstly, owning to the person-oriented statistical approach and despite the study longitudinal design, the analyses did not explicitly report on any causal relationship between measures of achievement strategies and overall satisfaction with life. Future studies should look more specifically into cause-effect models using these types of self-reported measures of achievement strategies and various well-being outcomes. Secondly, the convenience sample of university students included in this study cannot be considered representative of the entire population of university students in the context of reference (i.e., the University of Turin in Italy). Accordingly, the generalizability of the current findings should be considered with caution while they may well represent a base to validate the theoretical framework according to which different motivational strategies among university students may positively or negatively influence well-being over time.

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REVIEW ARTICLE

Data gaps in adolescent fertility surveillance in middle-income countries in Latin America and South Eastern Europe: Barriers to evidence-based health promotion

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Abstract

Adolescent health is a major global priority. Yet, as recently described by the World Health Organization (WHO), increased recognition of the importance of adolescent health rarely transforms into action. One challenge is lack of data, particularly on adolescent fertility. Adolescent pregnancy and childbirth are widespread and affect lifetime health and social outcomes of women, men, and families. Other important components of adolescent fertility include abortion, miscarriage, and stillbirth. Access to reliable, consistently-collected data to understand the scope and complexity of adolescent fertility is critical for designing strong research, developing meaningful policies, building effective programs, and evaluating success in these domains. Vital surveillance data can be challenging to obtain in general, and particularly in low- and middle-income countries and other under-resourced settings (including rural and indigenous communities in high-income countries). Definitions also vary, making comparisons over time and across locations challenging. Informed by the Adolescence and Motherhood Research project in Brazil and considering relevance to the Southern Eastern European (SEE) context, this article focuses on challenges in surveillance data for adolescent fertility for middleincome countries. Specifically, we review the literature to: (1) discuss the importance of understanding adolescent fertility generally, and (2) highlight relevant challenges and complexity in collecting adolescent fertility data, then we (3) consider implications of data gaps on this topic for selected middle-income countries in Latin America and SEE, and (4) propose next steps to improve adolescent fertility data for evidence-based health promotion in the middle-income country context.

Keywords: adolescent health, fertility, health promotion, surveillance.

Conflicts of interest: None.

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Introduction

Adolescent health is a major global priority, particularly in the low- and middle-income countries where 90% of the 1.2 billion adolescents (aged 10-19 years) globally live, comprising over 20% of the total population in some countries (1,2). Recent work highlights urgent need for the comprehensive, integrated, and sustained investment in adolescent health (3-5). This can reap immediate rewards, and pay dividends into adult health and future generations (3-5). A major challenge towards this goal is access to reliable surveillance data, which is critical to designing effective policies, programs, and research and then evaluating their impacts across populations (2-5). Data gaps may be one critical reason why the growing recognition of the importance of adolescent health has not transformed into sufficient research, policy, and action (2-5).

Data limitations can be a specific problem in understanding adolescent fertility patterns, trends, and outcomes (6-13). Adolescent pregnancy and childbirth are widespread and affect lifetime health and social outcomes of women, men, and families (6-9). Other important components of adolescent fertility include abortion, miscarriage, and stillbirth (14-16). Data on these topics can be challenging to obtain given the considerable stigma, measurement complexities, and cultural, demographic, and legal variation across regions and countries (6-16). There is also considerable overlap and variation in the terminology used to describe aspects and outcomes of adolescent fertility (6-13). (For clarity, Table 1 describes key terminology as used in this article.)

Informed by the Adolescence and Motherhood Research (AMOR) project in Brazil (17) and considering the relevance to the Southern Eastern European (SEE) region, this article reviews the literature to: (1) discuss the importance of understanding adolescent fertility generally, and (2)highlight relevant challenges and complexity in collecting adolescent fertility data, then (3) considers implications of these data gaps for selected middle-income countries (MIC) specifically in Latin America and SEE, and (4) proposes next steps to improve adolescent fertility data for evidence-based health promotion in the MIC context.

Term	This Article
Adolescent Fertility	We use this term in a general sense to cover any pregnancy-
	related experience among those 10-19 years of age,
	including live birth, abortion, stillbirth, or miscarriage. The
	live birth could lead to parenting or to adoption. This can
	include multiple pregnancies during this time of life.
Adolescent Pregnancy	The terms describes a specific physiological state of
	pregnancy among those 10-19 years of age. Includes
	pregnancies ending in births, but also miscarriage and
	abortion [*] .
Adolescent Live Birth	The term describes a specific outcome from an adolescent
	pregnancy among women, specifically the outcome of
	delivering a living child among those 10-19 years of age [†] .
Adolescent Parenting	This term describes one outcome that might follow a live
	birth. In contrast to the other definitions that apply to

Table 1. Key Terminology as used in this article



women only, this term applies to both men and women.

* http://origin.who.int/healthinfo/indicators/2015/chi_2015_37_fertility_adolescent.pdf. † https://data.worldbank.org/indicator/sp.ado.tfrt.

Section 1: Importance of Understanding Adolescent Fertility Patterns and Trends

Three major health risks stem from adolescent fertility. First, pregnancy during adolescence is associated with increased risk of maternal death and disability across a variety of outcomes, with unsafe abortion as one of the foremost contributors (14,16,18-22). Legal and social restrictions on access to safe abortion prompt adolescents to resort to procedures administered by unskilled providers and/or in unsafe conditions (14,16,20,21). Secondly, pregnancy and delivery during adolescence is associated with elevated risks of respiratory diseases, bearing premature birth trauma. and newborns with low birth weight (22). Finally, adolescent pregnancies are correlated with long-term consequences for the mother, including cardiovascular disease, mobility limitations, incontinence, and chronic pain (23, 24).

There are also social consequences. Adolescent pregnancies, particularly those resulting in a child, may cause women to miss important life opportunities by dropping out of school and earning less over their lifetimes (1,2,25). Adolescent childbearing can also perpetuate intergenerational poverty through successive waves of adolescent mothers (26,27). It is additionally associated with interpersonal violence and contributes to higher risks of experiencing violence, with a number of negative impacts (28).

Understanding the patterns of adolescent fertility globally and within specific populations is thus vital for regional, national, and international public health. This is particularly true as the critical role of adolescence on health outcomes across the lifespan is increasingly recognized. As highlighted by Vinter et al (2015): "Adolescence is second only to fetal and infant life in the rapidity of growth and pervasiveness of change across body systems" (29).

Section 2: Adolescent Fertility Data Gaps and Challenges for MIC

Despite the critical importance of this topic, finding relevant data can be challenging and/or have hidden complexities that obscures patterns, trends, and outcomes. Others have documented critical gaps in adolescent fertility data surveillance and management (3,4,6,7,14,30).

Besides adolescent fertility, many other relevant metrics and measures exist around other aspects of adolescent reproductive health (1-8,30). Some relevant examples include: adolescent abortion rate; adolescent marriage rate; access to contraception; use of contraception; use of modern contraception, a SDG (Sustainable Development Goals) target goal for those 15-49 years (31); planning status of adolescent pregnancy (intended, mistimed, unwanted); age at the time of the last pregnancy under 20; age at the time of the first pregnancy; marital status during adolescent pregnancy; and fertility preferences of currently married teenage women (want a child now, within a year, 2 years, later). Other important, related topics include sexual exploitation, sexual preferences, identity, sexually gender (1-8,30). transmitted These diseases



measures share many of the same challenges described in this article but are beyond the scope to discuss in detail.

We highlight some issues with relevance to MIC.

Research. First, it is important to note that research on adolescent health generally lags behind research in both child and adult health (1). This may help explain why the decrease in global burden of disease as measured in disability-adjusted life years for adolescents was less than the decrease for adults (3) and why adolescent health gains have been less than those for children (5).

Indicators. There are many relevant indicators in adolescent fertility, which are vital health indicators (30). For instance, rate of adolescent live birth is one of the 12 headline indicators proposed by the Lancet Commission on Adolescent Health and Wellbeing and one of 13 global health target measures for the 2030 SDG (11,31).

A recent paper by Azzopardi et al (2019) provided definitive estimates across many nations for these SDG indicators, including adolescent live birth, and gave a cumulative accounting of 11.7 million live births to adolescents between 15–19 years old in 2016 worldwide (3). While rates of adolescent live birth are decreasing in most countries, patterns vary considerably (3). For instance, Albania was one of only ten countries with an increase in the rate of adolescent live birth between 1990 and 2016 (3).

It is important to note the complexity in the measure of adolescent live birth, including how "adolescent" is defined (11). In the Azzopardi et al (2019) paper, the SDG "annual birth rate per 1000 adolescents aged 10-19 years" metric was measured by "live births per 1000 adolescents in females aged 15-19 years" (3). Of course, across the 10-19 age range many pregnancies occurred that did not result in a live birth, which can have health consequences and are thus also important to measure.

Table 2 shows in detail three of the most common ways that relevant constructs in adolescent fertility are actually measured in surveillance, providing calculations for the measure, and targeted critiques for these metrics (adolescent fertility rate, adolescent pregnancy, and adolescent girl pregnancy) (30).

Comparative data. Comparative data is important to understand regional differences cumulative global needs. which and time necessitate similar frames and harmonized data (14). Adolescent health data in MIC can be found through national and cross-national surveillance systems. Many MIC publish their own vital statistics reports, but the quality of civil registration and vital statistics systems vary, even across MIC (32).

Many MIC also participate in cross-country surveillance systems toward global consensus indicators. including the Demographic and Health Survey (DHS), the Multiple Indicator Cluster Survey (MICS), and Reproductive Health Survey (RHS) (33-36). These are administered by national health systems in conjunction with USAID (DHS & RHS) and UNICEF (MICS) (33-36). They use similar definitions of adolescent fertility, and often, have been administered consistently for many years. International comparison information for adolescent fertility and related measures are also compiled into databases by major organizations, including the United Nations (UN) (37), the World Bank (38), and the Global Health Data Exchange (39). Major international efforts generate point estimates



for country-level comparisons, allowing for cumulative global calculations for key indicators (3,14,21,33,40).

Source	Indicator name(s)	Calculation	Comments Numerator	Comments Denominator
	Adolescent birth rate Adolescent fertility rate	Number of live births to women 15-19 years / Total number of women 15 to 19 years	Excludes very young adolescents (10-14-year- olds) Excludes miscarriages	Requires vital statistics for denominator, which can be challenging in very low income settings
V.	Age-specific		stillbirths, and abortions.	Assumption that all women 15-19 years are <i>at risk</i> of
UNFP	fertility rate		Measure of adolescent childbearing, not pregnancy	pregnancy and thus, presumably that all women in this age group have already hit puberty. This may not be the case in communities with elevated malnutrition or illness that affect pubertal timing.
UNFPA	Adolescent pregnancy Adolescent	Number of women aged 20-24 that had a live birth before the age of 18 / Total number of women aged 20 to 24	Excludes miscarriages, stillbirths, and abortions. Measure of adolescent childbearing, not pregnancy Excludes miscarriages	Excludes those who died <i>prior</i> to adulthood, such as those who died in childbirth and/or those living in violent communities. May underestimate adolescent pregnancy/childbirth in the most disadvantaged areas. Requires vital statistics for denominator, which can be challenging in very low income settings Similar to above. The issue
UNFPA	Adolescent girl pregnancy	that had a live birth before the age of 15 / Total number of women aged 20 to 24	Excludes miscarriages, stillbirths, and abortions. Measure of adolescent girl childbearing, not pregnancy	of deaths before reaching 20- 24 is particularly problematic in this group because of the very high risk of maternal mortality in low- income settings, among adolescents having children

Table 2. Selected definitions for adolescent fertility measures^{*}

* Loaiza E, Liang M. (2013). Adolescent pregnancy: A review of the evidence. New York, NY: UNFPA.

These readily available metrics are valuable, and provide vital comparative data, but as in the live birth example above, in the background is variation and complexity. Many MIC have incomplete data for adolescent reproductive health outcomes and/or contextual variables (income inequality, social determinants of health) to better understand variation, patterns, and reasons for those outcomes (12,13). The DHS, MICS, and RHS are not completed yearly, and some countries have not done them recently or at all. For instance, Brazil has not completed a post-2000 DHS (41).



Countries, who have cost sharing for these surveys, have autonomy to add questions and determine sampling frames, which may vary. For instance, many locations did not include unmarried adolescents in questions about sexual activity, use of contraception, or childbearing intentions in past DHS; this continues in a few DHS programs (33,36).

Additionally, while many global health indicators seem straightforward when presented in tables comparing outcomes across countries, plotted in useful maps (41) included in sophisticated or data visualizations (43), they are often obtained from very complex statistical models, different time periods, and/or may have missing data generated through sophisticated algorithms (3,14,19,33). In some cases, cross-national comparisons are created where at least some studies have national data extrapolated from smaller studies (14.19). These estimates often do not provide region or focal population specific statistics, which can vary in critical ways within a country. Whatever the indicator, there can be incentives to suppress data for political reasons (5), making the data unreliable in ways that will not be visible in public reports or comparisons.

Stigma. There are also critical gaps in adolescent fertility data due to underreporting (6). Many adolescents do not want to admit to sexual behavior. These actions and consequences are stigmatized and can be illegal, particularly induced abortion. The implications of these issues for data quality vary by country, and by context within countries (6). School-based youth risk behavior surveys may omit sensitive questions due to stigma and discomfort, exclude younger adolescents, and miss those who are not attending school, but who are particularly vulnerable (44). Informed consent at this age can be complex and parents may refuse to let their children participate in health surveys that include these issues.

Missing populations. Many major yearly public health surveillance instruments (e.g., BRFSS in the US) exclude those younger than 18 as primary respondents. As in school-based settings, adolescent sexuality questions may be deemed too sensitive (or unreliable) respondents. for proxy Population-based telephone surveys may also miss vulnerable communities, including refugee, migrant, homeless and street youth (6,7). School-based surveys miss students who have left school, including those who did so because they are parenting. Thus, many critical communities related to adolescent fertility are excluded from surveillance. There is also a lack of attention to adolescent male fathers. This is problematic because many assume parenting roles and after doing so, like their female counterparts, become adversely impacted. For example, younger age at birth of first child in men, as well as women, has been associated with greater risk of cardivascular disease (45). However, global data is insufficient on the quantity of adolescent pregnancies fathered by those 10-19 themselves. Some DHS programs do not survey adolescent men at all (46).

Adolescents less than 15 years of age. Adolescents younger than 15 are often left out of measurement for fertility issues. For instance, much DHS data uses the 15-19 age category to determine adolescent births, excluding the very young and high-risk births. This is a problem because younger girls generally have more complications



with pregnancy and childbirth versus older ones (44,46).

Repeat births. Limited guidance exists on repeat birth, especially rapid repeat pregnancy (within 2 years of the index pregnancy). Data on this is particularly limited in MIC, but evidence from higherincome settings indicate that rapid, unwanted repeat pregnancies are relatively common among adolescents (9).

Disaggregated data. There is a critical need to disaggregate data by community, vulnerability, and narrower age groups to identify true needs and risks (6). For instance, while adolescent health data is typically aggregated for 15-19-year-olds in many MIC, the pregnancy rate is higher among 18-19-yearolds than among 15-17-year-olds (14).

Abortions, miscarriages, and stillbirths. Especially given that a large percentage of adolescent pregnancies are unwanted or unintended (82% in a US study) (14), not all adolescent pregnancies end in a live birth. While birth data are generally complete, collection and evaluation of abortion data and estimation of miscarriages globally and by country are limited (14). Miscarriage among adolescents may go unrecognized (14). Stillbirths, a major issue in many MIC, can be hard to definitively quantify (47,48). These issues can vary greatly by location and reporting laws (voluntary or required, sanctions), and the role of the public and private health sectors; where abortion is legally or logistically restricted may be both the least likely to have relatable data on abortion as well as most likely to have unsafe abortions (14,16,20,21). Abortion policies can vary greatly in a short time period, impacting data reporting patterns, validity, and completeness over time (14). In places were abortion is illegal, there are clandestine clinics unknown to the health system and that do not provide information to national registries or researchers resulting in underestimates of true prevalence.

Cross-Sectional Data. The cross-sectional nature of data typically collected on adolescent fertility also impacts research consequences of adolescent into the related issues. pregnancy or as socioeconomic characteristics are measured at the time of the survey, not at birth or during pregnancy (49). In retrospective surveys, a woman's situation may have changed considerably. She may have experienced a socioeconomic downturn subsequent to the delivery; for instance, some adolescents are kicked out of their homes if they become pregnant. Cohort effects can also be an issue; yet, little longitudinal research exists on this topic, especially cross-cultural from large, populations (50).

Good Sexual Health. Most adolescent fertility surveillance metrics focus on risk and danger (pregnancy, sexually transmitted disease), treating all adolescent sexuality as negative (51,52). We know little about childbearing desires (6) or positive sexual health. In some communities, childbearing and marriage at this age are common and surveillance systems might build distrust by taking a completely negative perspective on this issue (7,53).

Consequences of these gaps and challenges. Many adolescent pregnancies and the negative consequences are preventable, but inconsistent and unreliable



data can make it hard to design effective solutions across all populations. Ignoring inequality between specific groups can hide critical disparities, including a fundamental cause of intergenerational cycles of poverty. There can be considerable variation in data quality across regions within countries, across countries, and across regional groupings of countries. This adds complexity (not always acknowledged) to comparisons, international and makesevidence-based policy and the evaluation of those policies challenging (4,5,54,55). Yet, better surveillance may bring unwelcome or unexpected findings as key metrics may increase, impacting funding priorities or political momentum. Without meaningful, nuanced. consistent data. including data sensitive to subtle and incremental change, it is challenging to design programs, policies, and research to address adolescent fertility issues and hard to measure intervention effects (49).

Section 3: Data Challenges in the MIC Context

We now specifically consider these adolescent reproductive health data challenges from experiences in the AMOR project in a Latin America context, followed by a consideration of these issues in the SEE context.

The Adolescence and Motherhood Research (AMOR) Project. The AMOR project (17) is a research initiative with two complementary study aims of improving quantitative health research capacity in a low-income rural area of Northeast Brazil, while completing a pilot project towards the long-term objective of building sustainable infrastructure for research to elucidate pathways between adolescent childbirth and adverse health conditions across the lifecourse (23). As part of this study, a pilot cohort of adolescents, pregnant for the first time, was recruited in the first trimester of pregnancy and followed over time.

Measurement/Regional Data. Brazil is a large MIC with substantial socioeconomic regional divides. Many states in Northeast Brazil, such as Rio Grande do Norte, rank last for income, education and social services, while other states in the south of the country, such as São Paulo, are relatively well off (56). In Brazil, the National Information System on Live Births (SINASC), implemented gradually in all states since 1990 (57), receives live birth information from all maternity hospitals and other health units.

Although there is increasing coverage of SINASC across the states, scale-up has occurred differentially across Brazil. For example, it was estimated that the coverage rate of SINASC reached almost 100% for the South, Southeast and Midwest regions in 2011, but it was between 70-90% for most of the poorer Northern and Northeastern states (58). Although SINASC provides useful data about rates of live birth for women of specific age-groups and regions over the years, incomplete data in some registers, particularly in the less advantaged regions, and the lack of information about miscarriages or abortions, limits its use for the understanding of adolescent pregnancies. The Brazilian Institutes of Geography and Statistics (IBGE) performs a demographic census in Brazil every decade and provide information about adolescent childbirth rates, but its use is limited given the large time lag between surveys. During the years between the censuses, the IBGE performs an annual National Household Sample Survey.



However, because data is collected on a sample of households for each state, information about the levels and patterns of adolescent fertility, as well as any spatial disaggregation generated by such estimates are limited by small sample sizes. Moreover, questions about adolescent fertility are directed only for girls aged 15 or older.

Study Recruitment. Planning the AMOR project recruitment was difficult due to such data gaps. Our target sample included adolescents in the first pregnancy aged between 13-18 years-old from the Trairi region of the Rio Grande do Norte state. Using information from SINASC, we identified the number of live births from adolescents in the target towns during the previous years, but the data regarding adolescents from 13-18 vears were aggregated into the 10-19-year age group. In particular, the number of adolescent pregancies increases dramatically when age 19 is included, showing the importance of relevant data disagregation.

Once the project was underway, we also needed adolescent birth rate for our focal location to understand the scope, representation, and success of our study recruitment. Again, aggregated information by age groups from SINASC prevented us from being able to do these estimates. We also were unable to estimate miscarriages, which were not included in the SINASC data, but were ultimately seen in 8% of our adolescent sample after baseline evaluation.

Latin America Context. Regional relevance important and knowledge are for consideration of these data gaps in Brazil. Adolescent fertility rates in the WHO Latin American and Caribbean region are the second highest in the world, much higher than in other regions with similar levels of development (49). While total fertility has dropped in recent decades, adolescent fertility rates have dropped much less sharply (46). The high rates of adolescent fertility can be seen in the Latin American Table 3.

Indicator	Latin America Examples			South Eastern European Examples			Notes
	Brazil	Colombia	Honduras	Albania	Romania	Serbia	
Azzopardi et al, 2019, Lancet article (data from 2016) [†]	66.8	41.6	72.6	21.8	32.2	16.1	Data is "Birth rate (live births per 1000 population per year) in females aged 15–19 years." Representing SDG Metric: "Annual birth rate per 1000 adolescents aged 10–19 years."
World Bank database adolescent fertility rates (data from 2016) [‡]	62.7	49.5	72.1	20.7	33.7	19.3	Yearly adolescent fertility rate since 1960 by countries with regional benchmarks.
Adolescent Birth Rate Map	65	85	99	18	36	22	Map with comparisons by countries. Per

 Table 3. Adolescent birth rate (births per 1,000 women ages 15-19) available by selected countries in Latin America and South Eastern Europe by source*



Adolescent Health UNICEF [¶]							website "Most recent estimates for each country taken from 2015 Update for the MDG Database: Adolescent Birth Rate (UNFPA/UN Population Division)."
United Nations age-specific fertility rates (2010-2015) [§]	67.0	57.7	77.8	20.7	36.4	21.0	5-year average age- specific fertility rates from 1950-1955 with regional benchmarks.
WHO Adolescent birth rate by WHO region, 2005- 2016**	60.8	71.6	101.0	18.9	35.3	16.4	Data visualization with comparisons by countries within WHO regions and global and regional benchmarks.
Demographic and Health Survey (DHS) ^{††} (date of most recent DHS included on website)	87.9 (1996)	85.1 (2010)	99.0 (2011)	19.6 (2008)	N/A	N/A	Adolescent birth rate information by country. Subnational information available by income quartiles and rural/urban.

* As Shown by Source as of March 15, 2019.

[†] Azzopardi PS, Hearps SJC, Francis KL, et al. Progress in adolescent health and wellbeing: tracking 12 headline indicators for 195 countries and territories, 1990–2016. Lancet 2019; published online March 12. http://dx.doi.org/10.1016/S0140-6736(18)32427-9.

* SP.ADO.TFRT from World Bank Website downloaded https://data.worldbank.org/indicator/sp.ado.tfrt 3.14.2019.

[¶] https://data.unicef.org/topic/maternal-health/adolescent-health/ -- Adolescent birth rate by country (number of annual births per 1000 adolescents aged 15-19).

§ https://population.un.org/wpp/Download/Standard/Fertility/ FERT/7: Age-specific fertility rates by region, subregion and country, 1950-2100 (births per 1,000 women).

** http://apps.who.int/gho/data/node.sdg.3-7-viz-2?lang=en SDG Target 3.7 World Health Statistics data visualizations dashboard SDG Target 3.7 | Sexual and reproductive health; Adolescent birth.

^{††} http://apps.who.int/gho/data/view.main.vURBADOBIRTHTOTv Adolescent birth rate Data by country; Per website: Last updated: 2016-03-23.

Though abortion and contraception are heavily restricted in this region, many occur nonetheless, often unsafely (46,49,59). Adolescent fertility is considered to be high with little use of modern contraceptives; there are an estimated 600,000 unplanned pregnancies in adolescents, and about half of women giving birth for the first time are in their teens (50). Many Latin American nations have adolescent pregnancy and health inequalities by population or region, but these disparities are hidden by aggregated national-level data (46). Genderbased violence is a significant problem in Latin America, though sexual coercion and abuse from adult males are not reliably or consistently recorded in adolescent health surveillance data (46).

Examples. To demonstrate an example of the general data complexity mentioned in section 2 applied to the Latin American context, Table 3 provides comparative data specifically for one metric (adolescent fertility rate) for three Latin American



Countries (Brazil, Colombia, and Honduras) taken from current online resources or recent, influential publications from reliable sources.

Data is also provided for three SEE countries (Albania, Romania, and Serbia). This table demonstrates inconsistent results, timing differences of data collection, and the importance of these issues on demonstrated trends. While some variation is to be expected over time, there are large differences across measures. For instance, measures for Honduras vary from 72.1 to over 100 per 1000 women. Table 4 summarizes some key challenges in the Latin America context in adolescent fertility surveillance.

Location	What is missing for	Context specific challenges	Specific areas in the
	surveillance?		country where there are
			data gaps and challenges
South Eastern Europe Examples	Pregnancies Teen pregnancies which end in abortion Adolescent births outside the marriage Teen pregnancies which end in miscarriages	Despite some standardized instruments there are differences in indicators used to monitor the problem. Different indicators used by EU (Eurostat) and UN DHS is not carried out by all SEE countries. It is not planned for the future and needs to be substituted by good surveillance data	Important discrepancies especially in abortion rates among surveillance and DHS/RHS. Limited studies in Serbia, Bulgaria and Albania show very high risk among Roma population compared to general. Most surveillance data do not allow specific monitoring of this ethnic group.
Latin American Examples	Data about abortion: According to the most recent estimate, about 99% of abortions in Colombia are performed outside the law (impossible to obtain direct data about these) Data on interpersonal violence in pregnancy Information relevant to infectious diseases such as Zika, which may have influenced abortions Stillbirths	Abortion in Brazil and Colombia are legal only in very specific circumstances. In Colombia this includes the following circumstances since 2006: The continuation of the pregnancy constitutes a danger to the life or health of the mother; The existence of life-threatening fetal malformations; The pregnancy is the result of rape, non-consensual artificial insemination or incest. Vulnerability is hidden and patterns of risk or illness may not reflect facts.	Northeastern Brazil has lower surveillance, with relevance to Adolescence and Motherhood Research study planning and recruitment evaluation, and to other studies on similar populations. While the rich in many Latin American countries may have access to abortions, this is not the case for the poor. Thus, more cases of microcephaly may have occurred from Zika that were not reported as those who were rich could have received abortions that were never recorded. This can impact regional estimates as well as surveillance generally.

Tuble in Some important data gaps by region for South Eastern Earope and Eath Amerik	lata gaps by region for South Eastern Europe and Latin America
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Southern Eastern European context. The SEE region is mostly made of MIC transitioning from ex-communist societies to European Union (EU) associates, including Albania, Bosnia and Herzegovina, Bulgaria,

Croatia, Northern Macedonia, Moldavia, Montenegro, Romania, Serbia, and Ukraine. This context has both similar and unique adolescent reproductive health data gaps to those discussed above (60,61). These



countries have a very different historical and economic background from the Latin American context.

While this region has some of the lowest rates of adolescent-girl pregnancies among all LMIC (31), rates remain higher than the EU average. Some Eastern European EU members in the SEE region, notably Romania and Bulgaria, have high rates of adolescent pregnancy relative to peer states (62). Also, although the SEE region is rated relatively high in terms of equality as measured by Gini index, the trends of 'adolescent-girl pregnancies' rates are disproportionally unfavorable among the poorest (31,62,63). Usage rates of contraceptive methods, including modern methods, remain very low in SEE (63). Abortion has dropped significantly in the region, since the 1990s, but reliance on abortion as a means of fertility control remains high in some countries (62,63).

Variation and measurement challenges are demonstrated in Table 3 for the SEE counties. Misinterpretation of indicators or in data can cause significant gaps inconsistencies in reporting of adolescent fertility rates across sources for the same country in the region (63,64). When comparing adolescent fertility rates among SEE countries, Albania appears to be the only one showing a reverse of the general decreasing trend during the last decade. Romania has one of the highest adolescent birth rates in the region. The three major surveillance instruments (DHS, RHS, and MICS) have been implemented in Albania, in consecutive rounds, with the most recent published on December 2018. The latest DHS or RHS reports from other SEE countries are from more than 10 years ago. Besides the metrics in Table 3. Albania also has official administrative data from birth registration. Accordingly, the adolescent fertility rate is 15.96 (65), considerably lower than estimates from other survey-based surveillance sources.

According to some estimations, Romania has one of the highest "young adolescent" birth rates in the world (14). Data from the 2005 Romanian RHS, which could be outdated, show regional variation with the rate of young adolescent births per 1000 to be 10 in urban areas compared to 46 in rural areas (66). Similarly, some data from the Serbian MICS 2014 allows detailed analyses of adolescent fertility indicators among Roma settlements where rates are exceptionally high compared to general population (67,68). In some Roma settlements, 32.8% of adolescents are having children (23.8% given birth; 9% pregnant) (68). As in Latin America, most SEE lack reliable country-level data on abortion (14). When they do, the data conflict. For instance, 2017 Albanian estimates of the adolescent abortion rate were 2.1 per 1000 live births among those 15-19 years from abortion surveillance data (69), while an estimate based on DHS is lower at 1 per 1000 women for those 15-19 years (70). Data from Romania is from 2005, which estimates the adolescent abortion rate (for three years prior to survey) at 10 per 1000 women 15-19 years, which is a decrease from 26 per 1000 women 15-19 in the RHS 2000.

One additional interesting issue is that this region is defined differently by various international organizations (60,61). Many other locations have similar benchmark/comparator issues. Table 4 also summarizes some key challenges for SEE region in adolescent fertility surveillance.



Section 4: Ideas for Solutions and Conversations

In order to design targeted interventions to improve adolescent health, there is a need to better understand data and needs around critical metrics of relevance to these population groups. Darroch et al (6) provide some excellent solutions. These include: using creative analyses of existing data to consider reporting by those over 15 of their experiences before 15, though this is subject to limitations in report and recollection, particularly over time; broadening existing national surveillance to better include excluded groups (younger women, nevermarried women); and creating focused, youth-targeted surveys especially including vulnerable communities. Harmonized data with systems also are needed consensus/standardization of various instruments used in various MIC, with buyin from relevant organizations, including WHO, UNICEF, UNFPA, World Bank, USAID, and Eurostat (1,71-73). Shared goals (such as SDG targets) can provide momentum to achieve these goals. Indeed, there are critical new movements towards health data collaboratives (1,71-73), though these have many challenges (74,75). Engaging the health system may help fill in some data gaps, such as increasing the stimuli for the health units/ providers to provide the information properly, to fill out the forms, making them understand its importance or giving some credits for who does. This should be a priority especially in countries where population surveys have failed to overcome stigma and produced lower rates than surveillance systems. Other options include using specific studies to represent larger regions, but these do not solve issues where there is no data or where it has critical gaps for underreported or missing groups. In fact, this could obscure these issues even more dramatically. Also, for better data, more longitudinal studies are needed with data about teen pregnancy and the consequences over time, physically, emotionally, and situationally.

One way to address these issues is to have conversations across settings. We invite interested readers with similar, or different, challenges to share their concerns to be compiled in future work. The survey will be open from April 1, 2019 to January 1, 2020: http://hawaiidphs.co1.qualtrics.com/jfe/form /SV_7UTmvPGiFHiQ5KJ.

Conclusions

Adolescent health is increasingly recognized as a major global priority, necessitating comprehensive, integrated, and sustained investment to allow this population to achieve their full potential and most optimal wellbeing (1,3). This investment can reap rewards. As the Lancet Commission on Adolescent Health and Wellbeing highlighted, this time period is foundational to physical, cognitive, emotional, social, and resources, concluding economic that: "Investments in adolescent health and wellbeing bring benefits today, for decades to come, and for the next generation" (5).

Variation in the measures, and the absence of other important metrics, may contribute to misleading conclusions about who is at risk, trends in rates, and the success or lack thereof of interventions. With improved collection of this health data, governments are better equipped and informed to prioritize health challenges, develop policies, deploy resources, and measure success (6,7,73-77). In the absence of this information, it is challenging to develop appropriate adolescent reproductive health programs and interventions.



While this paper focused on adolescent pregnancy, these data collection challenges could be relevant to many other adolescent health issues that are preventable but also neglected, such as mental health, drug abuse, intentional and unintentional injuries, or sexually transmitted infections (2). Other sexual and reproductive health problems, including HIV/AIDS, remain a major concern for adolescent health, particularly in some regions. Collecting substance use data

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and adolescent violence have related issues and also relationships with adolescent sexual choices and behaviors. These all share stigma. Yet these all appear in adolescence with considerable consequences to adolescent immediate and future health as well as their future families (2), and connect back to the recognition that adolescent health generally, and adolescent fertility specifically, are critical parts to a life-course perspective on adolescent health (1,5,9-11).

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Sexual health knowledge, attitude and risk perception among in-school and out-of-school female adolescents in Onitsha, Anambra State, Nigeria

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Abstract

Aim: Young people need protective information and skills in order to reduce the risk associated with unsafe sex. This study assessed and compared the sexual health knowledge, attitude and risk perception of in-school and out-of-school female unmarried adolescents in Onitsha North Local Government Area, Anambra State, Nigeria.

Methods: A comparative cross-sectional design was used in which 391 in-school female adolescents (mean age: 15.9 ± 1.4 years) were selected from 25 private and 17 public schools in Onitsha North Local Government Area, Anambra State, Nigeria using multistage sampling method. A comparison group of 392 out-of school female adolescents (mean age: 15.5 ± 2.5 years) was also selected from a major market in the same Local Government Area using cluster sampling technique. Data was collected from the respondents with pre-tested, interviewer-administered questionnaires on reproductive and sexual health knowledge, risk perception and attitude, sexual behaviour, contraceptive knowledge and sources of sexual health information.

Results: In-school girls demonstrated better knowledge of sexual and reproductive health compared to their out-of-school counterparts. The awareness of fertile period, contraception methods, STI and HIV transmission and prevention were all significantly better among the in-school adolescents compared to their out-of-school counterparts (P<0.05). They also had markedly higher risk perception of getting pregnant (P<0.05) or acquiring HIV infection (P<0.05) compared to their out-of-school counterparts.

Conclusion: About 21% of adolescents in this study area were involved in risky sexual behaviour and this was higher among the out-of-school adolescents than their in-school counterparts. All stakeholders in the state and the Local Government Area should come together and develop interventions that would improve the sexual health knowledge and sexual risk perception of the adolescents.

Keywords: attitude, female adolescents, in-school, knowledge, Nigeria, Onitsha, out-of-school, risk perception, sexual health.

Introduction

Adolescents (10-19 years), especially females, are most vulnerable to unsafe sex. They also bear the brunt of the consequences. It is estimated that nearly two-thirds of premature deaths and one-third of the total disease burden in adults are associated with behavioural factors that began in youth and unprotected sex is mentioned among these factors (1). Most studies and interventions on adolescents in sub-Saharan Africa and Nigeria target in-school adolescents because they are easily accessible, easier to organize and monitor compared to those who are not in school. However, most of the secondary school age youths in Nigeria are not in school (63% of boys and 79% of girls) (2). Worldwide, about 120 million school-aged children are out of school and slightly more than half of these are girls and one-third of these children are in Sub-Saharan Africa and 10% in Nigeria (3). A recent study in Anambra state, Nigeria, reported that 43% of pregnant girls were expelled from school and none was recalled back (4). Similar studies conducted in Botswana also reported that most pregnant teenagers drop out of school (5).

Studies have shown that most out-of-school adolescents do not live with their parents and are found most times on the street, market places or motor parks hawking or serving as shop assistants to others (6-9). This is why most are vulnerable to unsafe sex and have lower sexual health knowledge compared to their in-school counterparts. Adolescents seek reproductive and sexual health information from a variety of non-formal sources that include peers, pornography and magazines. The unguided youth usually experiment with the information received and often become exposed to STIs, unwanted pregnancy among others. Young people need protective information and skills in order to reduce the risk associated with unsafe sex. Studies in other parts of Nigeria showed in-school adolescents reporting teachers and parents as their main sources of information while out-of-school adolescents reported friends and the media as their main sources of information on sexual health (10,11). The findings are consistent with studies carried out in other African countries like in Uganda where as many as 69% of out-of-school adolescents receive their information from their peers compared to only 8% of their counterparts (12). Research has shown that the knowledge of out-of-school adolescents on sexual health issues is poor. A study carried out in Lagos reported that two-fifths of respondents did not know that pregnancy could occur during their first sexual intercourse, most felt there was no risk associated with sexual intercourse and some had misconceptions that abstinence after menarche was harmful. Many of participants also felt that having sex was necessary to show love in relationships (13). In various studies, preferred sources of sexuality information include the health workers and parents (10,14-16). This is because they give reliable information unlike peers who could give wrong and misleading information.

The out-of-school adolescents are not easily accessible, because they are always on the move and not available for follow-up activities (12). Therefore, it is important to clarify the needs of both groups taking into consideration the social and environmental factors, peer norms, beliefs and values of the different groups in order to develop and implement successful prevention programmes for the two groups.

Onitsha, Nigeria, holds the largest market in West Africa, and second only to Lagos in youth concentration. Therefore, an area of large youth concentration such as Onitsha is most suited for this proposed research. The objectives of this study were to assess and compare the sexual health knowledge, attitude and risk perception of in-school and out-of-school female unmarried adolescents in Onitsha North Local Government Area (LGA), Anambra State, Nigeria.

Methods

Design and study area

A cross-sectional, comparative study was carried out in 2012 including unmarried in-school and out-of-school female adolescents aged 10-19 years residing in Onitsha North LGA in Anambra State, Nigeria. The Onitsha main market, reputedly the largest in West Africa, enjoys large patronage by traders and visitors from all over Nigeria and virtually all West African countries. There are other satellite markets (about 30) to relieve the enormous pressure on the main market. Many out-of-school children are found in every part of the market hawking virtually anything. Some are in the market as shop assistants, while some are left entirely on their own in some stores. This constitutes the setting for the out-of-school aspects of this study. Also, the Onitsha North LGA has 25 private schools and 17 public schools, giving a total of 42 schools. There are 22 mixed schools, 12 boys' only schools and 8 girls' only schools. Some of the schools belong to the mission, some a government-owned, while the rest are private schools.

Study population

The study population consisted of unmarried female adolescents between the ages of 10-19 years and comprised: a) In-school adolescents and b) Out-of-school adolescents. For in-school, only those in Senior Secondary School One to Senior Secondary School Three (SSS1-SSS3) were considered for the study for comparison with their counterparts. This is because most of the out-of-school adolescents are within the age range of those in these classes than the classes below. For out-of-school adolescents, those that had never been to secondary school, finished primary school but did not continue or had dropped out of secondary school were considered eligible. The exclusion criteria included, for in-school, all the post-secondary school adolescents employed or unemployed who had finished secondary school and those with mental, hearing or speech disabilities.

Minimum required sample size was determined for comparison of two independent groups (in-school vs. out-of school female adolescents) (17). Based on reports from previous studies conducted in Nigeria (13,18) and an anticipated response rate of 90%, a total of 236 individuals constituted the minimum sample size. However, it was decided to recruit a total sample of 800 female adolescents (400 among in-school adolescents and 400 among out-of school adolescents) in order to considerably increase the power of the study.

Selection of in-school adolescents consisted of a two-staged sampling technique which employed stratified sampling method in the first stage and simple random sampling method in the second stage. Secondary schools in the area were stratified into four categories as follows: two female-only private, six female-only public, 17 mixed private and five mixed public schools. From each of the strata, one school was selected using stratified random sampling technique. From each selected school, 100 respondents were chosen using simple random sampling method and ensuring proportionate representation from classes SSS1-SSS3 reaching a total sample size of 400 respondents.

Out-of-school adolescents were selected using cluster sampling technique as was done in previous studies (12,19). The market is estimated to have more than 60 clusters. Clusters of 30 were selected by simple random sampling from the sampling frame containing the list of all the clusters twice (13). Using the WHO cluster sampling method, seven consenting adolescents were selected from each cluster until a total of 400 respondents was reached. Since the clusters were in different directions, a bottle was spun and the direction of its mouth was used to show the starting point of the study.

Data collection

The same pre-tested interviewer-administered questionnaires were used for both in-school and out-of-school adolescents to ensure uniformity. The questionnaires were pretested among 20 in-school adolescents and 20 out-of-school adolescents in Nnewi North LGA for suitability, reliability, acceptability and appropriateness.

The questionnaires were used to collect information on variables such as: demographic characteristics, sexual health knowledge, attitude and HIV risk perception, pattern of sexual behaviour, contraceptive use and sources of sexual health information.

Eight hundred questionnaires were handed out, but 783 were returned (391 for in-school and 392 for out-of-school) – yielding an overall response rate of approximately 97.9%.

Data analysis

SPSS version 17 was used for data entry and analysis. Chi-square test was used to compare proportions of the categorical variables and t-test for comparison of mean values of the numerical variables. Differences and associations yielding p-values ≤ 0.05 were considered statistically significant.

Results

The mean age of in-school girls was 15.9 ± 1.4 years and that of the out-of-school girls was 15.5 ± 2.5 years. Most respondents in both groups were Catholics, though more predominant among in-school girls (59.8%) as shown in Table 1. Majority (57.9%) of the out-of-school girls lived most of their time with relatives, either of the two parents, friends and boyfriend compared to 77.7% of the in-school girls who lived most of their time with both parents (P=0.001).

Socio-demographic characteristics	In-school (N=391)	Out-of-school (N=392)	P-value*
Age (in years):			
10-13	9 (2.4)	84 (21.4)	
14-15	135 (34.5)	91 (23.2)	0.001
16-17	204 (52.1)	118 (30.1)	
18-19	43 (11.0)	99 (25.3)	
Religion:			
Roman Catholic	234 (59.8)	187 (47.7)	
Protestant	90 (23.0)	132 (33.7)	0.001
Pentecostal	54 (13.8)	69 (17.6)	
Islam	4 (1.0)	4 (1.0)	
Others-Sabbath, Jehovah's Witness	9 (2.4)	0 (0.0)	
Who they live with most time?			
Both parents	297 (77.7)	162 (43.9)	
Relative	31 (8.4)	133 (35.7)	0.001
Either parent	33 (9.0)	55 (14.9)	0.001
Friends	4 (14.8)	23 (6.2)	
Boyfriend	1 (0.3)	9 (2.4)	
Other	2 (0.5)	0 (0)	

Tuble It botto utility fulling the state of the groups fullingers (common percentages)	Table 1.	Socio-demographi	c characteristics o	of the groups	[numbers	(column	percentages)
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* Chi-square test.

In-school girls demonstrated better knowledge of sexual health compared to their peers that were out-of-school, as shown in Table 2. They had statistically significant knowledge of

fertile period compared to their out-of-school counterparts (P=0.001). However, less than 30% of girls in both groups were aware of the fertile period in a woman's cycle. Also, the in-school respondents had better awareness of contraceptive methods, types of STIs and HIV transmission and prevention than the out-of-school respondents, all of which were statistically significant.

Knowledge of sexual health	In-school	Out-of-school	P *
Knowledge of fertile period:	,		
During menstruation	45 (11.5)	76 (19.4)	
Immediately after menstruation	124 (31.8)	95 (24.2)	0.001
Half way between two periods	108 (27.7)	40 (10.2)	
Don't know	109 (27.9)	181 (46.2)	
Knowledge/Awareness of contraceptive methods: [†]			
Condom	285 (72.9)	267 (68.1)	
Abstinence	120 (30.7)	98 (25.0)	
Oral Pills	84 (21.5)	60 (15.3)	
Safe period	57 (14.6)	14 (3.6)	0.001
Injectables	38 (9.7)	28 (7.1)	
Withdrawal	47 (12.0)	13 (3.3)	
Others	2 (0.5)	0 (0.0)	
None	52 (13.3)	75 (19.1)	
Knowledge/Awareness of HIV/ AIDS/STIs: [†]			
HIV/AIDS	383 (98.0)	383 (97.7)	
Gonorrhea	264 (67.5)	217 (55.4)	
Syphilis	190 (48.6)	163 (41.6)	
Candidiasis	143 (36.6)	108 (27.6)	0.002
Chlamydia	13 (3.3)	12 (3.1)	
Herpes	18 (4.6)	8 (2.0)	
Others	11(2.8)	8(2.0)	
None	41 (10.5)	75 (19.1)	
Knowledge of HIV: HIV transmission can be: [†]			
By blood transfusion and sharing of sharp needles or blade	302 (77.2)	315 (80.4)	
Through mother to child transmission	171 (43.7)	97 (27.8)	
By sharing food with a person with HIV	33 (8.4)	64 (16.3)	0.001
Through mosquito bite	24 (6.1)	66 (16.8)	0.001
By witchcraft or supernatural means	8 (2.1)	30 (7.7)	
Reduced by using condom	125 (32.0)	47 (12.0)	
Reduced by not having sex at all	151(38.6)	36 (9.2)	

 Table 2. Sexual health knowledge of the groups [numbers (percentages)]

* Chi-square test.

[†]Multiple responses.

The commonest methods of contraception known to both groups were condoms, followed by abstinence. Less than 50% in both groups were not aware of other methods of contraception. Almost all adolescents in both groups (98%) were aware of HIV as a type of STI, followed by gonorrhoea, syphilis and candidiasis. More than 50% of the girls in both groups knew that HIV can be transmitted by blood transfusion and sharing of sharp needles or blade. Sixteen percent of out-of-school girls had the misconception that HIV can be transmitted by sharing food with an infected person and also through mosquito bites compared to less than 10% of the in-school girls. Only 12% of the out-of school girls believed that HIV can be reduced

using condoms, and a lower proportion of 9% believed it can be reduced by not having sex at all. This is in comparison to in-school girls with 32.0% and 38.6%, respectively (Table 2).

Most of adolescents thought that a single sexual intercourse was enough for one to become pregnant or acquire HIV infection (Table 3). In-school girls had better perception of risk of getting pregnant (χ^2 =16.31, P=0.001) or acquiring HIV infection (χ^2 =21.98, P=0.001), following a single sexual exposure. However, a greater proportion of their out-of-school peers perceived their chance of acquiring HIV to be high (χ^2 =20.03, P=0.001). Although most of adolescents could not rate their risk of acquiring HIV infection, most of them felt that their chance of getting the disease is nil or low. Furthermore, although majority of adolescents believed that AIDS is real, in-school girls demonstrated better attitude. Two hundred and forty five (62.7%) in-school girls compared to 36.0% out-of-school girls did not agree that girls should be sexually experienced prior to marriage. Similarly, a significant proportion of adolescents agreed that unmarried couples should use condom sex (χ^2 =27.84, P=0.001) (Table 3).

Attitude and risk perception	In-school	Out-of-school	P *
Number of sex before one can become pregnant:			
Once	307 (78.5)	257 (65.6)	
2-5 times	54 (13.8)	55 (14.0)	0.001
>5 times	22 (5.6)	25 (6.4)	
Don't know	17 (4.4)	57 (14.5)	
Number of sex before one can get HIV infection:			
Once	312 (79.8)	254 (64.8)	
2-5 times	55 (14.1)	48(12.3)	0.001
>5 times	14 (3.6)	26 (6.6)	
Don't know	21 (5.4)	64 (16.3)	
Perceives self at risk of acquiring HIV infection:			
None	117 (29.9)	86 (21.9)	
Low	29 (7.4)	40 (10.2)	0.001
Moderate	15 (3.8)	8 (2.0)	0.001
High	9 (2.3)	30 (7.7)	
Don't know	221 (56.5)	228 (58.2)	
A girl should have sexual experience before marriage:			
Agree	105 (26.9)	89 (22.7)	0.001
DNK/Unsure	41(10.5)	162(41.3)	0.001
Disagree	245 (62.7)	141 (36.0)	
Do you believe that AIDS is real?			
Yes	372 (95.1)	358 (91.3)	0.020
No	9 (2.3)	24 (6.1)	0.029
Don't know	10 (2.6)	10 (2.6)	
Unmarried couples should use condom during sex:			
Agree	148 (37.9)	128 (32.7)	0.001
Disagree	159 (40.7)	113 (28.8)	0.001
Don't know	84 (21.5)	150 (38.3)	

Table 3.	Knowledge.	attitude and	risk perce	ntion <i>Inun</i>	nbers (columi	n percentages)]
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* Chi-square test.

Discussion

A major threat to health of the adolescent stems primarily from their sexual behaviour which is partly influenced by lack of knowledge of reproductive health issues. For example, only a

small proportion of both groups knew that a woman is likely to become pregnant half way between periods and even a smaller proportion of out-of-school respondents (10%) significantly differed from in-school adolescent (28%) in this regard. This is consistent with the finding of the NDHS (2008) where only 19% of all women knew the women's' fertile period (20). The study conducted in the northern part of Nigeria showed a lower result because only 3.1% knew when ovulation occurs (21). In South-Africa (22), it is 11%, while it is higher in Ethiopia (23) with 48%. This poor knowledge of fertile period amongst Nigerian adolescents may be the reason why the level of unwanted pregnancies and abortions is high. Currently, it is estimated that 23% of adolescents in Nigeria have begun child bearing (20). This finding strengthens the need to educate adolescents on reproductive and sexual health issues. However, a large proportion of both groups in this study knew that pregnancy is likely to occur at first sexual contact. This finding is consistent with the studies carried out in three states in Northern-Eastern Nigeria (49%) (15) and Lagos (60.5%) (24), but slightly lower with that carried out in Ethiopia (48%) (23).

A higher percentage of the in-school girls had better awareness of contraceptive methods than the out-of-school girls. The condom is mostly known by both groups followed by abstinence and oral pills. This agrees with findings of other studies conducted among adolescents (6,25-30). Adolescents and most young people have high awareness of condoms than most contraceptive methods (26). This is probably due to the much publicity given to preventive measures such as the condom with the onset of HIV pandemic; sometimes it is even distributed free of charge to the sexually active individuals. Ninety-eight percent of the two groups were aware of HIV/AIDS and this is consistent with the figures from the 2008 NDHS (20) and also with findings of studies carried out in Ghana (25), Malawi (27) and Uganda (28). Overall, the in-school adolescents significantly had better knowledge of HIV transmission and prevention than the out-of-school counterparts, 16.8% believed that mosquitoes can transmit HIV and only 9.2% believed that condom can prevent HIV transmission. This is not surprising as educational attainment is positively associated with increased awareness of HIV methods as reported in the 2008 NDHS (8) and other African countries (25,27-28). Both groups had better awareness of HIV than other STIs. This is common with most studies involving adolescents and is not surprising because of the pandemic nature and publicity given to HIV infection (13,16,25,27,28).

It is a common finding in studies involving the youth to discover that most do not consider themselves at risk of contracting HIV (25,27,28). In this study, more than half of the respondents in both groups do not consider themselves at risk or do not know that they are at risk of acquiring HIV infection. Misconceptions, ignorance, poverty, desire for pleasure and sex under the influence of alcohol amidst other factors may provide the possible explanation for the low risk perception (31). However, the in-school girls significantly had better perception of risk of getting pregnant (χ^2 =16.31, P<0.05), or acquiring HIV infection (χ^2 =21.98, P<0.05). They also had better attitude than their out-of-school counterparts. Overall, most disagree that girls should have sexual intercourse before marriage. Studies done in Lagos (13), Ethiopia (23) and Portugal (32) have also reported a similar finding.

Ninety-nine percent of the respondents affirmed that people had talked to them on issues of sexuality. In-school respondents had received their information mainly from parents and school teachers, while out-of-school girls had received information from youth organizations, parents and friends. This is consistent with results of similar studies done in Owerri (10), Benin (11) and in four other African countries (16). In this study, in-school adolescents significantly had more knowledge on sexual health than out-of-school adolescents. Involvement in schools and plans to attend higher education are all related to less sexual risk-

taking and lower pregnancy. However, their knowledge of many sexual health issues was poor; a significant number of both groups did not know their fertile period and had some misconceptions of HIV/AIDS.

Our study may have some limitations. Due to the sensitive nature of the topic, some respondents found it difficult to respond to some questions. Furthermore, some of the parents were not willing to allow their adolescent children to be interviewed, especially for the out-of-school girls. There was also the problem of privacy in the market. However, in order to circumvent these problems, painstaking explanations on the purpose and benefits of the study were offered to all adolescents and a good number responded positively thereafter. In addition, our findings should be interpreted with caution due to the cross-sectional nature of our study design.

In conclusion, this study has revealed that in-school respondents showed higher knowledge of sexual and reproductive health issues than their out-of-school counterparts, probably because of the effect of the school environment. They had better knowledge of HIV transmission and prevention methods, STIs and contraception. However, both groups had low knowledge of fertile period and other forms of contraception. The in-schools girls also had better risk perception of HIV/AIDs and demonstrated better attitudes than the out-of-school girls towards pre-marital sex and condom use.

It is therefore recommended that out-of-school adolescents should be targeted to go through behavioural change communication (BCC) on sexual and reproductive health issues. Using the findings of the study as a baseline data, the Ministry of Health and Education, faith organizations, international and non-governmental bodies and all adolescent stakeholders should be encouraged to collaborate and cooperate with opinion leaders into impacting and improving the reproductive and sexual health knowledge of adolescents more so for the outof-school adolescents. These could also happen by training and retraining more teachers and peer educators on issues of reproductive and sexual health for impartation on their students and their out-of-school counterparts.

Parents are the primary sexual educators of the children. Parents should be sensitized on the importance of providing a supportive home environment; maintaining strong ties with them and giving appropriate information on sexual issues according to their ages. This will bring about a level of family connectedness that will effect positive changes in the sexual behaviour of the adolescents. The responsibility of sensitizing parents can be taken up by the Ministry of Women Affairs with cooperation from faith-based organizations, representatives of market women, parents, teachers association and other bodies.

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objectives and benefits of the research to them. They were assured of no harm in participation and were told that participation is entirely voluntary.

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REVIEW ARTICLE

Neglect, abuse and violence against older women: Definitions and research frameworks

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Abstract

The aging of the global population with women living longer than men, resulting in the feminization of aging, focuses attention on the intersection of gender and age. Women across the lifespan can be victims of violence but there has been little attention to date to the neglect, abuse and violence against older women. Because of this gap in knowledge and remedies, little is known about neglect, abuse and violence against older women, particularly its prevalence as well as evidence-based prevention and intervention strategies. Several definitions of neglect, abuse and violence are reviewed here, along with conceptual frameworks that operationalize these definitions differently, resulting in differences in findings on prevalence as well as fragmentation in the way that older women victims of abuse are viewed. Three definitions of older adult abuse are discussed, including those formulated by the Toronto Declaration, the National Research Council, and the United States Center for Disease Control. Each focuses on a different aspect of abuse of older women: active ageing, old age dependency, and domestic violence in later life. A fourth conceptual framework, the human rights perspective, shows promise for addressing abuse of older women in a more holistic manner than the other definitions, but Is not fully developed as a way of understanding neglect, abuse and violence against older women. This is the first of a four-part series on older women and abuse.

Keywords: ageing, elder abuse, neglect, older women, violence.

Older women, socio-demographics, and human rights

Population aging is a global trend that is changing economies and societies around the world (1). In 2012, people aged 60 years and older represented almost 11.5% of the global population and by 2050 this is expected to double to 22%. Older women outnumber older men: in 2012 for every 100 women aged 60, there were 84 men, and for every 100 older women aged 80 and above, there were only 61 men. The feminization of aging, representing the intersection of age and gender, has important implications for policy as the world continues to age. Gender discrimination across the lifespan has a cumulative effect, and neglect, abuse and violence across the lifespan results in a high lifetime rate for older women. Neglect, abuse and violence against older women have been largely overlooked as a focus of research; this is in spite of the fact that unique and compounded disadvantages are experienced by older women (2). Older women aged 60 years and older have been identified as subject to discrimination by the Convention to Eliminate All Forms of Discrimination Against Women (CEDAW) experts in 2010 and by the United Nations (UN) Department of Economic and Social Affairs (DESA) in their 10-year review of the implementation of the Madrid International Plan of Action on Ageing (3). One area of discrimination in the form of human rights violations that has been largely overlooked by policy makers, researchers and advocates for girls' and women's rights is neglect, abuse and violence of older women.

Because of this gap in knowledge and remedies, little is known about neglect, abuse and violence against older women, particularly its prevalence as well as evidence-based prevention and intervention strategies. In November 2013, to begin to address this gap, the UN DESA held an Expert Group Meeting (EGM) inviting researchers and other experts from around the world to New York City to review the state of knowledge, gaps and next steps to address this area of human rights violations against women and older people.

One of the recommendations in the final report, "Neglect, Abuse and Violence Against Older Women", prepared by the UN DESA Department of Social Policy and Development, is that *"while both quantitative and qualitative research have begun to develop salient factors in cultural differences, age-related differences and service needs and gaps for older women victims"* (2), more data are needed both on prevalence as well as practices to prevent neglect, abuse and violence against older women. In addition, unifying themes that connect older women in developing and developed countries, and in both modern and traditional societies, should be identified along with unifying themes that connect women of all ages.

Discrimination against older women

Women across the lifespan can be victims of violence, but neither the women's domestic violence movement nor the aging empowerment movement has mobilized to end violence against older women. While elder abuse has been the object of many studies, abuse of older women has had only modest attention in the gender based literature (4). Older women have lacked status as battered women in domestic violence research and activism. Older women are often excluded in studies of violence against women and often completely absent as though older women do not belong in the category of women.

Older women are often absent from discussions about shelters and hotlines, and there is the lack of a debate on circumstances and special needs of older women victims of abuse that may affect help seeking behavior. However, a gender analysis of violence against women and girls focuses on male dominance and subordination of women, and subordination seems especially relevant for older women (4). Is the women's domestic violence movement ageist? Why haven't older people taken ownership of mistreatment of their peers (5)? Why hasn't the professional leadership in this field joined with older people to form a grass roots movement like the women's movement to speak out against elder abuse? Could social ambivalence

about old age be one reason, and the double jeopardy of sexism and ageism another? Abuse of older women is neglected by advocates of gender equity, women's rights activists and aging advocates. Is it because the link to frailty and dependency makes older abused women appear to lack agency?

Gender inequality and the life course

The United Nations Special Rapporteur on Violence against Women observes that the inequality and discrimination experienced by women intensifies with old age (6). Discrimination against older women on the basis of age and gender can result in situations where they experience neglect, abuse and violence (7).

Ageism

Ageism is defined as "the systematic stereotyping and discrimination against older people because they are old, just as racism and sexism accomplished this with skin color and gender" (8). Ageism reinforces systems of oppression in two ways. It focuses on individual perspectives and actions and leaves hidden insidious forms of discrimination. Age blindness implicitly uses the privileged as the norm and judges others by that standard (9). Ageism and sexism create a socially constructed dependency in old age of which feminization of poverty is a key factor. These factors make discrimination and disadvantage seem inevitable. For older women, invisibility is symbolic of this process (10). Whittaker (10) suggests that the failure of gender experts to do this analysis is a measure of the entrenched ageism within the women's movement.

Cultural norms and social expectations

Social expectations and changing social norms can also create a perception of abuse toward older family members (11). In studies of older adult abuse in Asia and South Asia, the daughter-in-law is often identified as an abuser for not serving a traditional role of caregiving in the home while engaging in paid work or a career (12).

Public policy and availability of social and health programs

Political decisions about social protections for older women, and availability of health, mental health, criminal justice and other resources can limit options within families and communities for addressing issues of neglect, abuse and violence, according to Shankardass (13).

Multi-dimensional nature of neglect, abuse, and violence against older women

Manjoo (6) argues for a holistic approach to understanding abuse of older women and how to address it. Recognizing intersectionality and the continuum of violence against older women requires analysis of violence in four spheres: violence in the family; violence in the community; violence that is perpetrated or condoned by the State, including custodial settings like care homes and hospitals; and violence in the transnational sphere as it affects migrant, refugee and asylum seeking older women (6).

Gender inclusion

While abuse can affect all older adults, older women are arguably more likely to experience many of these forms and levels of abuse than older men. First, women live longer and with chronic impairments for which they may need support in the home and community. Second, older women are less likely to have adequate pensions and other benefits than older men, giving them fewer resources to ensure their independence. Finally, women across the lifespan

experience cumulative disadvantages and lower status than men, leaving them more vulnerable to abuse and neglect in old age.

Purpose

The purpose of this series of articles is to discuss the current state of knowledge about abuse of older women. It explores various definitions of neglect, abuse and violence against older adults and discusses whether there are agreed upon definitions of neglect, abuse and violence against older women. It addresses main forms or categories, prevalence and risk factors of neglect, abuse and violence against older women, as well as health consequences of violence and abuse, and data sources along with problems in collecting such information. It also provides an overview of needs of older women survivors of neglect, abuse and violence. It discusses preventive measures to address the issue, presenting evaluations of their effectiveness where available. It provides an overview of main approaches to addressing abuse of older women, and key interventions including policies and programs for the protection of older women victims of abuse along with outcomes where evaluations have been completed. Finally, recommendations are offered for further improvement of policies in these areas.

This paper focuses on definitions of neglect, abuse and violence against older adults based on current conceptualizations of abuse. It proposes that there are three dominant conceptual frameworks for understanding neglect, abuse and violence against older women. These are: older adult mistreatment, informed by social gerontology and using a definition proposed in the Toronto Declaration on Elder Mistreatment (14); older adult protection, informed by geriatrics using a definition that was formalized by the National Research Council (15); and intimate partner violence or domestic violence against older women, informed by feminist gerontology and adapting a definition originally formulated by the USA Centers for Disease Control (CDC) (16). A fourth, a human rights perspective, is an emergent framework for examining abuse of older women, and is currently under development (17) (Bridget Sleap, Senior Policy Advisor, HelpAge International, Personal Communication, August 8, 2013). Differing definitions have led to research findings, policy responses, and programs and practices that may appear contradictory and confusing to those not familiar with the field of elder abuse and neglect (18). Each is linked to different assumptions and theoretical explanations for abuse of older women, and interventions including policies, and programs and practices to prevent and end neglect, abuse and violence against older women.

Forms of abuse

Main forms of abuse used to categorize mistreatment of older women include: physical, sexual, psychological (also called emotional, verbal and non-physical) abuse, financial (also called material) exploitation, neglect, and violation of personal rights (19). Different conceptual frameworks use a combination of different forms to operationalize abuse. The Elder Mistreatment and Older Adult Protection frames use most of the forms cited above, with the possible exception of violation of personal rights, sometimes termed social abuse (20). The Intimate Partner Violence (IPV) frame uses physical, sexual, and psychological forms of abuse, and sometimes violation of personal rights, but not neglect and usually not financial exploitation (unless included in a measure of psychological abuse) (16).

Physical/Sexual: Some studies of older women and abuse categorize sexual abuse as a sub-set of physical abuse. Physical abuse includes actions intended to cause physical pain or injury to an older adult, such as pushing, grabbing, slapping, hitting, or assaulting with a weapon or thrown object. Sexual abuse can include offensive sexual behaviors as well as physical contact of a sexual nature (14).

Psychological: This form of abuse is also called verbal or emotional abuse, which may be further defined as active or passive. This describes actions intended to inflict mental pain, anguish or distress on an older person (19).

Qualitative research studies have examined forms of psychological abuse against women in greater depth. Montminy (21) found 14 types of psychological abuse, which can be active or passive, perpetrated by intimate partners against older women. These include: control, denigrate, deprive, intimidate, threaten, abdicate responsibility, manipulate, blame, harass, negate victim's reality, sulk, infantilize, show indifference, and provoke guilt. In IPV studies, financial exploitation or material abuse (use of property or possessions without victims' permission) can be a subset of psychological abuse. Also in IPV research, psychological abuse may be limited to threats of physical or sexual violence.

Neglect: The National Research Council (NRC) definition of elder abuse, with its inclusion of vulnerability as a core concept associated with victims, provides the most explicit link with neglect of older care dependent adults. This definition is further operationalized to include neglect as an "omission by responsible caregivers that constitutes 'neglect' under applicable federal or state law" and caregiver as "a person who bears or has assumed responsibility for providing care or living assistance to an adult in need of such care or assistance" (15). It is further operationalized as refusal or failure of these responsible for providing a caredependent older adult with assistance in daily living tasks or essential supports such as food, clothing, shelter, health and medical care. This can also include desertion of a care dependent older adult, also called abandonment (14).

There is no overarching theoretical framework for elder abuse (22). This makes it difficult to operationalize neglect of older women as part of a larger discussion of neglect, abuse and violence. In addition, in spite of a general observation that older adult caregiving dyads are most likely female (23), there is a paucity of studies that focus on neglect as a form of elder abuse perpetrated against elderly care dependent women by female formal or informal caregivers. Research and discussions that link caregiving of care dependent older adults and neglect by caregivers in general are either gender neutral or treat gender as a study variable.

Financial exploitation and material abuse: This form of abuse describes actions of illegal or improper use of an older person's money, property or assets. Women have been found to be especially vulnerable to this form of abuse and were twice as likely to be victims of financial abuse as men in a recent study conducted in the USA (24). Most victims in this study were between the ages of 80 and 89 years old, lived alone, and had some care needs that required help in their homes.

Violation of Personal Rights: Linked to the concept of individual human rights, this form of abuse includes the infringement of personal rights as a form of elder abuse (19). It includes behaviors that violate an older person's right to privacy, right to autonomy and freedom, and right to have access to family and friends. This form of abuse is also known as *social abuse* (20).

Definitions, differences and agreements

Most professionals in the field of elder abuse agree that lack of a generally accepted definition of abuse, mistreatment or maltreatment of older adults is a barrier to understanding this social problem. The lack of a commonly accepted definition of elder or older adult abuse is also a challenge for understanding the abuse of older women from a global perspective. Because definitions tend to use similar language in different frameworks, it can be confusing to differentiate among them. The discussion below attempts to clarify some of this definitional confusion.

Purposes of definitions

Definitions of elder abuse and neglect are used for research, particularly prevalence and population studies, policy and program development, and practice. Three influential definitions reflecting divergent underlying assumptions about elder abuse and abuse of older women have guided research and policy decision making. They are presented here.

Mistreatment of older adults (elder mistreatment)

In the Toronto Declaration on the Global Prevention of Elder Abuse, elder abuse is defined as "a single or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person. It can be of various forms: physical, psychological, emotional, sexual, and financial or simply reflect intentional or unintentional neglect" (14). This is linked to the active ageing concept of older adulthood, in which older women and men are considered to have the capacity to be productive contributors to society (25).

This definition originated with a United Kingdom NGO, Action on Elder Abuse in 1995 (26), and was adopted by an expert group on elder abuse from the International Network for the Prevention of Elder Abuse (INPEA) and the World Health Organization (WHO) that met in Toronto, Canada in 2002. Age of the victim is not defined as part of this definition but is usually 60 years of age and older in studies that use this definition, because they tend to focus on older adults living in the community. This definition used in elder abuse research, policy and practice formulation is influenced by social gerontology.

Critics of the WHO definition state that while it has become popular for policy purposes, it is difficult for researchers to operationalize and includes data elements, such as 'appropriate action', 'expectation of trust', and 'distress', which are largely subjective. The use of 'a single or repeated acts' as a baseline measure has been identified as ambiguous (26). 'Trusting relationship' is a key concept in both Elder Mistreatment and Older Adult Protection frameworks. This speaks to the nature of the relationship between older adult victims and perpetrators of abuse: crimes committed against older women by strangers are not defined as elder abuse in these research frames. This is not the case in IPV research, where rape and other forms of violence can be perpetrated against girls and women of all ages through casual dating experiences and by strangers.

Abuse of vulnerable adults (older adult protection)

Abuse of vulnerable older adults refers to "intentional actions that cause harm or create a serious risk of harm (whether or not harm is intended) to a vulnerable elder by a caregiver or other person who stands in a trust relationship to the elder, or failure by a caregiver to satisfy the elder's basic needs or protect the elder from harm" (15).

This definition of elder abuse was developed by an expert panel (Panel to Review Risk and Prevalence of Elder Abuse and Neglect) convened by the National Research Council of the United States National Academy of Science for the purpose of creating a suggested uniform definition and operationalized data elements on elder abuse for research, policy, and program development and practice purposes. In this definition, self-neglect, victimization by strangers, and intimate partner abuse of older adults, unless vulnerability exists above and beyond old age, is not considered elder mistreatment (27).

The conceptualization of elder abuse victims as frail and vulnerable older adults in need of protection falls under this definition. Care dependent older adults in home or institutional care settings with physical, mental or cognitive impairments, including Alzheimer's disease, may be viewed as potential victims of physical or emotional abuse, neglect, or financial

exploitation by family or professional caregivers with whom they have the expectation of a relationship of trust.

The vulnerable older adult conceptualization of elder abuse has been criticized as reflecting too closely the measures used in child abuse (18). While the Toronto definition is broad, the definition promoted by the US National Research Council on Elder Mistreatment has been criticized as overly narrow in defining victims as vulnerable, rendering it unusable for studies on late life domestic violence life, which can be experienced by able-bodied older people (26), and in precluding self-neglect. It has also been criticized as too broad in other definitional elements, such as "any harm ... and - can include but is not limited to", which allows too much discretion and latitude (26).

The concept of vulnerable adult, which is a key dimension of the NRC definition, has been criticized for being ambiguous and meaning different things in different frames. Goergen & Beaulier (28) have engaged in a critical analysis to better understand the concept of vulnerability within the context of elder mistreatment. In the Elder Mistreatment frame, older adults may range from unimpaired and independent to impaired and dependent, with only the latter group identified as vulnerable. In the contemporary feminist frame, often older women are assumed to be vulnerable based on age alone, and grouped with other categories of marginalized women as reflected in the panel for International Women's Day sponsored by UN Women at the United Nations, New York, on March 8, 2013.

Intimate partner violence against girls and women of all ages

Intimate partner abuse is defined as violence against women that "incorporates intimate partner violence (IPV), sexual violence by any perpetrator, and other forms of violence against women, such as physical violence committed by acquaintances or strangers (28).

This definition was developed by an expert panel convened by the United States Centers for Disease Control and Prevention in 1996 to formulate a uniform definition and recommended data elements for gathering surveillance data on intimate partner violence. It was intended to promote consistency in data collection for public health surveillance and as a technical reference for automation of the surveillance data (29).

Operationalized data elements broaden the scope of this definition somewhat. The victim is anyone who is the target of violence or abuse. The perpetrator is the person who inflicts the violence or abuse or causes the violence or abuse to be inflicted on the identified victim. In this definitional set, the perpetrator is assumed to be an intimate partner, defined as current or former spouse or common-law spouse, and current or former non-marital partner including dating partner (heterosexual or same sex), boyfriend or girlfriend. Violence can include physical, sexual, threat of physical or sexual violence, and psychological or emotional abuse.

Psychological abuse is defined apart from threat of physical or sexual abuse to include humiliating the victim, controlling the victim's behavior, withholding information from the victim, getting annoyed if the victim disagrees with perpetrator, deliberately doing something that makes the victim feel diminished, using the victims' money, taking advantage of the victim, disregarding what the victim wants, isolating the victim from family or friends, prohibiting the victim's access to transportation or telephone, getting the victim to engage in illegal activities, using the victims' children to control victims' behavior, threatening loss of custody of children, smashing objects or destroying property, denying the victim access to money or other basic necessities, and disclosing information that would tarnish the victims' reputation. It also includes consequences such as impairment, injury, disability and use of health, mental health and substance abuse services (29).

This conceptualization of abuse is not necessarily gender or age specific although it typically is applied to analyses of abuse and violence toward women of reproductive age. It does not

define the victim as incapacitated or care dependent. Financial or material exploitation if included at all is defined as a form of psychological abuse. It assumes a power and control relationship between the victim and perpetrator. According to this definition, sexual abuse could be perpetrated by an acquaintance or stranger; physical abuse could be perpetrated by a one-time date.

Violence

The World Health Organization (WHO) has used another definition of violence for a multicountry study of intimate partner violence against women. In this definition, violence is defined as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that results in or has a high likelihood of resulting in injury, death, psychological harm, or deprivation (30). It links intentionality with the commitment of the violent act, and] links the acts to a power relationship. This includes threats and intimidation as well as physical violence. It also includes neglect and all types of physical, sexual and psychological abuse, as well as selfabusive acts such as suicide (31).

This definition of violence against women was used in the WHO Multi-country study on women's Health and Domestic Violence against Women focused on intimate partner abuse of women that includes physical and sexual violence, emotional abuse, controlling behaviors and physical violence in pregnancy. It also includes a life course perspective on violence by non-partners since 15 years of age, and childhood sexual abuse before 15 years of age. Victim subjects were defined as ever partnered (currently or in the past) and even though the definition of victim did not specify age, in this study subjects were between the ages of 15-49 (22). Lifetime abuse prevalence is sometimes calculated across the lifespan for girls and women of all ages: this provides a relatively standardized prevalence measure that can be used to compare abuse rates across cohorts of women into old age (32).

Human rights and abuse of older people

Human rights is a recent conceptual framework that was the subject of discussion in fora like the Expert Group Meeting on Neglect, Abuse and Violence of Older Women and the Elder Abuse Symposium sponsored by the Elder Abuse Interest Group at the 2013 Gerontological Society of America meeting. The human rights framework is believed by some elder abuse experts to hold promise for understanding neglect, abuse and violence against older women in a holistic way without the potential for fragmentation of other frameworks (33).

While it is still too early to propose a human rights theory of neglect, abuse and violence against older women, some of the elements of such a theory can be tested using existing data. This includes applying a life course perspective using longitudinal data, and focusing on the experiences of older women specifically, not older people in general or women in general. It also includes awareness of intersectionality, specifically related to gender and age, but also including race/ethnicity, class, access to health and mental health, and relationships.

Including the concept of intersectionality begins to draw on a human rights framework. This states that human rights are interdependent and the level of enjoyment of any one right is dependent on the level of realization of the other rights. The Convention for the Elimination of all Forms of Discrimination Against Women (CEDAW) and the CEDAW General Recommendation No. 27 (human rights of older women) lay out the rights of older women to live lives of dignity free of discrimination and abuse (34).

The human rights framework defines older adults as rights bearers, because they have a right to live lives of dignity, free of abuse, and family members and caregivers as duty bearers, to explain their obligation to ensure that older adults to whom they are related or to whom they

have a commitment to provide care. The State (government) is a duty enforcer, with the obligation to ensure that the rights of older people are upheld, and sometimes are duty bearers, when the State is directly responsible for older people's care. The most recent research on older adults and abuse using this framework has been undertaken by HelpAge International in collaboration with the London School of Economics.

Each of the frameworks used to study and understand neglect, abuse and violence against older women leads to different and conflicting findings, including prevalence and risk factors associated with the neglect, abuse and violence. In the next issue of the journal, findings from prevalence and qualitative studies as well as risk factors will be presented and discussed.

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EDITORIAL

Future directions for research on neglect, abuse and violence against older women

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The elder abuse field has developed significantly since its inception as a field of practice along with gerontology in the 1970s. Research on elder abuse evolved later, stimulated by the work of the late Rosalie Wolf, considered a founder of the elder mistreatment field (1). Much of this work has been interdisciplinary, with medicine, law, nursing, psychiatry and social work collaborating, as well as sociology. As a result, important research initiatives have significantly broadened our understanding of prevalence, and other dimensions of elder abuse, within aging and vulnerable adult frameworks. However, some aspects of elder abuse remain underdeveloped and open for further exploration.

Feminist perspective/domestic violence

Much work still needs to be done to bring elder abuse into the domestic violence field. Feminist scholars particularly in the disciplines of sociology, social work and psychology in the 1980s and 1990s began to consider elder abuse within a feminist perspective (2). Some limited intervention research on elder abuse in this frame was initiated (3,4).

Feminist gerontology has also been developing as a perspective (5). Coming out of social gerontology and critical theory, this perspective seeks to focus on gender relations in gerontology and builds on the pioneering work of Mary Bricker-Jenkins and feminist social work practice (6). Bringing elder abuse within the domestic violence framework has resulted in increased understanding of why older women have been invisible as victims and survivors of intimate partner abuse (7).

Some novel research methodologies have emerged from the European Union (8) and the World Health Organization (9) in examining prevalence of abuse experienced by older women. Another direction that has yet to be fully explored in the elder abuse literature with respect to older women and abuse is that of the application of complex trauma to an understanding of neglect, abuse and violence against women in later life (10-15).

Life course perspective

Bringing a life course trauma-focused perspective may also address another gap in the literature on older women and abuse: the failure of gerontology and the vulnerable adult fields to focus on older women and abuse in spite of evidence that abuse is more prevalent for women of all ages, compared with men; and the failure of the domestic violence field to include women above the age of 49 in prevalence studies and to relegate older women in an "other" category (Susan B. Somers, President, International Network for the Prevention of Elder Abuse, Personal Communication, January 5, 2019).

To place elder abuse within the field of family violence, we need to move beyond a siloed approach to understanding abuse only as child abuse (vulnerable dependent) and spouse/partner abuse (reproductive age women as victims/survivors). These siloes when applied to elder abuse have resulted in a misunderstanding of older adults as frail care dependent victims or as experiencing negligible intimate partner violence in later life. It has also obscured an identified risk factor in elder abuse: abuse experienced earlier in the lifespan of elder abuse victims (16).

Trauma-informed care

Only very recently has trauma been considered a factor in elder abuse (14,17). Social work is a leading profession that has placed trauma-focused care as a practice model in the fields of child abuse and spouse/partner abuse. However, the medical model dominating elder abuse has resulted in a lack of understanding of the role of trauma in elder abuse. Both feminist gerontology and a life course



perspective require a feminist perspective and an understanding of domestic violence as part of the life course. While theory has laggedobservation, a growing body of research has identified a correlation between abuse early in the lifespan and abuse (16,18). This required elder challenging the ageist bias in the field of domestic violence, as well as the wellmeaning but misguided effort to address a perceived sexist bias in gerontology research by applying a gender neutral lens (19).

Practitioners and researchers are beginning to develop and assess trauma-focused interventions and care. Among promising psycho-educational models include groups, groups promoting support spirituality among older women who have experienced familial abuse, and interventions intended to target depression and abuse (4,20,21).

Acknowledgement of trauma as a central factor in abuse for girls and women of all ages not only provides an explanatory framework for what has been identified as a risk factor for elder abuse, experiencing abuse as a child, but can also provide a practice framework for interventions across the lifespan. It also has the potential for integrating older women into a life course perspective on neglect, abuse and violence against girls and women: older women are too often relegated to an "other" category as though old age renders older women gender neutral (see Susan B. Somers, above). Interventions for children who have experienced abuse, as well as younger women who are victims of domestic violence, may mitigate against vulnerability to abuse in later life as older women. Also, interest in unresolved trauma in later life has led to models of intervention that can begin to address late life trauma or earlier unresolved trauma.

Theoretical advances in understanding neglect, abuse and violence across the life course

The field of elder abuse research has been hampered by lack of a unifying theory that explains abuse of older adults in domestic settings (22). This is also the case for understanding neglect, abuse and violence against older women from a life course perspective, and in explaining how abuse experienced in childhood can be a risk factor for abuse in later life. An understanding of trauma across the life course provides one framework for conceptually linking abuse experienced earlier in life to risk of late life abuse (23). Research has found that the effects of childhood trauma may persist or surface intermittently with mental or physical effects that include continued revictimization (24). Early life trauma has been associated with later life physical and mental health problems; in addition, the broad scope of early traumatic experience is also evident in risk behavior studies. One comprehensive literature review found that the correlates and consequences later of childhood trauma on life consequences is compelling (25). The effects of early trauma can be life-course persistent and negatively affect the wellof individuals. being families and communities. Understanding this from a life course perspective can help to identify multiple points of intervention, with trauma-informed research and practice models.

Childhood trauma effects can persist into old age (26). The Adverse Childhood Experiences (ACE) Study conducted by Kaiser Permanente in California has found that the more adverse experiences subjects reported experienced in childhood, the more difficulties they reported encountering in later life (27). In addition,



older women who report interpersonal violence earlier in their lives experience adverse cumulative emotional and health symptoms that affect wellbeing later in life (28,29).

Lifetime prevalence of gender-based violence in women and the relationship with mental disorder and psychosocial often overlooked functioning is prevalence studies of neglect, abuse and violence against older women (30). Survey questions about interpersonal abuse within the past year or even five years might lead to misleading conclusions that older women experience minimal if any genderbased violence compared to younger ones, when in fact abuse experienced earlier in life can continue to be vividly experienced in late life as well.

Complex trauma and relevance to abuse in later life

Individuals with a history of interpersonal trauma rarely experience only a single event, and traumatic mav have experienced exposure sustained, to repeated or multiple traumas: this has been proposed to lead to a complex symptom that includes presentation not only posttraumatic stress symptoms but also those predominately in affective and interpersonal domains (31). This is known as complex trauma, a type of trauma that occurs repeatedly and cumulatively and within specific relationships and contexts (32). While initially thought to be related to child abuse, including child sexual abuse, the expanded understanding now extends to all forms of domestic violence. including emotional abuse, and attachment trauma occurring with the context of family and other intimate relationships over extended periods of time (33,34).

While complex trauma (developmental disorder for children) has been proposed as a diagnostic category for the DSM-5, to date it has not been accepted as a distinct diagnostic category (35). The 11th revision

World Health Organization's to the International Classification of Diseases (ICD-11) does include Complex Post Traumatic Stress Disorder (CPTSD) as a diagnostic category distinct from PTSD (36). The ICD-11 CPTSD includes not only the three symptom clusters associated with PTSD (re-experiencing the trauma in the here and now; avoidance of traumatic reminders; and a persistent sense of current threat manifested by exaggerated startle and hypervigilance) but in addition three additional clusters, identified as disturbances in self-organization. These include affective dysregulation; negative and disturbances self-concept; in relationships (37).

The basis of the concept of complex (developmental) trauma is attachment theory, originally formulated by Bowlby (38). Other clinicians and theorists began to examine the developmental timing of trauma exposure and emotional dysregulation in adulthood (39,40), the impact of the developmental timing of trauma exposure on PTSD symptoms and psychosocial functioning among older adults (10), and the relationship between childhood trauma and complex posttraumatic stress disorder symptoms in older adults (15).

With a theoretical basis for understanding complex trauma from a developmental perspective, researchers and practitioners have begun to understand the links childhood between experiences of interpersonal trauma and abuse with experiences across the lifespan, including old age (14,17,31). As this understanding developed, intervention strategies evolved with gerontologists taking the lead in implementing and evaluating them (20). In addition, translational collaborations between researchers and clinicians have resulted in formulating clinical applications of the attachment framework (13) as well as designing phase-oriented clinical interventions (41).



Interventions for later life interpersonal victimization related to lifetime trauma necessarily require cognitive history capacity, access to treatment modalities with skilled practitioners, and motivation on the part of the victim, and may also require access to safe living alternatives and other community and social supports (42). Cultural beliefs about the role of girls and women within the family, as well as perceived responsibilities of older mothers toward impaired adult children who are abusive (43,44), are salient, even without past histories of abuse. Abuse of older women with dementia and/or severe physical care needs, particularly within settings, requires different care intervention strategies targeted to institutional or criminal justice remedies (45). However, for cognitively unimpaired victims living in the community who are struggling to resolve chronic abuse particularly as perpetrated by family members or trusted others, and who disclose a history of abuse as children and

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young adults, trauma focused interventions may be indicated.

Conclusion

Chronic interpersonal abuse experienced earlier in life, particularly if not within an enabling environment and if left unaddressed and unresolved, may predispose some victims to continued trauma during their lives, according to trauma-informed researchers (16.18).Adoption of a public health framework to address trauma can assist researchers, practitioners and policy makers to develop a theoretically informed multi-faceted prevention and intervention strategy to address what is known as complex trauma (14). Recently evolved methodologies for assessing, measuring (46,47) and treating this in older adults, including older adult victims of abuse, are beginning to make this feasible.

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ORIGINAL RESEARCH

Adverse effects of maternal age, weight and smoking during pregnancy in Pleven, Bulgaria

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Abstract

Aim: This paper aims to study the relationship between mothers' age, body mass index (BMI), gestational weight gain (GWG) and smoking and the risk for premature birth in Pleven, Bulgaria.

Methods: A case-control study was conducted in Pleven in 2007. The study was comprehensive for all premature children (N=58) and representative for full-term infants (N=192, or 10.4% of all of the 1827 full-term children) born in 2007 at the University Hospital of Pleven and resident in the city of Pleven. Retrospective data on determinants under study were collected from all the mothers included in this study (N=250).

Results: Mothers of premature children were more likely to be above 35 years old (27.6%), with a BMI \geq 25 kg/m² (23.1%), GWG below the recommended value (38.5%) and to smoke during pregnancy (37.9%). The odds of being a smoker during pregnancy were five times higher among mothers with low birth weight (LBW) newborns compared with their counterparts with normal birth weight newborns (OR=5.1, 95%CI=2.4-10.6). There was a positive association between BMI and LBW in infants whose mothers were overweight (OR=2.1, 95%CI=1.0-4.0). The risk of LBW increased when GWG was less than recommended (OR=1.8, 95%CI=1.0-3.1).

Conclusion: Our results indicate that pre-pregnancy BMI ≥ 25 kg/m², less than recommended GWG and smoking during pregnancy are risk factors for premature birth in Pleven region. Findings from this study suggest the need for active health and educational actions by health professionals in order to avoid premature births in Bulgaria.

Keywords: Bulgaria, lifestyle, Pleven, premature birth, risk factors.

Conflicts of interest: None.

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Introduction

Premature birth (PB) is a major public health problem worldwide (1). Furthermore, PB is rated as one of the most important single causes of the global burden of diseases in neonatal period (2). It is associated with increased infant mortality, short and long-term negative effects on health and additional costly care needs (3).

The interest of researchers in personal characteristics and lifestyle factors of the mothers is due to the fact that they are modifiable and they affect the incidence of premature birth. The challenge is to accurately measure the impact of these factors because of their complexity (4). Several studies have shown young maternal age as a significant risk factor for premature birth (5,6). It has not been established with certainty yet, whether this risk is associated primarily with the biological immaturity of young mothers, or an increased incidence of certain risk factors associated with socioeconomic status such as age-appropriate educational level, parity, smoking status, prenatal care utilization and poverty status (7,8). Women over the age of 35 years are also at increased risk of pre-term birth. Astolfi and Zonta (2002) found a 64% increase in the probability of giving premature birth for women over 35 years after controlling for educational status, birth order, and sex of the newborns (9).

Low or high pre-pregnancy body mass index (BMI) and inadequate or excess gestational weight gain (GWG) are linked to an increased risk of adverse neonatal outcomes (10,11). The weight of a woman before the pregnancy is related to her diet, quantity and quality of food (4). Studies have shown that low weight of women before pregnancy is associated with an increased risk of preterm birth (12). Campbell et al. (2012) found a link between low prepregnancy BMI and the birth of a premature baby, with a relative risk of >2.5 (6). A study conducted in 2010 in Bulgaria on the role of some risk factors for preterm birth failed to establish a statistically significant difference in the weight of women bearing preterm children and those with to term births (13).

Smoking is defined as one of the most common and preventable causes of adverse outcomes of pregnancy (14,15). Many chemicals in maternal smoking pass from the pregnant woman to the fetus through the placenta (16). Smoking is associated with placental abruption and inadequate weight gain during pregnancy, but this relationship with the birth of a premature baby is not conclusive and is not proven in all studies. The probable reason for this is that the impact of smoking depends on its duration and intensity, and decreases in women who stop smoking at the beginning of pregnancy (17). Some studies have found a strong causal association between smoking and PB of a child (18). A large number of studies have found a moderate influence of smoking in relation to PB of a baby (14,16,17).

Bulgaria is a country that is characterized by one of the highest indicators of age-specific fertility rate (above 40 per 1000) in Europe in the age-group 15-20 years, which is a risk factor for giving birth to a premature baby (19). According to Manolova (2004), 42.3% of women in Bulgaria smoked during pregnancy (20). However, prematurity as a public health issue has not been subject to scientific inquiry in Bulgaria in the past two decades. Yet, there are a small number of scientific publications in terms of risk factors for PB in Bulgarian children (21).

In this context, there is a need to determine the lifestyle characteristics of mothers as important factors for PB in Bulgaria. This paper aims at studying the relationship between mothers' age, BMI, GWG and smoking during pregnancy and the risk for PB in the city of Pleven, Bulgaria. We hypothesized a positive association between PB and younger or older age and smoking habits of the mothers. Furthermore, we assumed a positive link between low BMI and low weight gain during pregnancy and PB.

Methods

Study design

A case-control study was carried out in 2007 in the city of Pleven, Bulgaria. Pleven is a typical township, located in Central North Bulgaria. At the beginning of the study (in 2007) the size of the population of the city was 139,573 people. In the same year, the birth rate was 8.96‰. Maternal care was carried out only by the University Hospital. There were 2004 children born at the University Hospital, of whom, 1981 were live births. The proportion of preterm infants among all live births was 7.7%.

Study population

The anticipated sample size for inclusion in this study consisted of 250 newborns. The study was comprehensive for all premature children (N=58) and representative for full-term infants (192, or 10.4% of all 1827 full-term children) born in 2007 at the University Hospital of Pleven and resident in the city of Pleven.

Cases: 58 premature infants weighing 2500 g or less at birth. Their gestational age was 37 weeks or less, and they resided in Pleven.

Controls: 192 term infants who were matched to premature infants by date of birth. They were selected randomly among preterm children born on the same date. They weighed more than 2500 g. Their gestational age was more than 37 weeks and they also resided in Pleven.

Data collection

Document analysis: The information on birth weight, gestational age and home addresses of newborns was derived from medical records in a neonatal clinic at the University Hospital-Pleven.

Interview: The information for mother's age, weight of women before the pregnancy, weight gain during pregnancy and smoking habits was gathered retrospectively by interviewing mothers during home visits. Such information was not available in the records of mothers in the obstetrics ward, and not all women retained documents from antenatal visits.

Special questionnaires were designed for the purpose of the study. They were part of a larger study on risk factors for premature birth in the region of Pleven, Bulgaria. The questionnaire used for the documents' analysis contained 39 questions, four of which were related to demographic and socio-economic status of the mother. The questionnaire for the interview comprised 92 questions, nine of which were about the lifestyle factors of the mother. For the validation of the questionnaires, a pilot study was conducted. Before and after the pilot study questionnaires were discussed and approved by experts, pediatricians, obstetricians and public health professionals.

All included mothers answered the questionnaire in the process of an interview. All data in this study were based on women's reports during the survey interviews.

Ethical considerations

The study was conducted under the supervision of the Chair of the IRB (Institutional Review Board). The right of privacy of the studied subjects was guaranteed. Only the leading investigator had access to the identifying information. Mothers expressed their free will for participation and signed an informed consent before the interview.

Outcomes

We studied two outcomes: preterm birth (PB<37 weeks completed gestation and birth weight <2500 g) and low birth weight (LBW: birth weight <2500 g).

Determinants

Age of the mothers was determined as: \leq 24 years, 25-29 years, 30-34 years and \geq 35 years. Pre-pregnancy BMI was categorized according to the World Health Organization (WHO) as

either being underweight (BMI<18.5kg/m²), normal weight (18.5 \leq BMI \leq 24.9), overweight (25 \leq BMI \leq 29.9), or obese (BMI \geq 30).

We utilized the 2009 Institute of Medicine guidelines on GWG to categorize women's weight gain for their BMI as below, within, or above the recommended value (22).

Smoking during pregnancy was determined based on the question "*Did you smoke during pregnancy*?". Women who responded "*yes*" or "*rarely*" were categorized as "regular smokers" and "occasional smokers".

Statistical analysis

The survey data was processed with the statistical software packages SPSS (Statistical Package for Social Sciences), version 11.5, STATGRAPHICS and EXCEL for Windows.

The results were described using tables. Percentages were used to report the observed distribution of age of the mothers, BMI, GWG, smoking during pregnancy and other maternal characteristics.

Parametric tests for hypotheses testing at normal and near to normal distribution of cases: Ttest, ANOVA with post hoc tests (LSD, Tukey, Scheffe, Bonferroni, Newman-Keuls, Duncan) and nonparametric tests in other than normal distribution of cases Pearson χ^2 -test, Mann-Whitney, Kruskal-Wallis H-test were applied. Regression models for modeling and predicting of correlations and multiple logistic regression analyses controlled for covariates estimated the odds ratios with 95% confidence intervals of PB and LBW were used.

Using multivariable linear regression we assessed the relationships of studied determinants with outcomes (PB, LBW). Odds ratios (OR) were calculated to determine the effect of the age, weight and smoking during pregnancy, as factors for preterm birth.

In all cases, a value of $P \le 0.05$ was considered as statistically significant.

Results

Table 1 presents the distribution of basic characteristics of the participants by PB status. The distribution of maternal characteristics varied across mothers with PB and term birth.

Overall, 17.2% of women were above 35 years old. The share of older mothers was two times higher among those with PB compared to women with term-birth. Overall, 23.3% of women were underweight and 12.5% were either overweight or obese. The proportion of overweight was more than two times higher among mothers with PB (19.2%) compared to mothers with term-birth (9.6%). Around half (48.8%) of women gained above than the recommended weight for their BMI and a quarter (24.6%) gained less than the recommended weight. About 39% of women with PB compared to 21% of mothers with term-birth gained less than the recommended weight. Smoking was reported by 38% of women: 16% of them were regular smokers and 22% occasional smokers. The proportion of mothers with PB who smoked (38%) was about four times higher compared to smoking women with term-birth (10%).

Compared to mothers with term-born infants, mothers of premature children were more likely to be above 35 years (27.6%), have a BMI \geq 25 (23,1%), have a GWG below the recommended value (38.5%), smoke during pregnancy (37.9%) and deliver PB children after the third delivery (17.2%). Significant differences among mothers with PB were identified for maternal age, pre-pregnancy BMI, GWG, maternal smoking during pregnancy and birth order. Conversely, there was no significant difference between groups with regard to their income level.

Characteristics	All women (N=250)	Mothers with premature birth (N=58)	Mothers with term birth (N=192)	Р
Maternal age				
≤24 years	25.8	10.4	30.5	0.001
25-29 years	27.4	37.9	24.2	0.049
30-34 years	29.1	24.1	30.5	NS
\geq 35 years	17.2	27.6	14.8	0.047
Pre-pregnancy BMI				
$<18.5 \text{ kg/m}^2$	23.3	15.4	25.5	NS
$18.5-24.9 \text{ kg/m}^2$	64.2	61.5	64.9	NS
$25.0-29.9 \text{ kg/m}^2$	11.7	19.2	9.6	NS
$\geq 30 \text{ kg/m}^2$	0.8	3.9	-	-
Gestational weight gain				
<recommended< td=""><td>24.6</td><td>38.5</td><td>20.7</td><td>0.010</td></recommended<>	24.6	38.5	20.7	0.010
= recommended	26.7	26.9	26.6	NS
> recommended	48.8	34.6	52.7	0.020
Smoking during pregnancy				
Regularly	16.1	37.9	9.5	0.001
Occasionally	21.8	10.3	25.3	0.002
No	62.1	51.8	65.2	NS
Per capita income				
Lowest (0-125 Euro)	36.0	41.4	34.4	NS
Middle (126-250 Euro)	46.4	41.4	47.9	NS
Highest (>250 Euro)	17.6	17.2	17.7	NS
Birth order				
1	52.4	41.4	55.8	0.050
2-3	41.2	41.4	41.1	NS
<u>≥</u> 4	6.4	17.2	3.1	0.005

Table 1. Distribution of maternal characteristics

Table 2. Maternal characteristics correlated with normal birth-weight and low birth-weight (g)

	Linear regression				Logistic regress	sion		
Characteristics	All (n=250)		Low birth weight (N=58)		Normal birth weight (N=192)		Low birth weight	Р
	Mean±SE	Р	Mean±SE	Р	Mean±SE	Р	OR (95%CI)	
Maternal age								
25-29	3120±85	-	2297±45	-	3491±46	-	Reference	-
≤24	3219±69	NS	2256±47	NS	3318±62	NS	0.22 (0.08-0.58)	0.001
30-34	3168 ± 71	NS	2361±43	NS	3318±53	NS	0.50 (0.23-0.99)	0.048
≥35	2790±127	0.007	1876 ± 88	0.001	3312±71	0.005	1.19 (0.54-2,65)	0.600
Pre-pregnancy BMI								
18.5-24.9	3185±59	-	2149±90	-	3427±41	-	Reference	-
<18.5	3124±72	NS	2163±72	NS	3284±56	NS	0.64 (0.27-1.48)	0.280
25.0-29.9	2844 ± 101	0.040	2296±45	NS	3148 ± 96	0.001	2.12 (1.02-4.03)	0.049
$\geq 30^*$	2400±0	0.010	2400±0	NS	-	-	-	-
Gestational weight gain								
= recommended	3158±84	-	2300±44	-	3347±64	-	Reference	-
<recommended< td=""><td>2955±74</td><td>0.020</td><td>2307±40</td><td>NS</td><td>3287±61</td><td>NS</td><td>1.83 (1.04-3.08)</td><td>0.048</td></recommended<>	2955±74	0.020	2307±40	NS	3287±61	NS	1.83 (1.04-3.08)	0.048
> recommended	3191±66	NS	1971 ± 146	0.002	3402 ± 46	NS	0.65 (0.30-1.41)	0.270
Smoking during pregnancy								
No	3192±60	-	2065±92	-	3437 ± 40	-	Reference	-
Regularly	2666±72	0.001	2328±29	0.030	3080 ± 86	0.001	5.05 (2.41-10.58)	0.001
Occasionally	3162±66	NS	2333±58	NS	3265±58	0.001	0.52 (0.20-1.32)	0.160
*								

Only two children weighing 2400 g were born from mothers with BMI≥30.
Table 2 shows that maternal age at delivery, GWG and smoking during pregnancy were significantly associated with LBW.

Mothers who smoked regularly had a significant fivefold increase in LBW risk compared with nonsmoking mothers (OR=5.05, 95%CI=2.41-10.58, P=0.001). The association between BMI and LBW was evident among infants whose mothers' were overweight (OR=2.12, 95%CI=1.02=4.03, P=0.049). We did not assess obesity as a risk factor for LBW, because there were no mothers of children with normal birth weight who had a BMI \geq 30. The risk of LBW increased when GWG was less than the recommended value (OR=1.83, 95%CI=1.04-3.08, P=0.048).

Age of the mothers upon delivery less than 24 years (OR=0.22, 95%CI=0.08- 0.58, P=0.001) and between 30-34 years (OR=0.50, 95%CI=0.23-0.99, P=0.048) was found as a protective factor for LBW.

Table 3 shows the results of fitting a multiple linear regression model to describe the relationship between prematurity and three independent variables: pre-pregnancy BMI, GWG and maternal age. The model explains 93% of the variability in PB.

The equation of the fitted model was as follows:

Table 3. Multiple regression analysis: Pre-pregnancy BMI, GWG and maternal age correlated	
with premature birth	

Dependent variable: premature birth										
Parameter Estimate Standard Error T Statistic										
Pre-pregnancy BMI	87.6117	12.4486	7.03787		0.001					
Gestational weight gain	41.0981	41.0981 7.13523 5.7598			0.001					
Maternal age	19.6293 8.4454 2.32426		2.32426		0.021					
	Analysis of Variance									
Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value					
Model	2.30485E9	3	7.68283E8	1050 52	0.001					
Residual	1.70403E8	235	725119.0	1039.33						
Total	2.47525E9	238								

R-squared = 93.1157 %; R-squared (adjusted for d.f.) = 93.0571 %; Standard Error of Est. = 851.539; Mean absolute error = 646.141; Durbin-Watson statistic = 1.04712.

Discussion

This study provides useful evidence about PB and LBW in the region of Pleven, Bulgaria. Our results indicate that pre-pregnancy BMI, GWG related with personal BMI and smoking during pregnancy are important characteristics for PB in this population.

The age of the mother is essential for normal pregnancy and delivery with a favorable outcome. From a biological point of view, the best age for childbirth is 20-29 years (8). The average age of women in our study was 26.3 ± 5.8 years which was non-significantly lower than the average age for childbirth established in Bulgaria (27.9 years of age) (23) and also lower than that established by Yankova and Dimitrov (2010) who stated an average age of 28 years at birth (24). The results for more than a twofold increased risk of premature birth to mothers aged under 20 years were reported by Branum and Schoendorf in 2005 (25). The association between the risk of a preterm labor and mother's age is reported to be inverse (21,26), but we did not establish this. We found the age of the mothers at delivery less than 34 years as a protective factor for LBW.

We did not find a significant difference between the mean weight of mothers of premature (55 kg) and to term infants (54 kg) before pregnancy. We found a more than two times higher risk for LBW among mothers with pre-pregnancy BMI 25.0-29.9 kg/m², but there was no effect found of pre-pregnancy BMI<18.5 kg/m². The results of our study are compatible with the findings of a recent meta-analysis on the existence of a weak association or lack of association between low BMI before pregnancy and the birth of a premature baby (27).

According to our results, the probability of giving birth to a premature baby in women who have had GWG less than recommended is around two times higher compared with mothers with recommended GWG. The insufficient weight gain during pregnancy increases the risk of having a premature baby, especially amongst women with low BMI before pregnancy: RR=1.5-2.5 (27). Our results are similar to those of Schieve LA et al. (2000), who found out a three times higher risk of giving birth to a premature baby in women with a normal BMI, but not enough weight gain during pregnancy compared with women of normal weight and with adequate weight gain during pregnancy (28).

Our results concerning smoking during pregnancy (around 40% of all mothers) are close to a previous study from Bulgaria conducted by Manolova (2004), which reported that about 42% of all women smoked during the whole pregnancy (20). Yet, the proportion of smoking mothers in our study was higher than a previous study conducted in Bulgaria in 2007, which reported a prevalence of 33% (23).

Smoking is regarded as one of the most common and preventable causes of poor pregnancy outcomes (17). There is variability in the reported results for the relationship between smoking and PB, but a large number of studies establish an RR=1.2-1.5 when daily consumption of cigarettes is 10-20, and an RR=1.5-2.0 when more than 20 cigarettes are smoked per day. The same results were obtained by Andriani and Kuo for smoking mothers who lived in urban areas (17). Our survey revealed a greater than fivefold increase in the risk of LBW among mothers who smoked during pregnancy, a finding which is in line with previous reports about the influence of smoking on the PB risk (14,17).

Study limitations

This study may have several limitations. Firstly, reports of the characteristics of mothers were retrospective after the child was born. Additionally, self-reported data on BMI, GWG and smoking are highly correlated with PB and LBW, but they tend to underestimate these measures. Women who smoked were categorized into three groups based on qualitative variables, and not according to the number of cigarettes smoked per day. The dissemination of information on adverse outcomes of smoking may have discouraged some mothers from disclosing it.

Secondly, because the place of study was an urban area we did not find enough mothers less than 19 years old. The result was that we did not establish the association between young maternal age and PB.

Thirdly, we utilized the Institute of Medicine guidelines to categorize women's weight gain as below, within, or above recommended value (22), which maybe is not appropriate for Bulgaria, but there are no other recommendations to be used.

Finally, we excluded from the analysis some women with either missing information on the principal determinants of interest (age, BMI, GWG, smoking), or missing information on gestational age and birth weight (needed for outcome variables), but the number of missing values was small.

Obviously, there is a need for prospective studies from the registration of the pregnancy, in Pleven and in other regions of Bulgaria, in which such data should be collected in a standardized manner and the number of mothers and their children should be higher.

Conclusion

Our results confirm our research hypothesis that pre-pregnancy BMI>25 kg/m², less than recommended GWG related with their personal BMI and smoking during pregnancy are risk factors for PB. Age of the mothers at delivery <34 years was a protective factor for LBW.

This analysis was part of a study on the risk factors for PB and their impact on development and health status of children <3 years in Bulgaria. Our findings highlight the public health importance of promoting a healthy lifestyle of mothers in order to reduce the level of PB in Bulgaria.

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CASE STUDY

Women leadership for public health: The added value and needs of women driving public health system reform in Ukraine

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Abstract

The Ukrainian health care system is undergoing reforms. Although women constitute a driving force in the Ukrainian health system transformation, their economic and decision-making participation remains extremely low. The existence of barriers such as: work/life balance, gender bias, stereotypes, lack of confidence, lack of mentoring, and lack of adequate networking and equal access to opportunities prevent women from reaching high leadership positions.

With the aim to empower the current and future female public health leaders, the Ministry of Health of Ukraine and WHO held a seminar entitled "Women's Leadership in Public Health" in Kyiv on 16-18 May 2017. The seminar was based on the assumption that contemporary public health demands require a more inclusive and less hierarchical style of leadership – focused on developing and working with stakeholder networks. Such a leadership style is more effective in achieving public health goals.

The international, interdisciplinary and inter-professional faculty engaged in the interactive meaning making around such topics as: *the self-assessment of leadership competencies, public health leadership, leadership theories, system thinking, dealing with interests, power and stakeholders, barriers to women leadership and methods to address them, special leadership tools for women empowerment and leading change, communication and impact.* Strengthening health systems for better health was the red throughout the whole seminar.

Keywords: leadership, public health, Ukraine, women.

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Introduction

The Ukrainian health care system is undergoing through reforms. One of the main objectives of the new reforms is the shift towards a policy of strengthening and maintaining health and preventing diseases through the life-course. Women constitute a driving force in the Ukrainian health system transformation however, according to the Global Gender Gap Report by the World Economic Forum (1), Ukraine ranks 64th in terms of women's income level, 22ndin terms of women's education and 34thon economic participation and opportunities. Women's participation in decision-making remains extremely low. Women hold only 12% of seats in the parliament and make 11% of the Cabinet of Ministers. The European Parliament stated that gender mainstreaming constitutes an essential factor for the achievement of a sustainable and inclusive society (2) and smart, sustainable and inclusive growth require higher gender equality scores (3). The United Nations (UN) included gender equality and the empowerment of women in its sustainable development goals (SGDs) (Goal No 5) for the 2030 Agenda. Both Global Gender Gap Report (1) and EU Progress Report (2012) (4) examine barriers existing in relation to women leadership such as work/life balance, gender bias and stereotypes, lack of confidence, lack of mentoring, and lack of adequate networking and equal access to opportunities.

The recent publication of the World Bank on Gender Assessment in Ukraine (5) pointed out clear misbalances such as: male domination at the top managerial positions, political representation and decision making, persistent 'glass ceiling' in access to chief executive positions in public administration, stereotypes - traditional roles of men and women, lower wages and devaluated social prestige often associated with female economic activity, vulnerability at the labour market and poverty risks, prevalent part-time employment, unequal income opportunities, limited access to business activities and financial resource, public tolerance to spousal violence, gender-based violence and trafficking to name a few.

With the aim to empower and support the development of current and future female leaders who drive public health reform, the Ministry of Health of Ukraine held a seminar entitled "Women's Leadership in Public Health" in Kyiv on 16-18 May 2017. It organized the seminar with technical support from WHO, contributions from the Association of Schools of Public Health in the European Region (ASPHER) and Maastricht University, the Netherlands, and financial support from the Swiss Agency for Development and Cooperation. The seminar was delivered in the context of the implementation of the WHO European Action Plan to Strengthen Public Health Services and Capacities and the WHO Strategy on women's health and well-being in the WHO European Region. The seminar contributed directly to the implementation of the SDGs by developing a workforce with 21st century public health competencies.

The seminar

Concept, mission, objectives and content

The seminar was based on the assumption that contemporary public health demands a more inclusive, less hierarchical style of leadership – focused on developing and working with stakeholder networks to be effective in achieving public health goals (6,7). Public health leaders "*must be the transcendent, collaborative "servant leaders*" (8) able to: articulate shared values, acknowledge the unfamiliarity, ambiguity, and paradox, combine administrative excellence with a strong sense of professional commitment (8), show passion, drive and perseverance in leading for change.

The concept of the seminar was linked to the Merizow's Transformative Learning Theory (9), according to which learning is "...the process by which we transform our taken-for-granted

frames of reference (meaning perspectives, habits of mind, mind sets) to make them more inclusive, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action." (9).

The seminar was competency-based, structured around modern leadership theories especially suited to develop women leaders, reflecting real life experiences of role-models. It included the topics identified through research and local needs analysis. The seminar was supported by the executive coaching provided to the participants with the objective to develop, enhance and build personal leadership attributes for the successful career and growth in health care environment and develop the ability to set individual career goals to the benefit of population heath outcomes.

The main topics included: *self-assessment of leadership competencies, public health leadership and leadership theories, system thinking, dealing with interests, power and stakeholders, barriers to women leadership and methods to address them, special leadership tools for women empowerment and leading change, communication and impact.* Strengthening health systems for better health was the red throughout the whole seminar.

The content was presented during the two and a half day training which included interactive lectures, discussions, group work and experiential learning. The core of the programme was reinforced with the leadership development life stories from female health professional leaders

Trainers and participants

Five lecturers and trainers came from various professional fields: policy, academia, public health practice, government and business. They also came from different countries to assure variety of perspectives and experience. They represented: the Netherlands, Greece, Sweden, Finland, Canada and Ukraine. The lead trainer was responsible for the design, main content, cohesion and coaching whereas other trainers presented specific topics and illustrations from their public health practice as well as their leadership development stories. All presenters engaged in the discussion with the participants. The consecutive high quality professional translation was provided which allowed for good communication and satisfaction from the learning and teaching experience.

There were 22 participating women leaders who were carefully selected by the Ministry of Health in Ukraine based on their role or potential new position in relation to the introduction of public health reforms. The women came from different regions of Ukraine and represented a range of organisations which are vital in the change process including the Ministry of Health of Ukraine, Public Health Centre of the Ministry of Health of Ukraine, regional Health Centres and hospitals, non-governmental organizations, and the like.

Evaluation method

In order to gather the feedback from the participants we used a short open-ended questionnaire addressing the following dimensions: usefulness of the seminar for the public health reform and for personal development, satisfaction with the content, form and instructors, the highlights of the course and areas for improvement, further needs concerning a follow-up on women leadership in public health training and specific areas which the participants would like to cover. We also gave space for personal reflections about the course. 14 out of 22 participants filled in the questionnaires and five shared their observations face-to-face with the course leader with a help of a professional interpreter. The atmosphere was open and relaxed, building on trust and opinion sharing. The evaluation was carried out after the course and before the individual coaching sessions. The feedback on coaching was

obtained in a follow-up conversation after the coaching sessions. The evaluation forms were filled in Ukrainian language. The anonymity of responses was assured. The collected data was translated into English, analysed and synthesized according to the leading questions. Next conventional content analysis was used (10) to develop categories and arrange the data around them. The five categories include: *opinions about the course, aspects of special value, satisfaction with the trainer, areas for improvement and further training needs.*

Feedback from the participants

Opinions about the course

It was the first seminar about the leadership in public Health for women. All the respondents were "100% positive" and found the seminar of high quality, extremely useful both form and content wise. It was very interesting, helpful, informative, comprehensive and consistent. The participants felt that "...*Three days passed with one breath*". New theories and different leadership tools that can be used at work in the field of public health combined with the leader experience of the participants helped them structure all previously gained knowledge. The participating women leaders had a unique opportunity to do self-assessment and self-appraise their leadership qualities which help them reveal the strong and weaker sides and discuss the ways to improve them as well as see themselves from the leadership prospective. They also valued learning about Emotional Intelligence and how to manage emotions "...*I have a desire to invite the psychologist to work with us at the hospital*...". This helped them also understand why the authoritarian style is not the best approach especially when you work in an interdisciplinary team or if you are newly appointed to lead a department.

The participants stated that owing to this training they realized that the inner power of women is able to move or change things which may seem unchangeable. They especially valued familiarity and open communication with other women leaders and professional trainers who provided useful information and tips for troubleshooting the situational problems and barriers. Moreover, the experience of getting to know the colleagues from other regions who are inspired, fulfilled, beautiful women striving to use their skills as well as spiritual and cultural values for the general development of the country was very powerful. The presence, facilitation and sharing of experience of the international faculty was greatly appreciated. "...it showed the openness of the world towards my country Ukraine from a different perspective".

Aspects of special value

The participants especially valued some specific aspects of the training. These included: the scientific evidence on which the public health leadership course for women was based, realizing the added value of women power in leading people regardless of age and position, systematically presented content, examples from personal lives of trainers and coaches which allowed for making comparisons with their own life experiences, possibility to improve oneself, importance of developing the vision and understanding what kind of a leader you want to be. *"The value for me personally is that I realized my personal complexes, my claims toward myself which I have in my thoughts that I shouldn't have"*. The new theories of leadership, practical exercises on system thinking using a "red ribbon" (a role play illustrating system thinking using a red ribbon to connect the elements of a system) and "thinking hats" (the de Bono "six thinking hats") technique provided the information that a woman-leader needs at work. *"When I return to work, I will try to put into practice all gained knowledge and skills and will put special attention to my personal qualities"*.

Satisfaction with the trainers

The participants were very satisfied with the speakers' performance. The presenters and trainers were pleasant, open-minded, attracted their attention, very outspoken, showing excellent knowledge of the subject matter and professionalism, they served as examples or role-models. "I realized how to work on myself to become better and on what to work on concerning my personality." The combination of women's stories from real life or previous experience, attractive way of presenting the material, availability and genuine interest to answer the questions were inspirational. The trainers were open to dialogue and able to merge with the participants due to their high level of qualification, commitment to the job, high motivation, integrity and gratitude. Each speaker was an individuality holding their own position in the society and their own positive world view. Their honesty, openness and equal attention to all the participants greatly contributed to the satisfaction from the course. On the whole "….everything was good, time flew fast and the emotions were running high, it was generally hard to say goodbye to them. I love them. Good luck to them".

Areas for improvement

Although everything was interesting and highly satisfactory, the participants identified some areas which might be improved in the future courses. They would generally welcome more time to get to know each other better, to have more possibility for discussions and communication with the speakers as well as time to solve some situational problems from their individual professional practice, using real-life examples and getting feedback on them from other colleagues. They would also appreciate more situational games, exercises and active group work like the ones with the "ribbon" and "hats" and have more space to delve into the emotional intelligence topic and more life stories or research on women leaders in medical sphere even if it means inviting more teachers.

Further training needs

There was a strong conviction that the course on women leadership in public health needs to be continued in the context of theoretical knowledge and extended practical application with mentoring and coaching. The participants would be interested in getting more acquainted with such topics as: emotional intelligence, communication and social marketing, theory of negotiations, general management and time management to become more efficient and effective, short, consistent personal coaching, how to develop as a future leader and practical application of women leadership in public health practice including the dress code and personal preparedness for a role as a woman leader, leading change in the organisation, how to create a successful and effective team for a new public health centre in the region. They would also like to learn and practice how to lead public health system transformation in Ukraine, how to collaborate with different sectors and stakeholders for the benefit of public health reform, how to use evidence for informed decision making, how to practically apply women leadership competences in specific public health practice and importantly how to reach a high level position *"I have my personal need to get a high level job: just give me an opportunity and I will turn the world."*

The list of needs is long which shows that there is a great need for such a training especially for women. The course on women leadership for public health in Ukraine was a small drop filling a huge niche which is open. The participating women would like to be informed and invited for similar events in the future. Some of them would like to be involved and collaborate with WHO in preparing future programmes to assure the inclusion of current and real issues of concern in Ukraine.

Concluding remarks and recommendations

The initiative proved to be empowering not only for the participants of the seminar but also for the trainers who were able to challenge their own frames of reference and show the added value of women leadership in times of transformation in the context of Ukrainian health care and public health reforms. The women leaders from different regions of Ukraine had a unique opportunity to build social capital around women leadership and develop their own professional public health network which, in order to be sustainable, needs further support and more focused and in-depth training. This initiative has further provided evidence of the need for practical, context-specific development of female public health leaders in Ukraine. The programme will benefit from developing trainers and mentors from among the participants who can replicate the training model to meet the need of women working in the field of health in Ukraine.

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REVIEW ARTICLE

Maternal and new-born health policy indicators for low-resourced countries: The example of Liberia

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Abstract

Aim: Over the past two decades, two catastrophic events caused a steep decline in health services in Liberia: the long-lasting civil war (1989-2003) and the weak response of the health system to the Ebola Viral Disease (EVD) outbreak (2013-2015). In early 2015 The Liberian Government reacted and developed a strategic health policy framework. This paper reviews that framework with a focus on maternal and newborn health.

Methods: The study is designed as a narrative review executed during the second half of 2017 in Monrovia. It takes advantage of triangulation, derived from recent international and national documents, relevant literature, and available information from primary and secondary sources and databases.

Results: In 2015 the severely compromised health system infrastructure included lack of functional refrigerators, low availability of vaccines and child immunization guidelines, high stock-out rates, and an absence of the cold chain minimum requirements in 46% of health facilities. The public health workforce on payroll during 2014/15 included only 117 physicians. Skilled birth attendance as an indicator of maternal health services performance was 61%. Presently, approximately 4.5 women die each day in Liberia due to complications of pregnancy, delivery, and during the post-partum period, equalling about 1,100 women per 100,000 live births. Of particular note is the adolescent birth rate of 147 per 1000 women aged 15-19 years, three times higher than the world average of 44. Additionally, with a neonatal mortality rate of 19.2 neonatal deaths per 1,000 live births, Liberia stands higher than the world average as well. The high mortality rates are caused by multiple factors, including a delay in recognition of complications and the need for medical care, the time it takes to reach a health facility due to a lack of suitable roads and transportation, and a delay in receiving competent care in the health facilities.

Conclusions: The fact that performance is above average for some indicators and far below for other points to unexplained discrepancies and a mismatch of international and national definitions or validity of data. Therefore, it is recommended to concentrate on the core of tracer indicators adopted at the global level for Universal Health Coverage and the Sustainable Development Goals to enable a permanent update of relevant information for policymaking and adjustment. At present all health policy documents miss a thorough application of the SMART objectives (Specific, Measurable, Attainable, Relevant and Timely), notably missing in most documents are realistic and detailed budgeting and obligatory timelines for set targets.

Keywords: health system, Liberia, maternal and newborn health, maternal mortality, policies, strategies.



Introduction

The Liberian population is comprised of the descendants of the immigration from the United States in the early 19th century and of 17 major tribal affiliations. Half of the population lives in urban areas (1), the majority being Christians, a minority of about one-tenth are Muslims. The civil war from 1989 to 2003 generated a death toll of about 18% of the population of 4.5 million and nearly one million displaced persons (2). Living standards dropped considerably also as a consequence of the weak response of the health system to the subsequent outbreak of Ebola Viral Disease (EVD) 2013-2015 (3). Accordingly resources for health services missed the so-called Abuja target of 15% (4) by 2.6 percentage points. A restart and overhaul of the health system became mandatory.

Health system oriented towards women and children obtained particular attention of the Liberian government (5). The "Global Strategy for Women's, Children's and Adolescents' Health" (2016-2030) (6) the context of the Agenda for in Sustainable Development (7) identify 9 areas for 'Reproductive, Maternal, Newborn, Children, and Adolescent Health' policies. (RMNCAH) calling on initiatives and governmental country leadership, financing for health, health system resilience, individual potential, community engagement, multi-sector action, humanitarian and fragile settings, research and innovation, and accountability for results, resources and Similarly, Universal rights. Health identifies availability, Coverage accessibility, acceptability, and quality of services (8). These target areas for RMNCAH are of similar priority for almost all countries in the Economic Community of West African States (ECOWAS) as recently analyzed (9).

Our narrative review investigates maternal and new-born health policies. Also, review addresses the basic components of reproductive health specific for Liberia as an example for other low-resourced especially countries in West-Africa: fertility (actual bearing of live offspring), safe motherhood (pregnancy and delivery without risk for own life and child's life), family planning, prevention of unwanted pregnancies and abortions, as well as characteristic diseases for women in their reproductive age.

Methods

We make use of a combination of quantitative and qualitative methodologies. А participatory process involving governmental stakeholders through several interviews was particularly helpful and supportive in ensuring that issues were explored across sectors to provide a holistic understanding of the situation. Also, the paper takes advantage of triangulation based on national and international sources and publications as well as on data and documents of the Government of Liberia predominantly the Ministry of Health and the Liberia Institute of Statistics and Geo-Information Services. We emplov further the current methodology proposed by the Maternal Mortality Estimation Inter-Agency Group (MMEIG) (10).

The main framework of analysis is following steps of the policy cycle (11) as necessary, moving towards universal coverage. All policy health actual documents are analyzed looking at 1) agenda-setting with problem definition and situation analysis, 2) policy formulation with goals and objectives. 3) implementation by government action and 4) monitoring/evaluation with revised agenda setting.



Results

1) Review of health policy documents related to Maternal & New-born Health (MNH)

The key documents in this context are the "Investment Plan for Building a Resilient Health System 2015-2021" (12)in line with the "National Health and Social Welfare Policy and Plan 2011–2021" (13). Also, recently the Ministry of Health (MoH) in cooperation with national and international partners drafted and endorsed a document, the "Investment Case for Reproductive, Maternal, Neonatal, Child and Adolescent Health 2016-2020" (14) aiming to support high impact intervention for improving MNH (Maternal and Newborn Health). We have retrieved in total 28 policy documents, which all involve maternal and new-born health, either as a general or specific priority health problem under concern and in need for accelerated action (Table 1), as maternal mortality in Liberia is among the highest worldwide being 1,072/100,000 live-births during the seven years preceding the 2013 LDHS (15). According to the 2007 LDHS, maternal mortality was even slightly less than today being 994/100,000 (16). Approximately 4.5 women die each day in Liberia due to complications of pregnancy, delivery, and during the postpartum period (17), equalling about 11 women for every 1.000 live births.

No	Title of the Policy Document	Time Frame	Source (Internet pages or references)
1	National Health and Social Welfare Policy	2011-2021	http://moh.gov.lr/category/policies/
	and Plan		
	 National Health and Social Welfare Policy 		
	 National Health and Social Welfare Plan 		
2	National Health and Social Welfare Financing	2011-2021	http://moh.gov.lr/category/policies/
	Policy and Plan		
3	National Human Resources Policy and Plan	2011-2021	http://moh.gov.lr/category/policies/
	for Health and Social Welfare		
4	National Health and Social Welfare	2011-2021	Not online
	Decentralization Policy and Strategy		
5	Investment Plan for Building a Resilient	2015-2021	http://moh.gov.lr/cabinet-endorses-investment-
	Health System		plan-for-building-a-resilient-health-system/
6	Investment Case for Reproductive, Maternal,	2016-2020	http://www.globalfinancingfacility.org/sites/gff
	New-Born, Child, and Adolescent Health		_new/files/documents/Liberia%20RMNCAH%
			20Investment%20Case%202016%20-
			%202020.pdf
7	Liberia community health road map	2014-2017	Not online
8	Revised National Community Health Services	2016-2021	Not online
	Strategic Plan		
9	National Policy and Strategic Plan on Health	2016-2021	http://www.afro.who.int/en/liberia/liberia-
	Promotion		publications.html
10	National HIV & AIDS Strategic Plan	2015-2020	http://www.nacliberia.org/doc/Liberia%20NSP
			%202015-
			2020%20Final%20_Authorized_%20OK.pdf
11	National Malaria Control Program. Malaria	2016-2020	http://www.thehealthcompass.org/sites/default/f
	Communication Strategy		iles/project_examples/Liberia%20NMCS%2020
			16-2020.pdf
12	National Leprosy and Tuberculosis Strategic	2014-2018	http://www.lcm.org.lr/doc/TB%20and%20Lepr

 Table 1. Liberian policy documents embracing MNH



	Plan		osy%20Strategic%20Plan%202014- 2018%20consolidated%20(1)%20(1).pdf
13	The National Traditional Medicine Policy and Strategy (2015-2019)	2015-2019	http://moh.gov.lr/category/policies/
14	Strategic Plan for Integrated Case Management of Neglected Tropical Diseases (NTDs)	2016-2020	Not online
15	Consolidated Operational Plan (FY 2016/17)	2016-2017	http://moh.gov.lr/wp- content/uploads/2017/04/Operational-Plan_FY- 17martin.pdf and: http://www.seejph.com/public/books/Consolidat ed_Operational_Plan_2016-17.pdf
16	Joint Annual Health Sector Review Report 2016.	2016	http://www.seejph.com/public/books/Joint_Ann ual_Health_Sector_Review_Report_2016.pdf
17	Family Planning 2020 Commitment	2011-2020	http://ec2-54-210-230-186.compute- 1.amazonaws.com/wp- content/uploads/2016/10/Govtof-Liberia- FP2020-Commitment-2012.pdf
18	National Gender Policy 2010-2020	2010-2020	http://www.africanchildforum.org/clr/policy%2 0per%20country/liberia/liberia_gender_2009_e n.pdf
19	National Therapeutic Guidelines for Liberia and Essential Medicine List	2011- ongoing	https://www.medbox.org/countries/national- therapeutic-guidelines-for-liberia-and-essential- medicines-list/preview?q=
20	Essential Package of Health Services (EPHS)	2011- ongoing	http://apps.who.int/medicinedocs/documents/s1 9420en/s19420en.pdf
21	Road Map for Accelerating the Reduction of Maternal and New-born Morbidity and Mortality in Liberia (2011-2015)(18)	2011-2015	Ministry of Health and Social Welfare, Republic of Liberia. Roadmap for Accelerating the Reduction of Maternal and New-born Mortality 2011-2015 (an updated version of the original publication in 2007). Monrovia, Liberia: Ministry of Health, 2011.
22	Accelerated Action Plan to Reduce Maternal and Neonatal Mortality 2012-2016 (19)	2012-2016	Ministry of Health and Social Welfare, Family Health Division. Accelerated Action Plan to Reduce Maternal and Neonatal Mortality. Monrovia, Liberia: Ministry of Health and Social Welfare, 2012 July.
23	The National Roadmap for maternal mortality reduction "the Reach Every Pregnant Woman (REP) Strategy"	2007	http://apps.who.int/pmnch/media/events/2013/li beria_mnh_roadmap.pdf
24	National Strategy for Child Survival in Liberia	2008-2011	http://liberiamohsw.org/Policies%20&%20Plans /National%20Strategy%20for%20Child%20Sur vival.pdf
25	National Sexual & Reproductive Health Policy	2010	http://liberiamohsw.org/Policies%20&%20Plans /National%20Sexual%20&%20Reproductive%2 0Health%20Policy.pdf
26	Poverty Reduction Strategy	2008	http://www.emansion.gov.lr/doc/Final%20PRS. pdf
27	National Policy and Strategic Plan on Integrated Vector Management	2012-2017	http://pdf.usaid.gov/pdf_docs/PA00J21W.pdf
28	Liberia Health System Assessment (20)	2015	Ministry of Health, Republic of Liberia. Liberia Health System Assessment. Monrovia, Liberia: Ministry of Health, 2015.



The most recent situation analysis is the "Liberia Service presented in Availability and Readiness Assessment and Quality of Care report (SARA and QOC)" (21), while the most recent documents covering MNH policy implementation are the "Joint Annual Health Sector Review Report 2016" (22) and the "Consolidated Operational Plan (FY 2016/17)" (23).

The most important of the documents listed in table 1 is the Investment Plan (number 5) for the period 2015-2021 making use of the more recent data of the DHS 2013. The political decision-maker drafting it employed the MDG targets and indicators (24) but not yet the more recent SDG indicators (25). The method of stating targets is not explained, in spite of the recommendation to tailor targets towards local context and embrace a more approach. As an example, realistic Liberian policymakers envisioned a goal to reduce maternal mortality by three quarters between 1990 and 2015 as set in MDG-5. That would be equal to - looking at the upper bound level in 1990 (figure 1 below) -1,980 maternal deaths to be reduced to 495 per 100,000 live-births in 2015, which is at the same time close to the national target of 497 maternal deaths per 100,000 live-births set as a desirable goal only for 2021. Due to such weaknesses and inconsistencies, it may be assumed that the selection of Liberian objectives and targets in these documents often have been set at random. Such assumption is mirrored in the recent MGDs assessments (26) that criticize too ambitious MDGs, which do not take into account infrastructure and health system capacity in general, which is a strong request of the Global Strategy for Women's, Children's and Adolescents' Health (2016-2030) (27-29).

To enhance increased investment into health systems of resource-limited countries, IHP+ has been transformed into the International Health Partnership for Universal Health Coverage (UHC) 2030, based on the 2005 Paris Declaration on Aid Effectiveness and the 2011 Busan Partnership Agreement(30).During the first meeting of the UHC-2030 working group in March 2017 (31), the main focus was on low and middle-income countries facing many threats to their health systems including decrease in the external financial support. Liberia potentially faces similar threats in the near future but joined IHP+ only in March 2016, however, a significant amount of donor support (about 75%) (32) remains off-budget with various parallel implementation arrangements. Nevertheless, progress is visible in spite of the recent Ebola crisis (2014/15), mainly due to the efforts of the Liberian government to implement an Essential Package of Health Services (EPHS) - since 2011 (33,34).

2) Analysis of Maternal and Neonatal mortality

Looking at time trends, from 1985 to 2015 (Figure 1), the period of the first civil war (1989-1996) was when maternal mortality experienced a peak. In 1994 mortality ratios were 1,890 deaths per 100,000 livebirths (with the upper bound of 2,470 and a lower bound of 1,320). After a significant recovery, the second civil war (1999-2003) again caused a negligence to MNH and retardation of improvement. Today Liberian reproductive women have a 3 times higher chance than the average global population of women to experience premature death due to complications during pregnancy, delivery, and the postpartum period. Between 2000 and 2015, the global maternal mortality ratio, or a number of maternal deaths per 100,000 live births, declined by 37 percent - to an estimated ratio of 216 per 100,000 live births in 2015. In Liberia maternal



mortality in the same period declined by 43% from 1,270 to an estimated ratio of 725 per 100,000 live births in 2015, indicating considerable improvement since the civil wars ended, although still higher than the global average. The national data based on the DHSs published in 2008 and 2013 represent maternal mortality during the 7 preceding years. The main reason for differences is insufficient death statistics in Liberia, with many failing to register the majority of causes of deaths in the population. The Liberian MoH information

summarises: "The Liberian Public Health Law of 1976 mandates the MoH to register all deaths within 24 hours. As a result of inadequate access. the coverage of registration has always been below 5% annually. Death certificates are usually processed in Liberia with the intent to obtain insurance benefits. to settle inheritance issues and not as a requirement for burial and documentation of the cause of death." (35).As an example: in 2013, only 659 deaths were registered according to the rules.

Figure 1. Maternal Mortality Ratio in Liberia (9,15)



Data on maternal mortality presented in Figure 1 are obtained from databases maintained by the WHO, UNDP, UNICEF, and World Bank Group.

Some of the earlier policy documents stated several reasons for high maternal mortality rates mainly related to the insufficient quantity and quality of the Liberian human resources for health and health facilities' performance (36). Some of the problems cited were an inadequate number of skilled human resources for health general in and of experienced, skilled birth attendants specifically also inadequate emergency obstetric and new-born care services, inadequate referral mechanisms, inadequate essential drugs, equipment, and supplies were cited. The major non health factors include a lack of clearly defined community referral, lack of health financing mechanisms, and socio-cultural



inequities. There are significant delays which also contribute to maternal and newborn mortality: delays in recognition of danger signs and making the decision to seek health care, delays in reaching a health facility via an insufficient road system (37), and delays in receiving care at the health facility. Consequentially, the leading causes of maternal deaths are haemorrhage (25%) and hypertension (16%) followed by sepsis and abortion (each 10%). The next important indicator of MNH in the SDG framework is neonatal mortality. With 24.1 neonates' deaths up to 28 days per 1,000 live-births, Liberia is still above the world average (19.2 per 1,000 livebirths). However, the historical decrease in neonatal mortality is significant (Figure 2). The main causes of neonatal deaths are preterm birth complications (10%) and intrapartum related events: asphyxia (9%), and sepsis (8%).



Figure 2. Neonatal Mortality Rate in Liberia (15,38)

Legend: Lower, Median and Upper refer to the lower, median and upper bound of a 90% uncertainty interval.

Despite these results, policymakers should carefully consider whether the relatively low neonatal mortality could be due to the

insufficient Liberian deaths registration (potential entrap of under-registration). The framework for SDG monitoring includes 27 indicators for monitoring of



SDG-3 ("Ensure healthy lives and promote well-being for all at all ages"), out of which a group of 16 indicatorsis directly related to health status (39). Though all indirectly are relevant for MNH, a particularly important indicator, within SDG-3, is the adolescent birth rate per 1,000 women aged 15-19 years. The main rationale for the recognition of this indicator is: "Preventing unintended pregnancy and reducing adolescent childbearing through universal access to and reproductive health-care sexual services are critical to further advances in the health of women, children, and adolescents. Childbearing in adolescence has steadily declined in almost all regions, but wide disparities persist: in 2015, the birth rate among adolescent girls aged 15 to 19 ranged from 7 births per 1,000 girls in Eastern Asia to 102 births per 1,000 girls in sub-Saharan Africa" (40). In Liberia, this rate was even higher in 2015 and also higher than in ECOWAS and the African region. With 147 adolescent girls per 1,000 aged 15-19 years who gave birth to a baby, Liberian female population is at 3 times higher risk in this regard than the world average (44.1 per 1,000) (41).

3) Status of health services

The second group of relevant indicators for the situation analysis of MNH in relation to SDG-3 is related to health system strengthening. These indicators refer to health system structure, quality, and effectiveness of performance, which holds a prominent place in the situation analyses of many Liberian health policy documents. The Investment Plan for Building a Resilient Health System (2015-2021) has been marked already as one of the best health policy documents in Liberia. Following this report (3), the public health workforce on payroll, during 2014/15, only 117 physicians, included 436

physician assistants, 2,137 nurses (RN/LPN), and 659 midwives (1.2 per 10,000 population). Also 2,856 Trained Traditional Midwives (TTM) are listed. TTMs belong to the corpus of 8,052 community health volunteers (based on the 2013 mapping exercise). Today, health density varies significantly workers' between counties in Liberia, the lowest being in Nimba and the highest in Bomi. Though improvement in quantity is visible from 2010 to 2015, still numbers are far below the levels proposed by WHO to avoid critical shortage: 23 health workers per 10,000 are considered as necessary to secure essential maternal and child health services to the entire population (42). The Roadmap for scaling up human resources for improved health service delivery in the African region 2012-2025 has determined the same threshold (43).

Skilled health professionals' density is 25 per 10,000 globally, but in Liberia almost nine times less (2.9 per 10,000). The difference stems partly from different definitions of a skilled health professional, and consequently, different counting in WHO and national statistics. For international comparison, WHO includes as skilled health professionals only the following: nurses. midwives and physicians (44). There Liberia with 2.9/1.000 is the fourth to last place in the ECOWAS community and much below its nationally calculated average of 6.4/1.000 of skilled health professionals.

Maternal health services performance assessed by the proportion of births attended by skilled health personnel in Liberia at 61% is better than the ECOWAS average of 57% and the average of the African region. According to these statistics, Liberia still performs at a lower level than the global average where 3 out of 4 births (73%) were assisted by skilled personnel 2015. health-care in Performance is above average for some Page 9 of 17



indicators and far below for others (e.g., maternal vs. neo-natal mortality), the unexplained disparity points to mismatch discrepancies and of international and national definitions or validity of data. For example a comparison of maternal and neonatal mortality throughout historical periods in Liberia is misleading: researchers and authors of LDHS-2013 (page 285) (45) have rightfully warned that comparison is possible only with LDHS-2007, due to the fact that methods of estimates were significantly changed in 2007 and cannot serve for comparison with previous surveys - LSDH-1999/2000. Furthermore, the interpretation of indicators does not account for the fact that LDHS provides direct estimates of maternal mortality for the seven years preceding each survey.

Finally, a tracer indicator, relevant for MNH and SDG-3, may serve to describe the status of the Liberian health system its infrastructure best: "Infants and receiving three doses of hepatitis B vaccine". In Liberia, only 50% of children received the vaccination in 2014 (46) (ECOWAS average 78%). Such situation is well explained in a national situation analysis (47) as a consequence of the EVD (with declines crisis not only of immunizations but also all other MNH services). The recent SARA report (48) clarifies the situation by severely compromised health system infrastructure: lack of functional refrigerators, low availability of vaccines and child immunization guidelines, high stock-out

rates, and absence of the cold chain minimum requirements in even 46% health facilities. 13% are also without direct access to water, 43% without incinerator, and 45% without regular electricity.

Discussion

A main observation with regard to this policy analysis is that significant weaknesses national policy of the documents derive from missing links objectives, realistic between and measurable targets, activities with a quantifiable input, precise and controlled timelines for their implementation, and appropriate reliable budgetary allocation (49). An example of necessary links is given in figure 3.

Furthermore, Liberia (in spite of the country's low capacity) could use available opportunities to improve the insufficient registration of birth and death events. An immediate option is provided by the Multiple Indicator Cluster Survey organized and (MICS), funded by UNICEF. Preparation for the MICS 6 is ongoing in many countries (50), while Liberia implemented only the first round in 1995, with only three counties at the time (Montserrado, parts of Margibi and Bassa) though with 60% of the total Liberian population living in the same areas) (51). MICS is a valuable data source covering the reproductive health of women, health outcomes for children and adolescents, child mortality, education, water, and sanitation.



Figure 3. The complex linkage between a health problem, its determinants, areas of intervention, the regulatory framework and SMART activities



Based on the model Healthy Plan-itTM of CDC Atlanta.

A final evaluation will only be possible upon completion of all planned activities in 2021. Liberian MoH policymakers should consider more closely (during monitoring activities) the international developments, which received a final endorsement in 2017. The Universal Health Coverage (UHC) Indicators for the Sustainable Development Goals (SDGs) Monitoring Framework have been agreed on March 13, 2017 (52). The global indicator framework has been formally adopted by the United Nations General Assembly through the United Nations Economic and Social Council and will be instrumental for the national and international monitoring, evaluation, and comparison of achievements. Particularly relevant for Liberia is the SDG index, with tracer indicators that serve both for health workforce and health services' monitoring. The index comprises only 12 indicators and for both national serves and comparisons. international The latest examples of such utilization can be found in the Global strategy on human resources for health - Workforce 2030 and the Global Strategy for Women's, Children's and Adolescents' Health (2016-2030).

Conclusions and recommendations

There are well-developed strategies in almost all health areas, but most of them are missing defined action plans with publicized targets following SMART principles, therefore correspondingly there



is a severe gap in implementation. Also, data used should be referenced, crosschecked, and critically evaluated regarding reliability and validity. It is recommended to go beyond simple presentation and analyze differences in outcomes for statistical significance, including multiple identify regressions to significant determinants of health outcomes. Analyses and the discussion of their results should always be compared to West African, African, and global parameters, not restricted to the national perspective. For intra-national comparisons, the same data sources have to be used as otherwise comparability and conclusions are jeopardized.

It is further recommended to initiate as soon as possible a process of developing new health policy documents in Liberia for implementation after 2021 - by MoH stakeholders, involving inter-sectoral representation and independent expertise. multidisciplinary team of health Α policymakers should analyze opportunities and strengths, based on existing National Development Plans (especially the Liberia Agenda for Transformation: Steps towards Liberia Rising 2030 (53)). The main intention is to have health policy documents fitting the local context and the new movement towards SDGs, strictly applying SMART principles, especially obligatory timelines and budgetary allocation as a key element of the SMART realistic principle in planning. Acknowledging the local context, already now a first step could be the revision of the welfare health and social national decentralization policy and strategy:

• Development of a roadmap 2030 for the SDGs. which will allow for implementation and monitoring after 2021 (providing transparency of fragmented implementation and a database of ongoing projects in counties) is one of the immediate tasks for the Liberian MoH.

- Strengthening of policy planning at the county level is also a priority in policy formulation, preferably by using one of the proven models for programme planning, such as Healthy Plan-itTM by CDC (Atlanta).
- Invited international expertise should be given full access to data, and Technical Assistance should have access (observer status) to policy meetings like the Health Sector Coordination Committee (HSCC) and the Pool-Fund meetings (as otherwise a lateral and vertical information exchange within the MoH is severely inhibited).

Derived from Liberian health policy documents, the situation analysis, and the literature review, the following areas may be prioritized regarding MNH services (54):

- Ensure timely, equitable, respectful, evidence-based, and safe maternal– perinatal health care, delivered through context-appropriate implementation strategies;
- Build linkages within and between maternal-perinatal and other healthcare services to address the increasing diversity of the burden of poor maternal health;
- Increase the resilience and strength of health systems by optimizing the health workforce and improving facility capability;
- Guarantee sustainable financing for maternal-perinatal health; and
- Accelerate progress through evidence, advocacy, and accountability by:
 - developing improved metrics, and support implementation research to promote accountable, evidencebased maternal health care and



- translating evidence into action through effective advocacy and accountability for maternal health.

Finally, there is a significant opportunity for Liberia and all African countries to make use of the new WHO leadership and Dr. Tedros Adhanom Ghebreyesus, WHO Director-General, who recently pointed out (55):

"Universal health coverage is ultimately a political choice. It is the responsibility of every country and national government to pursue it. Countries have unique needs, and tailored political negotiations will determine domestic resource mobilisation. WHO will catalyse proactive engagement and advocacy with global, regional, and national political structures and leaders including heads of state and national parliaments".

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ORIGINAL RESEARCH

Switching emergency contraceptives to non-prescription status and unwanted pregnancy among adult and teenage women: A long-term European comparative study

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Abstract

Aim: Unwanted pregnancy is an important social issue, not least among teenagers. Emergency contraceptives (EMCs) can prevent from unintended pregnancy, if taken quickly after unprotected sex. This study's objective was assessing abortion/birth rates among adult and teenage women in Europe before/after an EMC switch to non-prescription status.

Methods: National authorities were consulted for EMC consumption data and abortion/live birth statistics. Rates (n=26 countries) in the year before the switch (= year of reference) were compared with rates before/after the change (up to ± 15 years). The focus was laid on the European Union and further countries closely related to the European Union.

Results: All countries with available data (n=12) experienced a substantial increase of EMC consumption after the switch. On average, abortion rates among women aged 15–49 years were 83% higher 15 years before (compared with the year of reference) and 14% lower 15 years after the switch. Correspondingly, teenage abortion rates were 35% higher 15 years before and 40% lower 15 years after the switch. In 2017, no country had higher teen abortion rates than at time of the switch. Teen birth rates continued decreasing at almost the same rate after the switch as before. **Conclusion**: An EMC switch to non-prescription status increases EMC use and may contribute reducing unwanted pregnancy among teenage girls.

Keywords: Emergency contraceptives, Europe, levonorgestrel, over-the-counter, prescription status, ulipristal acetate.

Conflicts of interest: None declared.



Introduction

For 2008, about 41% of pregnancies worldwide were estimated to be unplanned (1). Four years later, this proportion was stable at 40%, highest in Latin America (56%) (2). Unwanted pregnancies are an important social issue in Europe as well (rate estimated at 45%), and many are likely to end in induced abortion (50%) or unplanned birth (about 38%). Especially among teenagers, the rate of unintended pregnancy is supposed to be very high (roughly 80% of all pregnancies among American teenagers are unwanted) (1). Using long lasting oral reversible hormonal contraceptives regularly could be an ongoing protection from unwanted pregnancy, but this reliable method is not used by all fertile women (in 2012, by 82.5% in Portugal, but only by 33.2% in Lithuania) (3). One effective option avoiding unintended pregnancy after unprotected sex is quickly taking an emergency contraceptive (EMC). In Europe, mainly two active ingredients are used for emergency contraception, levonorgestrel (LNG) and ulipristal acetate (UPA), which have to be taken within 72 hours (LNG) or 120 hours (UPA) after unprotected sex.

As time is a crucial factor and EMCs are considered to have a good safety profile, the Medicines Agency European (EMA) recommended switching UPA (ellaOne®) from prescription-only to non-prescription status in November 2014 to speed up access to EMCs. The following legally binding decision of the European Commission valid (in principle) throughout the European Union (EU) made UPA available as an over-thecounter (OTC) drug across the EU (3,4). About 20 years ago, when LNG or UPA were not (freely) available for emergency contraception, pregnancy rates among teenagers were higher in many European countries compared to 2017, e.g. 55 per 1000 adolescents aged 15–19 years (England and Wales), or 68 per 1000 adolescents aged 15– 19 years in Hungary (5), and most teen pregnancies ended in abortions or presumably unplanned births.

One hope linked with facilitated access to EMCs was reducing abortion/teen births also However, concerns rates. were expressed regarding prescription-free availability of EMCs, moral worries as well as medical fears, e.g. that changes in sexual behaviour especially among adolescents could also lead to misuse and hence increase abortion rates instead of decreasing them (6), or that sexually transmitted infections might rise again (7,8).

This study's objective was to analyse the potential impact of an EMC switch to nonprescription status on unwanted pregnancy. This was done by assessing abortion rates among women aged 15-49 years and abortion and live birth rates among adolescents <20 years in Europe since and also before the switch of EMCs to nonprescription status. Within Europe, we mainly focused on the European Union (EU) and the European Free Trade Association (EFTA). A further aim was collecting EMC consumption data since their market introduction.

Methods

Consumption of EMCs

EMC consumption was investigated at the national medicines authorities (direct contact or yearly consumption reports). Another source for data on EMC use were drug consumption databases and EMC-related publications (9,10).

Year of reference



Following EMCs with their Anatomical Therapeutic Chemical Classification codes (ATC) were under research:

- 1. ATC code G03AD01 (LNG); approved first in Eastern Europe in 1979 and marketed in Western Europe since the 1990s.
- 2. ATC code G03AD02 (UPA); approved in Europe in 2009 and recommended by the EMA in November 2014 to have nonprescription status.
- 3. ATC code G03AA07 (levonorgestrel ethinylestradiol); dedicated +preparations (brand names PC4[®]) Tetragynon[®], Schering marketed prescription-only as products several European in countries (since the 1980s) and first EMC with non-prescription status in Iceland (in 1998).

The year/month of an EMC switch to nonprescription status (date one out of the three EMCs mentioned above was made available without medical prescription for the first time) was checked at the national medicines authorities (homepage or contact by e-mail). Additionally, EMC-related publications were screened. The year preceding the switch was defined as 'Year of reference' for comparing development of rates after/before the switch, if the switch became operative between January and October. For countries where the switch came into force in November or December, the year of switch was defined as 'Year of reference', as a switch towards the end of the year may hardly have had an impact on the same year's abortion statistics. The year of switch was defined being the first year 'after' a switch. Hence, statistics after the switch were compared with figures in the 'Year of reference' ended. Correspondingly, to take into account long-term trends, also rates in the years before the switch were compared with rates of the 'Year of reference' ended.

Analysis of rates

To obtain statistics on abortions and teen births, the homepages of national statistical offices were consulted or respective authorities were contacted directly (data sources available as supplementary material). For analysis of induced abortion rates (spontaneous abortions were not considered, as not mentioned in many abortion statistics) among the whole fertile female population, the total number of legally induced abortions was sought and referred to 1000 women aged 15-49 years. If stratified data were available, induced abortions performed to the countries' residents only were considered. Population structures were obtained from national statistical offices. Respectively, the number of induced abortions and live births (still births were excluded, since not available for all countries) among adolescents <20 years was referred to 1000 women aged 15-19 years.

If absolute numbers for abortions/live births were not available, rates were adopted as reported by the countries' authorities.

Generally, abortion and live birth rates for women aged 15–19 years presented in this study mostly include the figures for girls <15 years, as this is mainly the method how authorities report the rates for this age group. However, abortion/birth figures for girls <15 years are almost negligible for the calculation of teenage abortion/birth rates.

Abortion statistics for residents from Ireland and Northern Ireland were extracted from the annual abortion reports of the United Kingdom, since Ireland and Northern Ireland



have very restrictive abortion laws and only few abortions were performed in Ireland and Northern Ireland.

Rates for countries (e.g. England and Wales, the Netherlands, Sweden) generally reporting rates among women aged 15-44 years (instead of 15-49 years) were recalculated for the 15 to 49-year-old female population. For some years, figures on abortions or live births were not available from the national authorities. Therefore, rates were extracted from provided graphs by national health/statistical authorities or calculated based on figures from the historical Johnston archive (11), the World Health Organization (12), Eurostat (13), or the World Bank (14). Data were collected up to the year 2017.

Results

History of EMC accessibility

Exactly 26 countries were included in this comparative study (23 EU countries, 3 EFTA countries). Iceland (1998) and France (1999) were the first countries making EMCs available without medical prescription. According to the Icelandic medicines agency, the first EMC available (Tetragynon[®]) was classified as OTC medicine immediately after receiving marketing authorization in June 1998, as well as LNG, which was freely available since January 2003. Among the last European countries changing at least one EMC (UPA or LNG) to OTC status were Germany, Italy, and Croatia (all in 2015).

Hungary decided keeping the prescriptiononly status for all EMCs, Poland switched UPA to OTC status in April 2015, but the new Polish government abolished the decision and re-switched UPA to prescription-only status again in July 2017 (LNG never received OTC status in Poland). The most recent European countries making EMCs accessible without medical prescription were Malta (December 2016) and Andorra (June 2018).

In Gibraltar, a self-governing British Overseas Territory, EMCs were switched to OTC status in August 2017 only, about 8 years after the switch in the neighbouring country Spain, and more than 16 years later than in the United Kingdom itself.

Rates after the switch

In the year before the switch, total abortion rates ranged between 3.2 (Croatia) and 31.5 (Estonia) abortions per 1000 women aged 15–49 years. The mean for the 26 included countries was 11.8. Exactly 19 countries experienced a reduction of abortion rates since the switch. The sharpest decline was observed in Latvia (-63% within 15 years). In 7 countries, abortion rates among the total female population were slightly higher in 2017 (or in the year with most recent available figure) compared with the year of reference (Table 1).

The development of abortion rates among adolescents aged 15–19 years revealed a relatively uniform picture (Table 1). In all countries except Belgium and Greece (for which most recent figures were available for 2011 and 2012 only) abortion rates fell. The biggest reductions since the switch were visible in Latvia (-73%) and Norway (-67%). On average, abortion rates dropped from 12.0 at time of the switch to 6.9 abortions/1000 adolescents aged 15–19 years in 2017.



			Rates in the year of reference ^a		Rates in 2017 ^a			
Country	Switch	Reference	Abortions 15-49	Abortions 15-19	Births 15-19	Abortions 15-49	Abortions 15-19	Births 15-19
Belgium	Apr 01	2000	5.6	6.9	10.7	7.8*	8.4*	5.8
Bulgaria	Jan 06	2005	22.4	15.6	40.4	16.0	14.3	39.7
Croatia	Apr 15	2014	3.2	1.8	10.3	2.7	1.5	9.3
Czech Republic	Nov 11	2011	9.6	7.1	11.3	8.2	5.6	11.9
Denmark	Jun 01	2000	12.5	14.2	7.9	12.1***	11.3***	2.8
Estonia	Sep 03	2002	31.5	28.9	23.0	13.9	10.8	10.1
Finland	Jan 02	2001	8.9	15.5	10.7	8.2	7.6	4.9
France ^b	May 99	1998	13.4	13.2	7.1	14.4	10.4	4.7
Germany	Mar 15	2014	5.6	4.4	6.1	5.8	4.0	6.3
Greece	Jun 05	2004	6.0	2.1	10.8	6.8**	2.4**	9.0
Iceland	Jun 98	1997	13.6	20.6	24.3	13.3	12.6	6.0
Ireland	Feb 11	2010	3.7	3.2	14.4	2.6	1.4	6.9
Italy	Apr 15	2014	7.0	5.4	5.6	6.2	4.3	4.3
Latvia	May 03	2002	25.1	17.0	21.5	9.2	4.6	15.0
Lithuania	Jul 08	2007	11.7	7.3	19.5	6.9	3.2	12.2
Netherlands	Jan 05	2004	7.4	8.2	4.6	7.2	5.3	2.0
Norway	Jul 00	1999	13.4	19.0	11.7	10.6	6.3	3.0
Romania	Nov 06	2006	28.3	23.1	40.1	12.4	10.2	38.5
Slovak Republic	Apr 04	2003	9.8	6.6	20.8	5.8	4.3	27.3
Slovenia	Mar 11	2010	9.0	6.7	4.9	8.1	4.0	4.0
Spain	Sep 09	2008	9.7	12.7	13.2	8.7	8.8	7.2
Sweden	Apr 01	2000	15.6	21.1	5.0	16.8	13.0	3.1
Switzerland (Cantone Berne) ^c	Oct 02	2001	5.2	4.9	3.4	5.0	3.2	2.1
UK (England & Wales)	Jan 01	2000	14.1	23.7	29.3	14.4	14.7	12.7
UK (Scotland)	Jan 01	2000	9.6	18.4	29.3	9.9	12.9	13.0
UK (Northern Ireland)	Jan 01	2000	3.7	4.8	25.6	2.2	2.1	12.4
Mean			11.8	12.0	15.8	8.9	6.9	10.5

Table 1. Induced abortion and live birth rates at time of the OTC switch compared with rates in 2017

^aRates are displayed per 1000 women of the respective age group (figures for girls <15 years are normally included) ^bFrance métropolitaine (=France without Guadeloupe, Martinique, Guyane, La Réunion, Mayotte)

"No long-term abortion data available for Switzerland as a whole

Rates in bold letters are higher compared with rates in the year of reference

* 2011 figures

** 2012 figures

***2015 figures



Live birth rates among women aged 15–19 years fell in most countries. Only the Czech Republic and Germany had slightly higher rates in 2017 compared with the year of reference. However, the Slovak Republic had clearly higher birth rates after the switch and was the only country in this study were the sum of teenage abortion and live birth rates was higher in 2017 compared to the year of reference.

Further abortion and live birth rates for some European countries with incomplete statistics are displayed in Table 2.

			Rates in the year of reference ^a			Rates in 2017 ^a			
Country	Switch	Reference	Abortions 15-49	Abortions 15-19	Births 15-19	Abortions 15-49	Abortions 15-19	Births 15-19	
Andorra	Jun 18	2017	na	na	3.4	na	na	3.4	
Austria	Dec 09	2009	no stat	no stat	10.4	no stat	no stat	6.8	
Cyprus	?		no stat	no stat		no stat	no stat	6.6	
Hungary	Still Rx		na	na	na	12.6	16.1	23.2	
Luxembourg	May 05	2004	no stat	no stat	10.9	no stat	no stat	5.2	
Malta	Dec 16	2016	na	na	13.6	na	na	12.5	
Poland ^b	Apr 15	2014	na	na	13.4	na	na	11.1	
Portugal	Oct 00	1999	na	na	21.1	6.7	5.5	8.0	

Table 2. Induced abortion and live birth rates for further European countries

Rx=prescription-only

na=not applicable (abortion illegal or EMCs available with prescription only) no stat=no official data available

no stat=no official data available

?=EMCs have OTC status, but date of switch not determinable

^aRates are displayed per 1000 women of the respective age group (figures for girls <15 years are normally included)

^bEMCs were re-switched to prescription-only status in July 2017

Long-term analysis of rates

Fifteen years before the switch, the average abortion rates were 26.9 per 1000 women aged 15–49 years (data available for n=25 countries) and 15.2 per 1000 girls aged 15–19 years (data available for n=20 countries), ranging from 4.4 (Northern Ireland) to 153.8 (Romania) for all age groups and from 1.6 (Greece) to 55.0 (Romania) for teenagers. Live birth rates (mean=24.4; data available for n=26 countries) were lowest in Switzerland (3.0) and highest in Bulgaria (69.9).

In the mean, abortion rates among women aged 15–49 years were 83% higher 15 years before the switch in comparison with the year of reference, whereas 15 years after the switch, rates were 14% lower compared with the year of reference (Figure 1). The corresponding percentages for abortions among teenagers were +35% (15 years before switch) and -40% (15 years after the switch). Hence, the falling trend for abortions among teenagers was visible already before the EMC switch, but the mean decline was stronger after the switch. In contrast, for all age groups the trend towards lower abortion



rates was almost stopped after the switch (also when considering that the slight decline after the switch is mostly attributable to the decline among adolescents, which are included in the figures for the total age groups). On average, live birth rates declined at almost the same rate after the switch as they did already before the EMC change to OTC status.

Figure 1. Long-term analysis of abortion/live birth rates for n=26 European countries 15 years before and after the year of reference.*



^{*}For the calculation of the mean relative change (rate in the year concerned/rate in year of reference), each country contributes the relative change according to availability of data (e.g. Denmark for all years from -15 to +15, Ireland from -15 years to +7 years, etc.).

In most countries from Eastern Europe, abortion rates declined extremely after the fall of the Berlin Wall in 1989, which might be explained by the fact that regular contraceptives were used less compared with Western Europe. Hence, abortion might have been regarded being a common option for family planning.

For eight countries from Western Europe only (Finland, Denmark, Iceland, Norway, Sweden, Switzerland, United Kingdom (England & Wales), United Kingdom (Scotland)), a full history of 15 years before and after the EMC switch is available. These countries (Figure 2) may therefore provide a picture which is biased less by social turmoil as it might have been if including also data from Eastern Europe (Figure 1). Moreover, almost all dispensing pharmacists from these eight countries may have respected nonprescription rules before the switch, which may possibly not be the case if viewing at all 26 included countries.


Figure 2. Long-term analysis of abortion/live birth rates 15 years before and after the year of reference for eight countries with a complete ±15 year-history before/after the EMC switch.*



*The eight included countries are Finland, Denmark, Iceland, Norway, Sweden, Switzerland, United Kingdom (England & Wales), United Kingdom (Scotland).

EMC sales figures

For 12 countries, precise consumption numbers or sufficiently reliable estimations were available (Figure 3). Almost all countries showed a quick and strong increase of sales after the switch and reached an almost stable consumption peak after 8–10 years, seven countries evening out at about 80–100 used EMCs per 1000 women aged 15–49 years per year. Norway, showing the biggest increase, is observing a reduction of EMC use since reaching the peak ten years after the switch, now also approaching a level of 100 EMCs per 1000 women aged 15–49 years. Across the included countries, a direct linear correlation of EMC consumption and

abortion rates is, however, not visible, as e.g. France and Finland have now similar per capita EMC consumptions, but different abortion rates. The results (Figure 3) are approximately in line with corresponding results from a study providing estimations of EMC consumption in 2013 for almost all EU countries (15). Nevertheless, several countries with the lowest per capita consumption of EMCs in 2013 are currently among the EU countries with the highest teenage abortion and/or live birth rates (Romania, Bulgaria, Hungary, Slovakia, England & Wales, Czech Republic, Poland).



Figure 3. EMC consumption over time (figures include ATC codes G03AD01, G03AD02 and G03AA07).*



*For Scotland, the consumption may be underestimated between 2001 (year of switch) and 2008 (introduction of free-of-costs program) as figures for EMCs sold without prescription are not available and hence are not included in data provided by the National Health Service in Figure 3.

For further countries with no long-term data on EMC consumption, there have been reports of markedly higher EMC use after the switch, e.g. Switzerland, Portugal, Spain (16-18).

Discussion

Emergency contraception is highly а controversially discussed topic, to which societal institutions various such as medical/pharmaceutical societies, the churches. organizations or feminist contribute their opinion, which may sometimes be based more on personal beliefs or interests rather than on crude facts. The issue of barrier-free access to EMCs deserves. however, а sober analysis, evaluating its potential risks and benefits, as

discussed for LNG in a 2003 publication (19).

The efficacy of EMCs containing LNG or UPA has been proven sufficiently by several studies (20,21). Similarly, the EMA estimated that for women taking UPA within five days after unprotected sex, it would be able to prevent about three-fifths of pregnancies. Based on the positive riskbenefits ratio, the EMA recommended UPA to be changed to non-prescription status throughout Europe (22).

In contrast to some concerns expressed before, facilitated access to EMCs did not increase teen abortion rates in general, e.g., due to a change of sexual behavior, incorrect or excessive use of EMCs instead of ongoing hormonal contraception (23). No country (except Belgium and Greece, where latest



available figures are from 2011/2012 and may have fallen since then) showed longterm trends towards higher abortion rates among teenagers after the switch, and in only seven countries total abortion rates were slightly higher in 2017 than at time of the switch.

Interestingly, in Andorra, having very restrictive abortion laws, live birth rates were almost stable from 2000 to 2008 for younger and older women as well. Since 2009, rates began falling strongly until 2017 for the two youngest age groups (-60% for teenagers; -63% for women aged 20-24 years), while live birth rate for women aged 25-49 years fell by only 20%. Two EMC-related events may explain the drop especially among young girls: firstly, EMCs were available in Andorra at least with a medical prescription since 2008 (switch to OTC in 2018 only), and secondly, EMCs received OTC-status in the bordering state of Spain in 2009, easily accessible in case of need for women residing in Andorra.

A 2016 study found a direct correlation within Germany of higher EMC use with lower abortion rates. German regions with highest use (Bavaria, Baden-Württemberg) showed the lowest abortion rates, those with lowest use had the highest abortion rates (Saxony-Anhalt, Mecklenburg-Vorpommern) (24). On the other hand, the question arises whether in countries with a substantial growth of EMCs sales after the switch abortion/teen birth rates should not have declined stronger and faster after the switch than observed in reality (e.g. France). Possibly, country-specific social factors have also great weight, and perceptible reductions of abortion rates should not be expected quickly, anyway, as it takes roughly 8-10 years on average until EMC consumption almost stable reaches an maximum. Additionally, it may also take several years until most girls have learned using EMCs correctly (quick administration; taking a second dose in case of emesis within 3 hours after the first dose; respecting interactions with other medicines; etc.).

With EMCs' concern to action of mechanism, the WHO asserted clearly that LNG and UPA have no abortifacient effects (25). However, this debate has not been fully settled yet, and some authors state that EMCs' actions of mechanism (especially with regard to UPA) might potentially be interpreted as being abortifacient (26-28). Nevertheless, even if EMCs should have abortifacient effects, the question rises, how many of the women not taking an EMC (because of restricted access) after unprotected sex would finally anyway seek abortion service if getting pregnant unintentionally. Hence, it could be discussed if a hypothetical early-stage abortion would not be preferable to having a real abortion at a later stage of pregnancy, which of course is a serious and stressing decision.

Unwanted pregnancy represents an economic burden for society as well, as shown for Norway (for teenagers, direct and indirect costs estimated at €1573 per unwanted pregnancy) and the UK (direct health care costs estimated at £1663 per unwanted pregnancy) (29,30). Thus, it may be worth it also from an economic point of view assessing whether EMCs should be covered by social security (at least for teenagers), although an increase of EMC consumption after a switch, of course a welcome business for the producing pharmaceutical companies, may be a challenge for those social security systems fully covering EMCs (31). However, some studies/figures showed that barrier-free access to EMCs seems sometimes to be more important rather than full coverage (32,33).



It is, finally, an ironic twist of fate, that the very country (Hungary), where modern LNG-containing EMCs had been developed and approved first in 1979 is now one of the very few European countries keeping the prescription-only status for LNG and UPA (34,35). Remarkably, in contrast to most of the other countries, abortion rates among Hungarian teenagers fell only slightly since 2001 (16.1 in 2017 vs. 19.7 in 2001), and teen live births rates are almost on the same high level (23.2 in 2017 vs. 22.0 in 2001) as one and a half decades ago. Today, both teen abortion and live birth rates in Hungary are among the highest in Europe.

Limitations

For this study, recent/historical abortion statistics for most EU and EFTA countries were collected from national statistical offices or health authorities, which are supposed to provide the best possible national data on abortion and birth statistics. To our knowledge, this is the first study European comparing on level the development of abortion rates with respect to the year EMCs were made available without medical prescription. However, no data were available for the EFTA country Liechtenstein and for two micro-states closely related to the EU (San Marino, Monaco).

The quality and methods of data collection may vary across the European countries as well as legal definitions of 'abortion' or differences between officially reported numbers of legally induced abortions and estimated numbers of induced abortions actually performed (e.g. Greece) (36).

Several aspects may have interfered with the use of EMCs and development of abortion rates over time. However, according to agestratified consumption data from Denmark and Sweden (precise data from other countries are scarce), use of conventional hormonal contraceptives (which may also have changed over time) was not directly linked to the development of abortion/birth rates during the respective observation periods.

No reliable information is available about how the legal status of pharmaceuticals is respected by pharmacies in the included countries. In some countries, prescriptiononly status may exist pro forma only (37), thus self-medicated EMCs may have influenced abortion/live birth rates already before the formal switch to over-the-counter status.

Finally, the exact levels of awareness about and correct use of EMCs were not available, and it is likely that time to reach high levels of awareness about OTC availability of EMCs and their correct use differ between countries.

Conclusions

This study cannot provide evidence of a causal link between an EMC switch and subsequent changes in abortion/live birth However, pooled rates. data, timelv correlation of drops in abortion/live birth rates with EMC switch and the increase of EMC use after the switch suggest that overthe-counter availability of EMCs contributes reducing unwanted pregnancy especially among teenagers. Further studies are necessary to explain why in many countries the reduction of abortion rates was limited mainly to younger age groups (according to Danish data, per capita use of EMCs is highest among teenagers, thus possibly older women use generally EMCs less in other countries, too). Also, the question should be addressed why in some countries the decline of abortion rate was visible several years after the EMC switch only, despite of an



immediate and substantial rise in EMC consumption after the change. Weighing the pros and cons, it seems that in sum, the benefits of OTC access to EMCs may prevail. Additional measures such as free-of-cost dispensing of EMCs to minors or intensive campaigns information may support achieving lower abortion rates, if the switch to non-prescription status proves being not sufficient. Reasonable self-medication. however, requires safe and affordable drugs,

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access to high-quality advice about EMCs (e.g. in pharmacies) and/or well informed people.

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ORIGINAL RESEARCH

Overweight and obesity among women living in peri-urban areas in West Africa

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Abstract

Aim: This study assessed selected correlates of overweight and obesity among women in a sub-urban population of Abidjan, Côte d'Ivoire.

Methods: A cross-sectional study was conducted during April-May, 2014 in Abobo-Anonkoi 3, a peri-urban city of Abidjan in Côte d'Ivoire. Women of 18 years and older healthy in appearance were randomly recruited from households. Overweight and obesity were measured by BMI respectively greater or equal to 25 and 30 kg/m². Abdominal obesity was defined by waist to hip ratio greater or equal to 0.80. The level of physical activity was evaluated by the IPAQ questionnaire and the blood pressure according to the criteria of the JNC7 report. A regression analysis of the associated factors with overweight and obesity (age, marital status, level of study, level of physical activity, blood pressure, and socioeconomic status) was carried out.

Results: We visited 486 households in which 398 women were approached and 327 agreed to participate in the survey. The average age was 35.25 ± 12.4 years. The prevalence of overweight was 27.2% and that of obesity was 19.6%; 72.2% of women had abdominal obesity. The prevalence of abdominal obesity was 90.6% among obese people. Age (p=0.006), marital status (p=0.002) and blood pressure (p=0.004) were significantly associated with obesity. With regard to abdominal obesity, there was a significant association of educational level in addition to the above factors.

Conclusion: Overweight and obesity are a reality in this population of Côte d'Ivoire and about one in five people are affected by the scourge of obesity.

Keywords: abdominal obesity, Africa, central obesity, overweight, women.



Introduction

In 2016, more than 1.9 billion adults, 18 years and older, were overweight and these over 650 million were obese (1)Projections show that by 2030, about 2.16 billion adults will be overweight and 1.12 billion adults will be obese (2). The global prevalence estimate showed that the proportion of obese adults rose from 28.8% in 1980 to 36.9% in 2013 among men and from 29.8% to 38% among women (3). These increases have been observed in both developed and developing countries (3).

In Africa, in 2008, 26.9% of the adult population was overweight or obese (4). Overweight and obesity are risk factors for chronic diseases such as cardiovascular disease, diabetes and some cancers (5).

women's Certain events in lives (childbirth, menopause) could promote the development of obesity (6). Thus, several studies on obesity conducted both in developed countries and in Africa, particularly in urban areas. have established that the prevalence of obesity was often higher among women (7-10). Obesity affects women more often than men (11).

In Côte d'Ivoire, the World Health Organization STEPS survey (measures of risk factors for chronic diseases) revealed a prevalence of overweight and obesity of 32.2% among the adult population in 2005 in the Lagoon region, in the south of the country, which includes the city of Abidjan (8). The same study confirmed a higher prevalence of overweight and obesity among women of 37.6% compared to 24.6% among men. The 2011 - 2012 Demographic and Health Survey in Côte d'Ivoire reported an overweight prevalence of 19% and obesity of 6.6% among women of reproductive age (10).

In these studies conducted in Côte d'Ivoire, the factors associated with overweight and obesity in women have been underresearched in the peri-urban environment. This environment is at the junction of urban and rural areas, it is distinct from these two areas in relation to eating habits (12). It is also an important place for epidemiological, demographic, social and nutritional transition (2).However, demographic, social, epidemiological and nutritional transitions are inseparable (11,13). The corollary of this transition in the field of nutrition is the substitution of problems of overweight and obesity for problems of nutritional deficiencies (13). one marker of the ongoing Thus. nutritional transition is the increase in obesity (11). Diet is the leading cause of overweight and obesity (11). What factors other than diet are associated with overweight and obesity in women in this particular space that is the peri-urban environment?

To answer this question, we conducted a study to determine the prevalence and factors associated with overweight and obesity in women.

Methods

Framework of the study

This survey was conducted in the Autonomous District of Abidjan. It was carried out in households in the Anonkoi 3 district located in the municipality of Abobo, which is the second most populated municipality in the Autonomous District of Abidjan after Yopougon, with a density of 167 inhabitants per square kilometre (14). The Autonomous District of Abidjan is located in the Lagoons region in the south of Côte d'Ivoire (15).

Type and period of study

This was a cross-sectional study conducted from 24 April to 23 May 2014. The sample size was calculated using the formula:

n = p (1-p) Z2/i2 with n: sample size; p: prevalence of overweight and obesity 32.2%; Z=1.96 for a 5% risk of error and i: accuracy (5%).



The sample size calculated was 336. Considering a response rate of 80%, the minimum sample size was 420.

Sampling strategy

The neighbourhood of Anonkoi 3 is a village in the commune of Abidjan. In this neighbourhood households are not numbered. In the general census of the population in 1998, the neighbourhood had 474 households (16). However during a comprehensive study in this area, Sackou Kouakou et al. identified 668 households (14). Therefore, we conducted a random sample, we calculated a sampling interval of two (668/336 = 1.98). We considered household No. 1 the first household found when we had access to the area, and we visited one in two households.

Population

The study included all women 18 years of age and older who were not in bed and were present at the time of the survey. Women who were pregnant or breastfeeding were not included.

In each household visited, the woman aged 18 and over present was selected. In the presence of more than one woman 18 years of age or older, only one was randomly selected.

Data collection

Data collection was based on a pre-tested questionnaire with the free and informed consent of the person selected (written or oral consent). Overweight and obesity were defined from the Quételet Body Mass Index (17).Overweight is defined as having a BMI greater than or equal to 25 and lower than 30 kg/m²; obesity is defined as having a BMI greater than or equal to 30. Height was measured by a tape measure and weight by a Camry® brand scale model scal160 that can support up to 160 kg. Abdominal obesity was measured by a tape measure and defined as a waist circumference (WC) to hip circumference (TH) ratio greater than 0.80 (18).

The level of physical activity was assessed by the IPAQ questionnaire which defined 3 categories of persons: category 1 (inactive or insufficiently active) category 2 (sufficiently active) category 3 (very active). Blood pressure (BP) was measured with an OMRON electronic blood pressure monitor with an arm cuff after five minutes rest. Women with systolic blood pressure greater or equal to 140 mmHg and/or diastolic blood pressure greater or equal to 90 mmHg with or without treatment were considered to have high blood pressure. Systolic blood pressure below 90 mmHg and/or diastolic blood pressure below 60 mmHg were considered low blood pressure. The level of education was categorized into four (no education, primary level, secondary level and higher level) (19). The socioeconomic level was assessed by the poverty score or wealth index calculated on the basis of asset The ownership. wealth index was calculated using data on the ownership of assets selected by a household (e.g. televisions, bicycles, cars, materials used for housing construction, types of access to water and sanitation). The relative wealth scale was then classified into five categories (poorest, poor, middle, rich and richest) according to the quintile of the sample (19).

Other factors associated with overweight and obesity that were collected were age andmarital status.

Ethical considerations

Survey participants were informed of the reasons for the study. They all have accepted out personal to fill а identification form and submit to taking the settings. Their free and informed consent was obtained before the investigation began. They were free to withdraw from the investigation at any time without prejudice. The data were collected anonymously.



Data analysis

The data were entered on the Epi data software (version 3.1) and analyzed with the SPSS software (version 22.0).

The quantitative variable BMI was transformed into a categorical variable with 4 modalities: Lean, BMI less than 18.5; Normal, BMI between 18.5 and 24.9; Overweight, BMI between 25 and 29.9 and Obese, BMI greater than or equal to 30.

The ratio TT/TH has been transformed into a binary variable (less than 0.80: no; greater or equal to 0.80: yes).

The search of factors associated with BMI was done in two stages. First, we performed a univariate analysis using the Pearson KHI two test at the 0.05 significance level.In this analysis, BMI was considered as a qualitative variable with four modalities (skinny, normal weight, overweight and obesity).

Then, the variables having a value less than 0.05 p were included in a logistic regression model. For regression model, BMI (the dependent variable) has been categorized into two modalities (obesity / non-obesity). The non-obesity modality resulted from the combination of skinny, normal and overweight modalities. The adjusted odds ratio and the confidence intervals at 95% were calculated.

Results

Four hundred and eighty-six (486) households were visited. In 88 households there was no woman and in 398 households there was at least one woman aged 18 and over whom we approached. Among them, 46 did not meet the inclusion criteria (29 were pregnant and 17 were bedridden). Finally, 327 agreed to participate in the survey. The response rate was 93%. The average age was 35.25 years and the standard deviation was 12.40 years. The participation rate was 67.3%. The overall prevalence of overweight and obesity was 46.8%. The prevalence of overweight was 27.2% (89 women) and 64 women were obese (19.6%).

Table 1 presents the socio-demographic characteristics and association between women's BMI and the analyzed different factors. About 2 in 5 women had no education and just over 20% had only primary education. Almost 3 out of 5 women were married. The prevalence of high blood pressure was 26%. Very active women represented less than 2% of our study population. In this environment, the poor and the poorest represented nearly 60% of the population. The association between body mass index and age was significant. Indeed, overweight and obesity were observed mainly between 30 and 45 vears of age (54.68% obese, p=0.006). A significant association was also found between body mass index and marital status. Married women were more overweight and obese (p=0.002). In addition, overweight and obese women had higher blood pressure (p=0.004).

The factors involved in obesity are presented in Table 2. According to our study, the factor involved in the onset of obesity is age. The 30-45 age group is three times more likely to be obese than other age groups.



Variable	Number (01)	Cl-i	Normal	Onomialaht	Ohaaa	
variable	Number $(\%)$	Sкіппу n=19	normai n=156	Overweight	obese	р
	(100 %)	(5.50%)	(47.71%)	(2.21%)	(1957%)	r
Age (vears)		(5.50 %)	(47.7170)		(1).57 /0)	
15-30	128 (39 14)	8(44 45)	76 (48 72)	29 (32 58)	15(23.44)	
31-45	120(39.14) 120(39.45)	4(22.23)	52 (33 33)	$\frac{29}{38}(42.70)$	35(54.68)	0.006
>45	70(2141)	6(3333)	28(17.95)	22(24.72)	14(21.88)	
Marital status	70 (21.41)	0(33.33)	20(17.55)	22 (24.72)	14 (21.00)	
Married	184 (56 27)	8(44 45)	73 (46 79)	61 (68 54)	42 (65 63)	
Single and	107(30.27) 143(4373)	10(55,55)	83 (53 21)	28 (31 46)	$\frac{42}{22}(34.37)$	0.002
widows	115 (15.75)	10(55.55)	03 (33.21)	20 (31.10)	22 (31.37)	
Level of study						
none	127 (38.84)	12 (66.67)	51 (32.69)	39 (43.82)	25 (39.06)	
primary	68 (20.8)	2 (11.11)	30 (19.23)	22 (24.72)	14 (21.88)	0.106
secondary	106 (32.41)	3 (16.67)	59 (37.82)	25 (28.09)	19 (29.68)	
higher	26 (7.95)	1 (5.55)	16 (10.26)	3 (3.37)	6 (9.38)	
Level of physical						
activity						
Inactive	170 (51.99)	10 (55.56)	77 (49.36)	46 (51.68)	37 (57.81)	0.761
Active	151 (46,18)	7 (38.88)	77 (49.36)	41 (46.07)	26 (40.63)	
Very active	6 (1.83)	1 (5.56)	2 (1.28)	2 (2.25)	1 (1.56)	
Blood Pressure						
High	85 (26.0)	4 (22.23)	33 (21.15)	23 (25.84)	25 (39.06)	0.004
Normal	188 (57.49)	6 (33.33)	96 (61.54)	55 (61.80)	31 (48.44)	
Low	54 (16.51)	8 (44.44)	27 (17.31)	11 (12.36)	8 (12.50)	
Socioeconomic						
situation						
Very poor	61 (18.65)	6 (33.33)	28 (17.95)	15 (16.85)	12 (18.75)	
Poor	127 (38.84)	8 (44.44)	62 (39.74)	31 (34.83)	26 (40.62)	0.51
Middle income	88 (26.91)	3 (16.67)	42 (26.92)	28 (31.46)	15 (23.44)	
Rich	33 (10.10)	1 (5.56)	19 (12.18)	8 (9.00)	5 (7.81)	
Very rich	18 (5.5)	0 (0.0)	5 (3.21)	7 (7.86)	6 (9.38)	

Table 1. Socio-demographic characteristics and association between women's BMI and the analyzed different factors in Anonkoi 3

Table 2. Relationship between the analyzed factors and the risk of being obese in
Anonkoi 3

Independent variables	Ν	Obesity (%)	No obesity (%)	Adjusted OR	95%CI
Age group					
15 - 30	128	15 (23.44)	113 (42.97)	1.00	reference
30 - 45	129	35 (54.68)	94 (35.74)	2.80	1.44-5.44
45 - 60	70	14 (21.88)	56 (21.29)	1.88	0.84-4.16
Marital Status					
Married	184	42 (65.63)	142(54.00)	1.62	0.91-2.87
Single and widow	143	22 (34.37)	121(46.00)	1.00	reference
Blood Pressure					
High BP	85	25 (39.06)	60(22.81)	2.39	0.98-5.79
Normal BP	188	31 (48.44)	157(59.70)	1.13	0.48-2.64
Low BP	54	8 (12.50)	46 (17.49)	1.00	reference

OR: Odds Ratio; CI: Confidence Interval; 1: Reference category.



The prevalence of abdominal obesity was 90.6% among obese people. The different associations between abdominal obesity and factors are presented in Table 3. The association between abdominal obesity and age was significant. Indeed, abdominal obesity was observed in the 30-45 and 45-60 age groups (p=0.001). The 30-45 age group is three times more likely to have abdominal obesity than the 15-30 age group. Similarly, the 45-60 age group is four and a half times more likely to have abdominal obesity than the 15-30 age group. This abdominal obesity was also higher among women with no education

and those with only primary education (p=0.004).Thus. women with no education and those with primary education are three times more likely to have abdominal obesity than those with higher education. Abdominal obesity was also higher in married women (p=0.002) and those with high blood pressure $(p<10^{-1})^{-1}$ ³). Married women are twice as likely to have abdominal obesity as those without a partner. Women with high blood pressure are five times more likely to have abdominal obesity than women without high blood pressure.

Table 3. Association between abdominal obesity among women (n=327) and the
analyzed different factors in Anonkoi 3

	Abdominal	obesity	OR	95%CI	Р	
	no	yes				
	n=91	n=236				
	n (%)	n (%)				
Age group						
15 – 30	55(60.44)	73(30.93)	1.00	reference		
30 - 45	26(28.57)	103(43.65)	2.98	1.71-5.19	< 0.001	
45 - 60	10(10.99)	60(25.42)	4.52	2.12-9.62		
Level of study						
None	27(29.67)	100(42.37)	2.72	1.11-6.59		
Primary	13(14.29)	55(23.31)	3.10	1.15-8.31	0.004	
Secondary	40(43.95)	66(27.96)	1.21	0.50-2.89		
Higher	11(12.09)	15(6.36)	1.00	reference		
Marital status						
Married	39(42.86)	145(61.44)	2.12	1.30-3.47	0.002	
Single and widows	52(57.14)	91(38.56)	1.00	reference	0.002	
Blood Pressure (BP	')					
High BP	10(10.99)	75(31.78)	5.15	2.19-12.11		
Normal BP	59(64.84)	129(54.66)	1.50	0.80-2.80	< 0.001	
Low BP	22(24.17)	32(13.56)	1.00	reference		
	C 1					

OR: Odds Ratio; CI: confidence interval; 1: Reference category.

Discussion

In our study, almost half of the women were overweight, about 20% of whom were obese. This prevalence shows that one in five women is at risk of developing a cardiovascular pathology, as some authors confirm. These reported that women are becoming increasingly at risk for non-communicable diseases or associated comorbidities including hypertension, diabetes, cancer and stroke (20).

This obesity was related to various factors including age (between 30 and 45 years), marriage and high blood pressure. The active 30-45 age group is the obese age



group. These young adults are thus at higher risk of developing cardiovascular disease and dying prematurely, posing a serious threat to the economies of countries in sub-Saharan Africa (21,22).

The prevalence of overweight and obesity increases steadily with age in developing countries (9,23). Some studies in Nigeria, Cameroon and Togo found an association between age and obesity later (after 40 years) than found in our study (9,23,24).

The association between marital status and obesity can be explained by the fact that people after marriage have less physical activity, change their diet and may be less concerned about their weight (25). This is the observation in African society where culture considers that being overweight is a sign of material ease (19).

The prevalence of overweight and obesity is high in peri-urban areas, in the middle of the epidemiological transition. This high prevalence could be explained by the culture and lifestyles of our population. Indeed, in developing countries there is a shift from a low-fat diet and a physically active life to a diet richer in saturated animal fat and a sedentary lifestyle (2). Overweight and obesity are no longer only high predominant in socioeconomic backgrounds, but this burden in developing countries is shifting to low socioeconomic groups and particularly to women (26).

Our work confirms the relationship between obesity and high blood pressure (27). High blood pressure is more frequent in obese subjects and hypertensive subjects develop overweight more easily. This epidemiological observation explains the link between high blood pressure and obesity. In addition, obesity potentiates the presence and severity of other cardiovascular risk factors (28). An excess weight of 10 kg is associated with an increase of 3 mmHg in systolic blood pressure and 2.3 mmHg in diastolic blood pressure.

In Anonkoi 3, the prevalence of abdominal obesity was also high (near 3/4 of our total population and almost all obese women). Waist circumference is a simple indicator of excess abdominal fat in adults. Excess abdominal fat is associated, independently with the development BMI. of metabolic and vascular complications of obesity (24,27). Indeed, abdominal obesity, a toxic form of obesity, is a complex dysmetabolic state at the origin of a profound disorder of blood pressure, vascular endothelium and energy homeostasis. Thus, at equivalent BMI, subjects with abdominal obesity develop complications. more cardiovascular Beyond weight, the type of obesity has an even greater influence on the prognosis of patients (28).

Our study found that women with no education and those with only primary education are more overweight or obese. The lower the level of education, the higher the prevalence of obesity. In recent years, obesity rates have increased in all education groups, but more rapidly among less educated women (29). According to the Centre de recherche pour l'étude et l'observation des conditions de vie (Crédoc), those who have a healthy diet (more fruits and vegetables, higher nutrient intakes, better food indices) are those who have higher degrees. They are more interested in the links between nutrition and health (30). However, some studies have reported that women with a high level of education were more overweight or obese (25).

Study limitations

However, we noted some limitations in our study. The number of study participants was lower than the anticipated sample size. This is partly due to the fact that in more than 10% of households, there were no women. Moreover, we considered as married women, all women legally married or living in a couple. As far as parity is



concerned, it has not been sought. We considered snacking as diet data.

In addition, it is a cross-sectional study over a relatively short period and for which there could be bias in the design. These biases could be related to the nonrepresentativeness of the sample, the mode of selection of households and women in households. We did not take into account the number of women eligible for the survey in each household visited, we limited ourselves to choosing a single woman. Also, information on sociodemographic characteristics, level of physical activity and snacking were assessed using self-reporting which is a source of information bias.

Conclusion

The prevalence of overweight and obesity is high among women in peri-urban areas. This obesity particularly affects young, married women with no education or

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primary education. Our study shows the need for urgent intervention targeted at women with information, education and communication (IEC). It is important to against this obesity fight through awareness sessions for women on the consequences of obesity, education sessions and management of this scourge during home visits.

Conflicts of interest: None declared.

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REVIEW ARTICLE

A practical and applied approach to assessing the cross cutting nature of child injury prevention as a basis for policy making at the local level

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Abstract

Aim: Risk factors for child injury are multi-faceted. Social, environmental and economic factors place responsibility for prevention upon many stakeholders across traditional sectors such as health, justice, environment and education. Multi-sectoral collaboration for injury prevention is thus essential. In addition, co-benefits due to injury prevention initiatives exist. However, multi-sectoral collaboration is often difficult to establish and maintain. We present an applied approach for practitioners and policy makers at the local level to use to explore and address the multi-sectoral nature of child injury.

Methods: We combined elements of the Haddon Matrix and the Lens and Telescope model, to develop a new approach for practitioners and policy makers at the local level.

Results: The approach offers the opportunity for diverse sectors at the local level to work together to identify their role in child injury prevention. Based on ecological injury prevention and life-course epidemiology it encourages multi-disciplinary team building from the outset. The process has three phases: first, visualising the multi-sectoral responsibilities for child injury prevention in the local area; second, demonstrating the need for multi-sectoral collaboration and helping plan prevention activities together; and third, visualising potential co-benefits to other sectors and age groups that may arise from child injury prevention initiatives.

Conclusion: The approach and process encourages inter-sectoral collaboration for child injury prevention at the local level. It is a useful addition for child injury prevention at the local level, however testing the practicality of the approach in a real-world setting, and refinement of the process would improve it further.

Keywords: co-benefits, inter-sectoral collaboration, prevention and control, wounds and injuries.

Introduction

It is far from trivial to reiterate how devastating child injury is to the individual, family and society. Among the measurable costs, are loss of life, long and short-term disability, psychological consequences, and financial costs (1). In addition, child injury remains the leading cause of death and a major cause of disability for children aged 5–19 in the European Region (2). Despite this varied and heavy burden, funding for prevention is comparatively low (3), and capacity and leadership resources, in terms of adequate numbers of personnel and availability of the relevant skills set, are limited (4).

The determinants of child injury are multiple, broad, and not limited to the health sector (2,5). Thus, in order to efficiently direct and fund child injury prevention, one must account for the cross-cutting, multi-sectoral determinants that result from a complex interplay between human factors and those in the physical and socio-cultural environments.

Since the multiple determinants of child injury cannot be addressed by the health sector alone, a whole-of-government approach is required—vertically, from international politics to local decision makers, and horizontally, across policy fields such as health, transport, housing, justice and education. Preventive action must also work across society, employing a whole-of-society approach engaging actors and stakeholders within government, civil society, and the private sector (2,6).

Though inter-sectoral co-operation is essential, it is notoriously challenging (7,8). It is often difficult to engage relevant stakeholders and maintain their co-operation throughout the process from policy making through to implementation and evaluation. Additionally, the complexity of government systems, where roles and responsibilities are divided into traditional silos (e.g., health, transport, education), and where responsibility and power are split between national, regional and local levels, can further hinder cooperation (9). Thus, due to its complexity, child injury is one of the so-called 'wicked' problems of public health (7). However, its cross-cutting nature offers broad scope for interventions to result in or contribute to multi-sectoral co-benefits (10).

In this paper we focus on the role of regional or local level decision makers and propose a model to facilitate the decision making process for the cross cutting issue of child injury prevention.

Existing models for injury prevention

Several models to guide injury prevention have been proposed, including those addressing the multiple determinants of injury (11,12) intervention planning (13,14) and inter-sectoral collaboration (15). These models provide useful theoretical frameworks to address injuries and their prevention. However, they do not address the specific nature of child injury and in some cases may be challenging for use at the local level.

Child injury prevention requires specific, directed attention. Children participate in environments largely designed for adults where their physical and cognitive characteristics make them more vulnerable to injury. Physical and cognitive developmental stages precipitate different periods of injury susceptibility. Age is therefore an important factor in child injury prevention and models used must have the flexibility to address this heterogeneous group. Children are also highly dependent upon the care and protection of adults, so factors affecting an adult's capacity to supervise children can directly affect them (16,17). General injury prevention initiatives, designed for adults, do not always protect children to the same extent (18,19).

In terms of governance for child injury prevention, a lack of leadership and capacity at the national level such as dedicated government departments or ministries or a lack of a specific

focal point within key departments for child safety has been identified (20). It is likely that if this is the situation at the national level that there is an even greater potential for lack of capacity at the regional or local level where much decision making for health lies (21).

To our knowledge, no existing model or approach adequately addresses child injury, while simultaneously providing a practical, multi-sectoral process for practitioners and policy makers at the local level to use to guide prevention efforts. In order to adequately assess the specificities of child injury and its cross-cutting nature, as well as incorporate the potential co-benefits into prevention planning, practitioners and policy makers should be able to:

- Examine the issue and visualise the multi-sectoral responsibilities for child injury prevention in the local area
- Demonstrate the need for inter-sectoral collaboration and collective planning of prevention activities
- Identify the scope for co-benefits for other sectors, age groups or health issues arising from child injury prevention initiatives

In this paper we propose a model based upon aspects of the Haddon Matrix (22) and the Lens and Telescope model (23) providing a practical approach and process to meet these requirements for the local level.

The local level child injury prevention assessment approach

The traditional Haddon matrix depicts a time element in the first dimension (vertical axis), dividing factors associated with what Haddon termed the pre-event, event and post-event phases of an injury event. In the second dimension (horizontal axis), of the simplest form of the matrix, are the three vertices of the epidemiological triangle the host (human), the agent (vehicle/vector) and the environment, with environment often divided into social and physical. The Haddon matrix fits well into the traditional public health approach of primary, secondary and tertiary prevention and has been used to explore a variety of aspects of the public health process for injury prevention including assessing risk factors (5,24), identifying preventive strategies and assisting the decision making process (13) and for public health readiness and planning (25,26).

The traditional, nine cell, Haddon Matrix maybe less suited to child injury prevention due to the separation between environment, host and agent. Children's dependence upon adult supervision to secure their environment and their lack of control over the environment is difficult to capture in this version of the Haddon Matrix. Therefore, when developing our approach, we sub-divided the columns, host and agent into factors for human, social and physical environment. This allows the table to capture more detail that maybe particularly relevant for preventing child injury such as factors affecting parental supervision.

The temporal element of injury prevention is well represented in the Haddon Matrix, however circumstances preceding the injury are limited to the pre-event phase. This makes it difficult to differentiate between long standing risk factors such as socio-economic status, and short-term factors such as bad lighting. A further reality of child injury is that the determinants of injury change with age. The inclusion of the life course approach developed in the Lens and Telescope model (23) is intended to provide a visual cue regarding the needs of the different age groups, encouraging one to think of enduring injury determinants such as socio-economic status and parental factors.

The life course aspect of our tool is divided into five specific age groups relevant to child injury, 0-1, 2-4, 5-9, 10-14, and 15-19; with general phases for the foetal phase, adulthood, previous and the next generation. The slices representing age get larger towards older age groups to illustrate the breadth of influence preventive measures could have.

The resulting approach (Figure 1) can be used to examine a specific injury event (e.g., a specific car - pedestrian collision) or a group of injuries (e.g., child pedestrian injuries). Further, in order to include and examine all relevant factors, the matrix (or matrices, if a separate matrix is needed to provide more space) should be completed with factors relevant to each affected person in the injury event. For example, in the case of a car – pedestrian collision, a matrix should be completed accommodating the perspectives of the injured child, the driver, passengers in the car and any other relevant people.



Figure 1. Local level child injury prevention assessment approach

Using the local level child injury prevention assessment approach and process

The approach and resulting process are intended for use by practitioners and policy makers at the local or regional level. They can be used in three ways: first, to examine and visualise the multi-sectoral responsibilities for child injury prevention in the local area; second, to demonstrate the need for inter-sectoral collaboration and collective planning of prevention activities and third to identify the scope for co-benefits for other sectors, age groups or health issues arising from child injury prevention initiatives.

Phase one – Examining the issue and visualising multi-sectoral responsibilities

The approach and process are designed for use in a collaborative setting from the outset. Relevant partners and stakeholders from multiple sectors should contribute throughout the process to map each of the factors that contribute (or could contribute) to the injury event for each person involved in the injury. In line with concepts of life-course epidemiology, the factors should not be confined to the moment the injury occurred but should also include pre-existing factors. The process of eliciting each of these factors aims first, to draw all of the stakeholders together to come to a common understanding of the problem and potential

solutions (7) and second, to identify the many sectors implicated within child injury prevention.

Phase two - Demonstrating the need for multi-sectoral cooperation

Once factors and involvement of sectors coming out of the injury analysis are identified, users can reflect on them and propose specific evidence based interventions and policies that address these factors and identify the appropriate sectors that would need to be involved. These specifics can then be used to make the case for investment and/or engage additional stakeholders. The integrated life course approach serves as a prompt to ensure age is being taken into consideration as interventions are considered. Potential interventions can then be inserted into an empty matrix in the same way as the factors were placed in phase one.

Phase three – Visualising the scope for co-benefits

The third phase is designed to help identify potential co-benefits of child injury prevention strategies for other age-groups and issues within and outside the health sector. Co-benefits can be achieved as a result of child injury prevention measures in three ways. First are the physical, economic and societal benefits for the child, family and community as a result of a reduction in intentional and unintentional injury (1,3). Second are co-benefits for the target population or other groups arising as a result of injury prevention initiatives (e.g., the health benefits of swimming lessons or environmental and health benefits of a safer walking environment in terms of a reduction in car use); these are not dependent upon a reduction in injury incidence but are derived from the intervention itself. Third are co-benefits for other groups that can be achieved as a result of the *implementation* of injury prevention strategies (e.g., providing training and employment to distributers of safety equipment).

By reflecting on the age group segments of the approach, users are encouraged to consider the impact on other age-groups and identify which groups might directly and indirectly benefit from child injury prevention interventions and elaborate on these co-benefits. For example, an intervention to improve the walkability of an area surrounding a school would directly benefit age groups 5-9, 10-14 and 15-19 years, but may also benefit the elderly population of that area by providing a safer walking environment.

Discussion

Much responsibility for injury prevention lies with local practitioners and policy makers in terms of choice of intervention and process of implementation. However, for complex 'wicked' problems such as child injury, the key stakeholders at the local level are often unaware of their responsibilities for public health and the potential impact of their participation (27). Local government officials have been found to lack awareness of the link between health and non-health sectors, and their experience of inter-sectoral collaboration is often limited (8). A key determinant of success for inter-sectoral collaboration, is the development of a multi-disciplinary team of multiple stakeholders (28,29) to first reach a common understanding of the problem and then, on that basis, to collaboratively design evidence based interventions that are specific and relevant to the needs of the target population (7).

A significant difference between our approach and process and other existing models for child injury prevention is its interactive and collaborative nature. Our approach provides a practical framework to engage diverse stakeholders from the outset. It has been designed to provide a comprehensive approach to child injury prevention in a simple (and familiar) format to maximise output at the local level of governance. The exercise of mapping factors using a matrix that addresses the specific physical and social environments for host and agent

separately helps identify the potential involvement for many sectors and the identification of roles and responsibilities as interventions are selected. A limitation of this approach is that it is unable to quantify the comparative or cumulative impact of the identified risk factors in the local setting. Local knowledge of their relative importance in the target setting is therefore required to weight them appropriately, in terms of importance and prevalence, and to develop a suitable intervention. Additionally, the approach does not help planners/researchers identify what interventions or policies are already in place or how to choose an intervention. However the third dimension of the Haddon Matrix as proposed by Runyan (13) could be used in conjunction with this model to aid intervention choice.

The opportunity to identify the potential co-benefits of injury prevention initiatives offered by this approach is particularly important in the context of advocacy and efforts to secure funds for prevention activities. A lack of funding is a common barrier to adoption and implementation of public health interventions, particularly for complex or wicked problems. (8) If co-benefits of prevention activities outside the target group or injury domain can be demonstrated, the chances of securing funding may be higher, particularly if the co-benefit addresses a priority area (e.g., obesity or healthy ageing). Our proposed approach and process provide a way of demonstrating the interconnectivity between sectors and therefore the secondary impact child injury prevention strategies may have beyond childhood or outside the injury domain. However, it must be noted that when identifying co-benefits this approach does not offer any quantification of economical or health benefits associated with a given strategy.

The use of a life course model is a central element of our approach. There are several advantages to this: first, it emphasises the importance of a child's age for injury susceptibility and acts as a lens through which to consider relevant factors, particularly when looking at an overall injury issue (e.g., child drowning); second, it accommodates age in the design or choice of preventive interventions; third, it allows analysis of risk factors related to parents or carers and underlying causes; and, fourth, it provides a frame to reflect upon potential cobenefits for other age groups arising from child injury prevention interventions.

Additionally, some interventions in child injury prevention include longer timeframes between intervention implementation and results, especially when addressing the more complex risk factors such as substance abuse and mental health. These are often incompatible with the short-term pressures on policy makers (30). Visualisation of co-benefits using a life-course approach could provide policy makers with solid arguments for the implementation of such interventions.

Conclusion

This approach and three phase process to child injury prevention, based on combining Haddon's matrix with a life course model facilitates stakeholders identification of risk factors and solutions across policy sectors. When done collectively, engaging multiple stakeholders, it should result in a better understanding of the multi-sectoral nature of child injury prevention and the potential roles and responsibilities for the stakeholders at the local area. This, in turn, should assist in the planning of tailored inter-sectoral child injury prevention activities. Further the broadened frame helps identify potential co-benefits across sectors, within and outside the injury domain, which may assist in gaining support for child injury prevention.

This approach and process have been designed to provide a practical and user-friendly methodology to address the inter-sectoral issue of child injury prevention at the local level.

However it is yet to be tested in a real world setting and a study of its efficiency would be a useful addition to this research.

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Contributorship: BS developed the idea for the approach and process and all authors contributed to the design. BS led the drafting of the paper and all authors were involved in revising it and approving the final version.

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ORIGINAL RESEARCH

Assessment of knowledge, attitudes and practices about public health nutrition among students of the University of Medicine in Tirana, Albania

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Abstract

Aim: the aim of this survey was twofold: (i): to assess medical students' knowledge, attitudes and practices regarding nutrition in general, in order to identify their level of competences in the field of nutrition which will be useful in their future role of providers/health care professionals, and; (ii) to assess the knowledge, attitudes and practices regarding the discipline of public health nutrition in order to identify the needs for improving the curriculum of this subject in all the branches of the University of Medicine in Tirana.

Methods: A cross-sectional study was conducted in June-July 2013 including a representative sample of 347 students at the University of Medicine in Tirana, Albania (61% females and 39% males; overall mean age: 23±2 years; response rate: 87%). A nutritional questionnaire, adopted according to the models used in previous international studies, was used to assess the level of knowledge, attitudes and practices among the university students.

Results: Overall, about one third of the students was not satisfied with the quality and quantity of nutritional education and demanded a more scientifically rigorous curriculum. In general, students' knowledge about infant feeding practices was adequate. However, there were gaps in the students' knowledge regarding the commencement of breastfeeding, or the duration of exclusive breast-feeding. Furthermore, there was evidence of an insufficient level of knowledge among students regarding diet and nutrition in general and their health impact, especially on development and prevention of chronic diseases.

Conclusion: This survey identified significant gaps in the current curriculum of public health nutrition at the University of Medicine in Tirana. Our findings suggest the need for intervention programs to improve both the quantitative and the qualitative aspects of nutrition curricula in all the branches of the University of Medicine Tirana, in accordance with the professional expectations of this teaching institution, as well as the urge for a movement towards a more integrated curriculum and problem-based learning approach.

Keywords: Albania, diet, knowledge, nutrition, students, university of medicine.

Introduction

It is argued that the amount of nutritional education in the teaching curricula of different medical schools remains inadequate and does not meet the needs of this important area of health sciences (1,2). Hence, many studies show that family physicians generally have little training in nutrition (3-5). Furthermore, several studies have shown that the vast majority of medical students and incoming interns are dissatisfied with their education in medical nutrition and feel unprepared to counsel patients on nutritional topics (6-8). Therefore, it is largely recognized that there is a critical need for improvements of teaching programs related to nutrition in medical schools and public health schools along with an increased education of the general population at large (9-11).

Public health nutrition is a discipline introduced already in all branches of the University of Medicine in Tirana, the Albanian capital. However, there is no scientific evidence regarding the level of attitudes and knowledge in this field among the students at all levels and branches of this teaching institution in Tirana, which is the only Medical University in Albania.

In this context, the aim of this survey was twofold: (i): to assess medical students' knowledge, attitudes and practices regarding nutrition in general, in order to identify their level of competences in the field of nutrition which will be useful in their future role of providers/health care professionals, and; (ii) to assess the knowledge, attitudes and practices regarding the discipline of public health nutrition in order to identify the needs for improving the curriculum of this subject in all the branches of the University of Medicine in Tirana.

Methods

A cross-sectional study was conducted in June-July 2013 including a representative sample of 347 students at the University of Medicine in Tirana, the capital of Albania.

Study population

The study population consisted of a simple random sample of 347 students (out of 400 invited; response rate: 86.7%) of the University of Medicine in Tirana pertinent to the following branches: Medicine (26.8%), Nursing (32.9%), Pharmacy (21.9%) and Dentistry (18.4%). The sampling frame consisted of a list of all students who had undertaken a course on public health nutrition (280 medical students; 110 dentistry students; 108 pharmacy students; 312 nursing students). The response rate was somehow lower among the medical students (81.5%) compared with students from the other branches. On the other hand, the overall response rate was similar among male and female students.

Data collection

A nutritional questionnaire, adopted according to the models used in previous international studies, was used to assess the level of knowledge, attitudes and practices among the university students.

The first part of the questionnaire concerned the attitudes of the students about nutritional education in their respective faculties/schools. The attitudes were measured by means of an indicative scale from 1 to 5 regarding students' concordance with several statements (1= strongly disagree; 5= strongly agree) (7).

The second part of the questionnaire concerned the level of knowledge of the students about nutrition in general (4,5).

Data analysis

SPSS (Statistical Package for Social Sciences) version 19.0 was used for data analysis. Data were presented as frequency tables (for categorical variables) and as measures of central tendency (mean scores) [for numerical variables].

Results

Overall, the survey sample included 136 (39.2%) male students and 211 (60.8%) female students (overall mean age: 22.8 ± 2.1 years).

Students' attitudes about their education in the discipline of nutrition

Overall, the students were somewhat satisfied with the quantity (mean score: 3.3; range from 1 [lowest] to 5 [highest]) and quality (mean score: 3.2) of the nutritional education in the course of their studies (Table 1). Students reported that more time should have been dedicated to the topic of nutrition at the University of Medicine in Tirana (overall mean score: 3.5), especially including more material relevant to the personal health and wellbeing (mean score: 3.8). Conversely, students were quite neutral regarding the scientific rigor of the teaching curriculum (overall mean score: 2.9).

Students' attitudes	Total (N=347)	Medicine (N=93)	Dentistry (N=64)	Pharmacy (N=76)	Nursing (N=114)
I am satisfied with the <u>quantity</u> of my nutrition education.	3.26	2.69	2.81	3.47	3.83
I am satisfied with the <u>quality</u> of my nutrition education.	3.18	2.71	2.84	3.22	3.71
My medical school nutrition curriculum should have had more time specifically dedicated to the topic of nutrition (independent of organ system-based studies).	3.46	3.67	3.42	3.70	3.17
My medical school nutrition curriculum should have had more nutrition content formally integrated into the organ system-based courses.	3.38	3.91	3.36	3.21	3.07
My medical school nutrition curriculum should have included more online materials available for independent study.	2.90	3.32	2.52	3.05	2.67
My medical school nutrition curriculum should have included more material relevant to my personal health and wellbeing.	3.80	4.31	3.81	3.37	3.68
My medical school nutrition curriculum should have been more scientifically rigorous.	2.89	3.32	3.39	2.58	2.46

Table 1. Students' attitudes about their education in the discipline of nutrition

Students of the Faculty of Medicine were the most unsatisfied group with regard to the <u>quantity</u> (mean score: 2.7) and <u>quality</u> (mean score: 2.7) of the information obtained in the nutrition course, considering that:

- More time should be dedicated to the topic of nutrition in the course of their studies (mean score: 3.7);
- More nutrition content should be formally integrated into the organ system-based courses (mean score: 3.9);
- The curriculum should include more material relevant to personal health and well-being (4.3);

• In addition, medical students felt that the teaching curriculum should be more scientifically rigorous (mean score: 3.3) [Table 1].

However, almost similar attitudes were encountered among the students of the Faculty of Dentistry, but their mean scores were slightly higher compared to the students of the Faculty of Medicine.

Unlike the students of the Faculty of Medicine and Dentistry, students of the Faculty of Pharmacy appeared to be more satisfied with the <u>quantity</u> (mean score: 3.5) and the <u>quality</u> (mean score: 3.2) of the nutritional education; nonetheless, they considered that more time should be dedicated to the topic of nutrition in the course curriculum (mean score: 3.7), but were generally satisfied regarding the scientific rigor of nutrition curriculum (mean score: 2.6). Conversely, students of the Faculty of Nursing were the most satisfied group with regard to the <u>quantity</u> (mean score: 3.8) and <u>quality</u> (mean score: 3.7) of the nutritional education in their branch. Their most obvious demand, however, was that more material relevant to personal health and wellbeing should be included in the teaching curriculum (mean score: 3.7) [Table 1].

Overall, about one third of the students was not satisfied with the quality and quantity of nutritional education and demanded a more scientifically rigorous curriculum.

Three out of four students demanded a more practical and useful curriculum regarding personal health and well-being; more than half of the students demanded an integrated curriculum into the organ system-based; and half of the students suggested that more time should be dedicated to the teaching curriculum independent of organ system-based studies (Table 1).

Students' knowledge about infant feeding practices

Overall, the level of students' knowledge about infant feeding practices was satisfactory, as the percentage of correct answers for every question was in the range from 70%-92% (Table 2).

Correct	Wrong	Don't know	
71.8%	21.30%	6.0%	
/1.0%	21.3%	0.970	
1 10%	071%	1 10%	
1.470	97.170	1.470	
01.00%	1 60%	2 50%	
91.9%	4.0%	5.5%	
-	Correct 71.8% 1.4% 91.9%	Correct Wrong 71.8% 21.3% 1.4% 97.1% 91.9% 4.6%	

Table 2.	Students'	knowledge	on infant	feeding practice	es
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The percentage of wrong answers was higher among the students of the Faculty of Pharmacy, followed by the students of the Faculty of Dentistry (29.7% and 7.8% respectively).

About 82% of the students knew "the most appropriate age to introduce other foods in the infant's diet", whereas one out of three students of the Faculty of Dentistry gave a wrong answer (data not shown).

Regarding the "*commencement of breastfeeding*", 70% of the students did not know the recommended initiation of breastfeeding, which was especially apparent for students of the Faculty of Nursing and Medicine (80% and 76%, respectively), although the nutrition curriculum of these two faculties regarding infant feeding practices is much more expanded than the other two faculties (data not shown in the tables).

Most of the students (about 77%) stated that exclusive breast feeding is important because "breast milk is the ideal food", 10% of the students considered that "breastfeeding creates a

physical/spiritual bond between mother and baby", and 9% of the students believed that "breastfeeding protects the mother from pregnancy".

Regarding the duration of exclusive breastfeeding, the opinion of the students was divided between the period of 6-9 months, and only 1.3% of the students considered that *"breastfeeding should not be extended more than 1 month"* (not shown).

Students' knowledge on the health impact of diet and nutrients

Regarding the questions that aimed at assessing the students' general knowledge about the health impact of diet and nutrients, students of the Faculty of Medicine, generally, exhibited the highest level of knowledge compared to the other branches (Table 3).

Especially, medical students reported correctly on the following: "the nutrient that helps prevent thrombosis" (100%); "the nutrient closely related to the prevention of neural tube defects" (97%); "zinc is not an antioxidant" (87%); and "potassium has protective effect against hypertension" (75%). However, none of them knew that "excess proteins promote loss of Ca"; "Albanians are advised not to consume more than 30% fat" (8%); and "fruits and vegetables have a preventive role in the development of some types of cancer" (10%) [Table 3].

Item	Total [*]	Medicine [*]	Dentistry [*]	Pharmacy [*]	Nursing [*]
A nutrient believed to help prevent thrombosis is:	omega-3 fat	100	28.1	50	28.9
Excess of which nutrient may increase body calcium loss?	proteins	0	4.7	7.9	14
What is the type of dietary fiber helpful in lowering the blood cholesterol level?	soluble fiber	67.7	42.2	28.9	15.8
The major type of fat in olive oil:	monounsaturated fat	54.8	31.2	22.4	16.7
Compared with unprocessed vegetable oil, hydrogenated fats contain:	more trans fats	37.6	9.4	42.1	16.7
The nutrient is protective against hypertension	potassium	75.3	14.1	44.7	45.6
If a person habitually consumes 10 tablets a day of vitamin mineral supplements, which nutrient is least likely to cause toxicity	vitamin E	66.7	21.9	39.5	24.6
The most concentrated source of vitamin B12 is	Meat	43	6.2	18.4	31.6
Which substance raises the blood HDL- cholesterol level	alcohol	41.9	9.4	17.1	22.8
Nutrition Recommendations for Albanian recommends that the diet should contain the following percentage of energy as fat	under 30% of daily energy	7.5	9.4	25	21.9
Nutritional recommendations for Albanian recommends that the diet should contain the following type and percentage of salt	no more than 6 g iodized salt	44.1	3.1	19.7	37.7
A type of food believed to have a preventive effect on varioustypes of cancer is	Fruits and vegetables	9.7	34.4	57.9	41.2
The number of kilocalories in one gram of fat is	9 kkal	100	96.9	96.1	94.7
Which of the following is not an antioxidant nutrient	Zinc	86	46.9	80.3	48.2
The nutrient strongly associated with the prevention of neural tube defects is	Folate	96.8	73.4	77.6	71.1

Table 3. Students' knowledge about diet and health

* Percentages of correct answers.

Discussion

Our findings indicate that students of the University of Medicine in Tirana are not sufficiently satisfied with the quantity and quality of the knowledge obtained on public health nutrition, demanding more time to be dedicated to the topic of nutrition in the undergraduate curriculum including especially more material relevant to personal health and wellbeing. Such requirements and demands were more pronounced among students of the Faculty of Medicine and Dentistry.

Students' knowledge about infant feeding practices were relatively satisfactory among the students of the Faculty of Medicine, and less so among students of the other faculties. However, there were also apparent gaps in the knowledge of medical students regarding the commencement of breastfeeding, or the duration of exclusive breastfeeding. Our findings in this regard are compatible with previous reports from studies conducted elsewhere (12-14).

Regarding students' general knowledge about diet and its impact on the development or prevention and treatment of diseases, especially of chronic diseases, it was often encountered an overrated concept about the role/influence of the dietary fat and individual health, suggesting insufficient knowledge among students regarding the specific role and impact of carbohydrates and proteins. Similar findings have been previously reported in the UK (13,14), Canada (15,16) and the USA (17).

On the other hand, students included in the current survey did not have updated information regarding the "Albanian Recommendations for a Healthy Nutrition", which points to the need for case-based teaching, and updated scientific rigor.

Overall, the current survey identified gaps in the current curriculum of public health nutrition which suggests the need for appropriate changes and amendments to the curriculum in all the branches of the University of Medicine in Tirana (General Medicine, Public Health, Nursing, Pharmacy and Dentistry). From this perspective, our study provides useful baseline information which should be eventually used to close the knowledge and competence gaps in the current teaching and training programs offered by the University of Medicine in Tirana.

In addition, the assessment of knowledge, attitudes and practices of the students on nutritional aspects in general is a basic precondition for understanding their competences and roles as future health care providers and health professionals, hence, evaluating healthy nutrition as an important element in the prevention and treatment of a number of non-communicable diseases which are currently highly prevalent in Albania (5,18). From this point of view, our study makes a useful contribution in the Albanian context.

In conclusion, our study suggests the need for intervention programs to improve both the quantitative and the qualitative aspects of nutrition curricula in all the branches of the University of Medicine Tirana, in accordance with the professional expectations of this teaching institution, as well as the urge for a movement towards a more integrated curriculum and problem-based learning approach.

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Conflicts of interest: none declared.

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ORIGINAL RESEARCH

Health and health status of children in Serbia and the desired Millennium Development Goals

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Abstract

Aim: Children represent the future, and ensuring their healthy growth and development should be a prime concern of all societies. Better health for all children is one of the leading objectives of the National Plan of Action for Children and a key element of the tailored Millennium Development Goals for Serbia.

Methods: Our analysis was based on relevant literature and available information from the primary and secondary sources and databases. We analyzed health status of children that can be illustrated by indicators of child and infant mortality, morbidity, and nutritional status.

Results: There has been a significant reduction in the mortality rates at the national level, particularly with regard to infants and children under five years of age. However, the current mortality rate of Roma children is still three times as high as the Millennium Goal set at the national level for Serbia. Most deaths of children under the age of five are due to preterm birth complications, congenital anomalies, birth asphyxia and trauma, pneumonia and sepsis. The rate of malnourished children among the poor and in Roma settlements is twice as high as in the general population of Serbian children. A growing number of obese children was also noted in the Roma population.

Conclusion: Political awareness, commitment and leadership are required to ensure that child health receives receive the attention and the resources needed to accelerate the progress of Serbia.

Keywords: children, health status, Millennium Development Goals, Serbia.

Conflicts of interest: None.

Introduction

A comprehensive understanding of the children's and women's health as a state of complete physical, mental and social wellbeing (1) is essential to the health of current and future generations. Almost every culture holds that a society has a responsibility to ensure a nearly equal start in life for children, which implies developing their full health potential (2). However, there are still significant ethnical and regional differences that need to be considered while developing the global health policy framework. The differences in people health are determined by their exposures to health risks, which are, in turn, the social determinants of health (3). The prevention of disease requires overall investment in the social determinants of health and reduction of inequalities and unfairness in health.

The foundations for adult health and, indeed, the health of future generations are laid in early childhood and even before birth. Therefore, better health for all children is one of the leading objectives of the National Plan of Action for Children (4) and a key element of the tailored Millennium Development Goals for Serbia.

Progress in the reduction of child mortality is one of the leading public health challenges in all countries (1). Reducing child mortality is also one of the Millennium Development Goals, and the first of the total of 27 goals adopted at the World Summit for Children. It has also been incorporated into many national plans of action for children. In spite of major improvements, national reports on progress in attaining the Millennium Development Goals, even in countries in which child mortality has been reduced by two thirds on the average, highlight that the problem is still present in rural areas, among people living below the accepted poverty line and - as regards Southeastern Europe - in particular, among Roma subpopulations (1,5). Child mortality due to preventable causes is further compounded by poverty, unfavorable living conditions, low educational level of mothers, social exclusion, neglect, violence against children and insufficiently accessible antenatal and postnatal health care (6,7). Deaths among children under the age of five years represent one of the most serious challenges currently faced by the international community. To address this challenge, it is necessary to measure accurately the levels and causes of mortality among this population group (8). Major causes of under-five mortality remain the same globally; their relative importance varies across regions of the world. While in low-income countries infectious diseases account for a large proportion of under-five deaths, the main killers of children in high-income countries are non-communicable diseases such as congenital anomalies, prematurity, injuries and birth asphyxia (9). Monitoring of the nutritional status plays an important role in the analysis of the health of children, particularly when health risks and preventive actions need to be assessed and considered. Irregular and insufficient nutrition during infancy and later can significantly impair the growth and development of children and have adverse health effects (physical fitness, mental functions, immune system). At the same time, excessive food intake and an imbalanced diet may also result in obesity and negative health consequences (10).

The aim of our study was to analyze children mortality rates in Serbia, leading causes of death, differences in mortality rates between the average population of children and Roma children and diet and nutritional status of children under the age of five years.

Methods

This situation analysis has been done on the basis of relevant literature and available information from the following primary and secondary sources and databases:

- Published documents including strategies, policies, programs, plans, laws and other regulations of the Government of the Republic of Serbia, health regulations and guidelines of the Ministry of Health, published reviews, scientific and professional articles on health and health status of the Serbian population in national and international journals, national surveys and project reports of international organizations (UNICEF, WHO, EU, World Bank) that deal with issues of children's and women's health in Serbia;
- Publications in the area of routine health statistics, national e-databases (Institute of Public Health of Serbia, Dr. Milan "Jovanović Batut", Statistical Office of the Republic of Serbia and international e-databases (WHO/Eurostat) for comparison purposes.

This statistical information often is only available in aggregated sets of data which do not allow for detailed analyses.

Health outcomes and health status of children are illustrated by the following indicators: infant mortality rate (deaths of children in the first year of life), perinatal mortality rate (fetal deaths from the 22nd week of gestation or achieved 1000g in intrauterine development and deaths by the seventh day of life), neonatal mortality rate (deaths in the first 27 days of life only), and morality of children under five years of age (deaths before children turn five years); morbidity, nutritional status and comparisons with relevant national and international benchmarks and objectives. A special focus was placed on disparities and social inequalities in health among population groups within Serbia, which are considered unfair, unjust, avoidable and unnecessary.

The results were presented in tables and graphs.

Results

In Serbia, there has been a significant reduction in the mortality rates at the national level, particularly with regard to infants and children under five (Figure 1), while the reduction of the mortality rate in the prenatal period was somewhat more limited.



Figure 1. Children mortality rates in Serbia: Situation analysis and the desired Millennium Goal by 2015

I-infant mortality rate; II-perinatal mortality rate; III-neonatal mortality rate; IV-children under 5-year mortality rate.

Mortality among Roma children remains high, the rate has almost halved over the last five years bringing the number closer to the national Millennium Goal of reducing Roma under-five child mortality to 14 and infant mortality to 12. However, the current mortality rate of Roma children is still three times as high as the Millennium Goal set at the national level for Serbia (Figure 2).

Figure 2. Differences in mortality rates between the average population of children and Roma children in 2005 and 2010 in Serbia



Figure 3 presents the leading causes of death in Serbian children under-five years. Most deaths of under-five children are due to preterm birth complications, congenital anomalies, birth asphyxia and trauma, pneumonia and sepsis.



Figure 3. Distribution of the leading causes of death of children under-five in Serbia

The indicators of diet and nutritional status of children under-five years of age are presented in Table 1. The rate of malnourished children among the poor and in Roma settlements is twice as high as in the general population of Serbian children. Surprisingly, a growing number of obese children were also noted in the Roma population, from 6.7% to 12.8%, which points to irregular nutrition. The corresponding Millennium Development Goal in Serbia aims to bring the share of obese children down to 9.1% by 2015. Breastfeeding habits have not substantially changed, except in the Roma population where the number of exclusive breastfeeding up to the age of six months has decreased. The rate of exclusive breastfeeding is still only half of the desired Millennium Development Goal in Serbia (30% of exclusively breastfeed children from birth until the six month of age).

Indicator	Serbia		The poor		Roma settlements		MDG
	2005	2010	2005	2010	2005	2010	2015
Live births with low birth weight	4.9	4.8	8.6	8.3	9.3	10.2	
Percent of children first breastfed within a day after birth	68.8	61.9	71.7	69.1	72.5	70.3	
Percent of children with exclusive breastfeeding for the first six month	14.9	13.7	15.4	19.5	18.0	9.1	30.0
Percent of children 6-23 months who receive the minimum number of meals	Na	84.3	na	80.0	na	71.9	
Prevalence of malnourishment among children under-five (body weight for the given height \leq - 2SD)	3.2	2.3	3.8	5.2	4.1	5.2	
Prevalence of obesity among children under-five (body weight for the given height ≤- 2SD)	15.6	12.7	15.5	12.5	6.7	12.8	9.1

Table 1. Diet and nutritional status of children under five years of age in 2005 and 2010 in Serbia

Discussion

This situation analysis covers the health status of Serbian children that can be illustrated by indicators of child and infant mortality, morbidity and nutritional status which are compared with relevant national and international benchmarks and objectives. A special focus was placed on disparities and social inequalities in health among population groups within Serbia, which are considered unfair, unjust, avoidable and unnecessary since they open a systematic burden on vulnerable population groups. It is believed that the unfair differences in health of children result from social structures and political, economic and legal relations: they are derived from the system, and are result of the social system (so that they can be changed) and they are unjust (11). Marmot insists that they are not a natural phenomenon by any means; instead, they are a combination of poor conditions and low standards of living, poverty, risky life-styles, social exclusion, scarcely formulated, inappropriate health programs and sometimes toxic national and local policies (12).

Infant mortality is generally regarded as a basic indicator of population health and a measure of long-term consequences of perinatal events. This parameter is particularly

important for monitoring and assessing health outcomes in high risk groups such as pre-term children and children with developmental difficulties. Trends show that Serbia has made significant progress towards the Millennium Development Goal relating to infant mortality (13,14).

An analysis of routine statistical data, although infant mortality is still above the European Union–27 average (for example, in 2010, the EU-27 infant mortality average was 4.1 vs. 6.7 in Serbia), suggests that Serbia may achieve the proposed national Millennium Goals in 2015: an infant mortality rate of 4.5 and an under-five mortality rate of 5 per 1000 live births. Earlier comparisons of infant mortality revealed rates in Serbia two times higher than the EU rates, but this difference has been substantially reduced to date (15,16).

Recent studies conducted by UNICEF and other organizations indicate that the majority of the Roma population face social disadvantage and exclusion, and most of them live in poverty (17). Many Roma individuals are also unemployed, have limited education, as well as insufficient access to information, which combined with a lack of trust in institutions often prevent them from using healthcare services in case of need. The Multiple Indicator Cluster Surveys (MICS), which have been conducted periodically in Serbia since 1996 with the help of UNICEF, have been extremely valuable in gaining a better understanding of the challenges involved. From 2005, these surveys have provided assessments of child mortality in the Roma population using the Brass method for estimating child mortality taking into account the risk of death to which the children are exposed to (18). Although mortality among Roma children remains high, the rate has almost halved over the last five years bringing the number closer to the national Millennium Goal of reducing Roma under-five child mortality to 14, and infant mortality to 12. However, the current mortality rate of Roma children is still three times as high as the Millennium Goal set at the national level for Serbia (15).

According to the World Health Organization, most deaths of children under the age of five years are due to a small number of diseases and conditions. Forty-three per cent of these deaths occur among babies aged 0-28 days (newborns) and are mainly due to preterm birth complications, birth asphyxia and trauma, and sepsis. After the first 28 days until the age of five years, the majority of deaths are attributable to infectious diseases such as pneumonia (22%), diarrhoeal diseases (15%), malaria (12%) and HIV/AIDS (3%) (8,9).

While international efforts to address mortality among children under the age of five have resulted in significant reductions globally, persistent inequities between and within countries exist. These are not only driven by poverty, but are intrinsically linked to social exclusion and discrimination. Therefore, continued efforts to eliminate under-five mortality must take into consideration both direct causes and underlying determinants. This requires a comprehensive and holistic approach, which must explicitly recognize human rights' standards as essential and integral elements.

Also, poor nutritional status in children is strongly correlated with vulnerability to diseases, delayed physical and mental development, and an increased risk of dying. While, between 1990 and 2011, the proportion of children under the age of five years who were underweight declined by 36%, under-nutrition is still estimated to be associated with 45% of child deaths worldwide. In 2011, there were 165 million children under the age of five years who were stunted, and 52 million who were wasted (10,19,20). Low birth weight is closely associated with increased risks of neonatal mortality, cognitive problems and chronic diseases in later life (20). Our

analysis shows that the national average share of live births with low birth weight (under 2,500 grams) has remained constant in Serbia in the last decade. The share of low birth weight is significantly higher for Roma and poor children.

More preventive approaches and consistent efforts for improvement are needed in Serbia, to ensure that child health receives the attention and resources needed and secure the benefits that children and families require.

Identifying the health outcomes that matter most for the children, and set out the contribution that each part of the health system needs to make in order that desired health outcomes are achieved, would be an effective way to reach progress.

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ORIGINAL RESEARCH

Dietary patterns and physical activity among Palestinian female schoolchildren in East Jerusalem

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Abstract

Aim: This study aims to assess the Palestinian girls' dietary habits and physical activity patterns as a baseline for intervention.

Methods: A cross-sectional study of grade 4 and 5 pupils (mean age: 11 years) in 14 all-girl schools in East Jerusalem, of four different types of school ownership (overall N=897), was conducted, using self-administered questionnaires and height and weight measurements. Logistic regressions were conducted to determine predictors of healthy behaviours.

Results: Only 36.6% of the pupils reported eating breakfast daily, with UNRWA schools having the highest rate of daily breakfast consumption (42.6%). About 28% reported eating the recommended daily quantity of five portions of fruits and vegetables. Only 15% of the pupils reported being active at least five days a week and more than one third of the schoolchildren viewed TV for \geq 4 hours a day. The prevalence of overweight and obesity was 22.2% and 7.6%, respectively, with private schools having the highest rates, 29.6% and 12.8% respectively (P=0.001). Additional predictors of overweight and obesity were: being the first child in the family, watching TV for more than four hours a day, always eating while watching TV and being physically active less than five days a week.

Conclusions: Most Palestinian pupils miss breakfast, eat less fruits and vegetables than recommended and have sedentary behaviours. These findings raise serious concerns and point to the urgent need for tailored interventions.

Keywords: dietary and physical activity behaviour, obesity, Palestinian female schoolchildren.

Conflicts of interest: None.

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Introduction

Healthy nutrition and physical activity are the key factors in preventing and reducing obesity in children (1). Additionally, adapting such a healthy lifestyle throughout one's life span is essential for optimal physical growth and intellectual development (1). Obesity is known to be a significant risk factor for chronic diseases including type II diabetes mellitus, cardiovascular disease and certain types of cancer (2,3), and imposes a substantial economic burden (4). The obesity trend is especially alarming considering the increasing prevalence in children and adolescents. The need for effective preventive measures to control obesity has therefore become a major public health issue.

In Palestine, rapid urbanization, modernization and sedentary lifestyle have contributed to the increasing prevalence of overweight and obesity in all age groups (5). However, there are few local studies focusing on eating habits and physical activity patterns. One study was part of the Health Behaviour School Children survey (HBSC) conducted in 2004 in the West Bank and Gaza strip. This survey acknowledged problems such as skipping breakfast particularly among girls, low consumption of vegetables and fruits and low intake of milk (6). Such data is lacking for female schoolchildren from East Jerusalem. The current study is done to fill this gap and is part of a baseline study of a school-based intervention programme in East Jerusalem to promote healthy eating and physical activity among schoolchildren, their mothers and teachers.

The purpose of this paper is to describe nutritional and physical activity habits and their socio-demographic determinants among Palestinian girls in East Jerusalem schools of different types of ownerships.

Methods

Study design and population

A cross-sectional study was performed in April-June 2011 to provide the baseline data in a randomized controlled programme trial, before allocating schools into intervention and control groups. The primary target population was girls in grades 4 and 5, as those elementary schoolchildren are old enough to be able to answer the questions, however, they are not yet close to puberty when hormonal changes could have altered the results.

All schoolgirls from the different types of ownership in East Jerusalem were eligible for the study. This included 31 Jerusalem Municipality (JM) schools with 2,759 students, 23 Palestinian Authority (PA) schools with 2167 students, 40 Private schools with 820 students and eight United Nation Relief and Works Agency (UNRWA) schools with 1218 students. Average number of students per class is 34, with different numbers according to school type of ownership.

Sampling was done in two stages: i) stratified sampling of schools according to their ownership; ii) a random selection of classes (by lottery). All students in the selected classes were included.

Sample size calculation was based on the estimated prevalence of healthy behaviours relating to physical activity (>5 days per week), which was estimated at 25% among girls in grade 6 in the HBSC study (6). Assuming that this behaviour will increase among the intervention schools to 40%, and will remain at 25% in the control group, with a significance level of 5%, a power of 90%, intra-class correlation of 0.001 and a cluster size of 34, a sample of 14 schools was needed in order to provide 13% of the eligible population (952/6962). A random sample of schools was drawn in each of the four strata. This corresponded to six schools from the Jerusalem Municipality, four PA, two Private and two UNRWA schools, with 28 classes

and 935 students.

Data collection

A structured self-administered anonymous questionnaire was given to the pupils based on the HBSC questionnaire (6),which in turn was based on the WHO format (7). It focused on dietary assessment (eating breakfast, drinking before leaving for school, consumption of fruit and vegetables, milk consumption), physical activity (mode of transport to and from school, days per week active in sport for at least one hour per day), physical inactivity (watching TV) and knowledge (recommended daily consumption of fruits and vegetables).

The class teacher supervised filling the questionnaire by reading out aloud each question and then asking for an immediate response. The main researcher (MH) was present during administration of the questionnaires to clarify questions if required.

Respondents were informed that answering was voluntary and that information would be treated confidentially.

The height and weight of each student were measured after they completed the questionnaire, Students' weights were measured in their lightweight clothes (schools' uniform with no jackets) and without shoes before 10 o'clock break according to a standard protocol and instrument. Care was taken to ensure that the measurements were done sensitively and separately in a private room with the presence of the class teacher's supervisor.

Mothers' level of education and occupation was based on the mothers' self reported questionnaire and school files of the children for missing data.

Measures

Eating breakfast was assessed based on the question "Do you always eat breakfast before you leave for school?" with response options (1) yes, every day, (2) yes, sometimes, (3) never. Whereas drinking in the morning: (1) yes, always, (2) yes, sometimes, (3) never. Next, both questions were categorized into Yes (yes, every day) or No (sometimes or never). Daily consumption and quantity of fruits and vegetables were calculated and converted to two categorized into: (1) physical activity >5 days a week; (2) \leq 5 days a week. BMI-for-age was computed for each child using the WHO software AnthroPlus 2007 program. This program deduced z-score and percentiles using the exact age in days (8). Overweight was determined if a child's z-score fell between \leq + 1SD and +2 SD (85th percentile). Obesity was determined if the child's z-score fell below minus 2 SD (3rd percentile). Mothers' education was divided into three categories; (1) less than secondary, (2) secondary, (3) diploma and higher. Employment was divided into two categories; (1) yes, (2) no. Crowding index (the ratio between number of residents at home and number of rooms) was used as a proxy for socio-economic status and divided into (1) less than one; (2) 1-2, (3) more than 2.

Statistical analysis

Data analysis was performed using SPSS version 20. Chi-square tests were used to calculate associations between categorical variables by school ownership, grade, sociodemographic/economic variables. A stepwise forward logistic regression model was built for identifying independent predictors of eating breakfast daily, eating the recommended quantity of fruits and vegetables, physical activity and overweight and obesity. The variables in the final model of the stepwise forward logistic regression were tested again by entering them into the logistic regression models.

Ethical considerations

Approval from the Israeli Ministry of Education, Palestinian Ministry of Education, UNRWA Office of Education Department and private school principals was obtained. The research program was approved by the Hebrew University of Jerusalem/Authority for Research Students Committee.

Results

Sample characteristics

All 14 selected schools agreed to participate in the study. Of the 935 eligible schoolchildren, 897 (95.9%) participated (49.9% children were from grade 4 and 50.1% were from grade 5). Non-response was due to absence from school on the day of data collection. Table 1 presents the socio-demographic characteristics of the study population by school ownership.

	School Type							
Variable	Municipality	PA	UNRWA	Private	Total			
	(n=400)	(n=236)	(n=136)	(n=125)	(n=897)			
Grade (%):								
4 th Grade	49.8	50.0	49.3	51.2	49.9			
5 th Grade	50.3	50.0	50.7	48.8	50.1			
Age:								
Mean	11.02	11.00	11.10	10.98	11.02			
SD	0.70	0.78	0.87	0.71	0.71			
Order in the family (%):								
1	19.2	19.1	16.9	29.6	20.6			
2-3	39.0	30.9	37.5	51.2	38.4			
4	15.6	16.1	15.4	9.6	15.2			
≥5	24.8	33.9	30.1	9.6	25.9			
Sibling (%):								
0-2	14.5	6.8	5.9	43.2	15.2			
3-4	44.8	42.4	38.2	46.4	43.4			
≥5	40.8	50.4	55.9	10.4	41.4			
Crowding index (%):								
<1	9.0	6.4	8.1	17.6	9.4			
1-2	54.5	66.1	51.5	62.4	58.3			
>2	36.5	27.1	40.4	20.0	32.3			
Religion (%):								
Muslim	100.0	100.0	100.0	59.2	94.3			
Christian	0.0	0.0	0.0	40.8	5.7			
Mother education (%):								
Less than secondary	45.6	49.0	52.7	7.1	42.2			
Secondary	40.0	34.3	36.4	38.1	37.7			
Diploma & higher	14.4	16.7	10.9	54.9	20.1			
Mother employment (%):								
Yes	16.6	15.9	14.5	33.9	18.5			
No	83.4	84.1	85.0	66.1	81.5			

Table 1. Socio-demographic characteristics of the study population by school ownership

The age of students ranged between 9-14 years (mean: 11.02, SD±0.71). About 94% were Muslims and 6% were Christians, all attending private schools. The mean family size was

7.1; Schoolchildren from Municipality, P.A and UNRWA had more siblings compared to those in Private schools. Schoolchildren from Municipality and UNRWA schools lived in higher crowding index (residents per room) compared to PA and Private Schools. About 81% of the mothers did not work and 20% had a diploma or higher education.

Dietary habits

The percent of schoolchildren who reported having breakfast was 36.6%. There was a significant difference between school ownership with UNRWA schools having the highest rate of daily breakfast consumption (42.6%), compared to Municipality, PA and Private (P=0.032) (Table 2). More Muslim schoolchildren (29.7%) consumed breakfast compared to Christian schoolchildren (25.5%) in Private schools.

Table 2. Dietary pattern, physical activity, knowledge perception, overweight and obesity (%)by school type and crowding index

		School	ownership	Crowding index			
BEHAVIOURAL CHARACTERISTICS	JM	PA	UNRWA	Private	<1	1-2	>2
	N=400	N=236	N=136	N=125	(n=84)	(n=522)	(n=290)
Dietary pattern							
Always eating breakfast	38.3	34.7	42.6	28.0^*	56.0	33.3	33.6 [†]
Always drinking in the morning	46.0	42.0	51.5	47.0	52.2	48.8	45.2
Always eating vegetable at 10 o'clock break	18.3	8.5	22.8	16.0 [‡]	23.8	15.7	14.5
Always eating fruits at 10 o'clock break	18.3	11.4	20.6	16.1	16.7	15.9	17.6
Eating \geq 5 serving of vegetables and fruits/day	35.8	22.1	14.0	27.2 [‡]	29.8	27.2	27.2
Eating vegetables once or more per day	21.3	27.5	13.2	23.2^{*}	26.2	21.5	21.4
Eating fruits once or more per day	23.3	19.6	16.9	23.2	29.8	22.2	17.0^{*}
When thirsty water is the most used drink	69.5	90.3	79.0	68.0^{\ddagger}	78.6	74.7	78.3
Drinking milk every day	43.3	40.7	27.2	52.0 [‡]	59.5	41.8	35.5 [‡]
Lunch is the main meal at home	74.2	77.5	61.0	77.6^{*}	76.2	73.9	72.3^{*}
Eating with family or at least one parents	79.5	77.0	77.2	72.8	77.4	78.1	76.6
Eating while watching TV	27.0	21.7	20.6	32.0 [‡]	28.6	24.9	25.3
Eating while using computer	5.3	1.70	8.1	4.80^{\dagger}	3.6	4.6	5.2
Eating when bored/angry/stressed/frustrated	6.5	4.2	4.4	1.6^{\dagger}	4.8	5.2	4.5
Physical activity pattern							
Walking to school in the morning	65.3	71.6	93.4	39.2 [‡]	57.1	64.4	76.2 [‡]
Walking back after school	73.3	76.3	97.1	40.0^{\ddagger}	61.9	70.3	80.7^\dagger
Physically active ≥ 5 days a week	16.8	13.6	8.1	16.0	20.2	16.5	9.30
Sedentary behaviours							
Using computer >4 hours	20.0	14.0	7.4	17.6^{\dagger}	22.6	14.9	16.2
TV viewing ≥4	33.0	36.0	38.2	38.0 [‡]	33.3	33.5	34.5
Knowledge							
Acknowledge importance of breakfast	91.7	94.5	94.0	94.4	94.0	93.7	92.0
Acknowledge importance of fruits & vegetables	97.7	97.0	95.6	100.0	96.4	98.1	96.9
Acknowledge importance of water	98.0	95.8	100.0	99.2 [*]	97.6	98.1	97.9
Know recommended serving vegetables/fruits	12.5	12.0	10.3	14.4	25.0	21.3	23.5
BMI							
Overweight	24.8	14.4	21.3	29.6	29.8	19.3	25.2
Obese	7.5	3.4	10.3	12.8‡	7.1	8.4	6.2
	-	-				-	

* P<0.05; * P<0.01; * P<0.001.

Eating breakfast daily was associated with the socio-economic status of the family, measured by crowding index. Those living in a house with fewer than one person per room had a 2.4-

fold increase in the likelihood of eating breakfast (OR=2.38, 95%CI=1.36-4.18), controlling for school type (logistic regression, Table 3). UNRWA schoolchildren were more likely to eat breakfast (OR=1.75, 95%CI=1.07-2.88) compared to other school types of ownership. If mothers always prepared breakfast for their daughters, there was a 4-fold increase in the likelihood of the child eating breakfast (OR=3.83, 95%CI=0.82-17.96), although this finding was not statistically significant. These three determinants contributed independently to having breakfast daily (logistic regression, Table 3). The mother's level of education and employment status, beliefs, and knowledge regarding the importance of breakfast meals and birth order were found to have no effect on eating daily breakfast. "Not feeling hungry" was the main reason for skipping breakfast (78.6%).

Variable	Number	OR	P-value	95%CI
Crowding index:			<0.001 (2) [†]	
<1	73	2.38	0.003	1.36-4.18
1-2	432	0.75	0.099	0.53-1.06
>2	230	1.00	-	reference
School ownership:			0.004 (3)	
JM	341	1.00	0.640	0.62-1.34
PA	193	0.91	0.030	1.07-2.88
UNRWA	86	1.75	0.018	0.34-0.90
Private	115	0.55	-	reference
Mother preparing breakfast to her daughter:			<0.001 (2)	
Never	13	1.00	-	reference
Sometimes	235	1.41	0.67	0.29-6.76
Always	487	3.83	0.089	0.82-17.96

Table 3. Determinants of eating breakfast – logistic regression models^{*}

* The last variables left of the stepwise forward logistic regression were entered into the logistic regression model.

[†]Overall p-value and degrees of freedom (in parentheses).

The most commonly consumed food for breakfast was za'ater and oil with bread. This choice varied widely between school ownership type (P<0.001), where UNRWA schoolchildren consumed the most (61.6%). Other relevant variables were Muslim religion (P<0.001) and mothers who had not attained secondary education (P<0.001).

The proportion of schoolchildren who reported drinking in the morning before leaving for school was 46.2%. This was not found to be associated with school ownership, grade, or with socio-economic variables.

About 28% of the schoolchildren reported consuming the recommended number of daily servings of fruits and vegetables (five servings a day), with a significant difference between school types of ownership (P<0.001) and the mother's level of education (P=0.01). Only 12.3% of schoolchildren reported the correct answer for the daily recommended consumption of fruits and vegetables. Children of mothers with a diploma or higher level of education had a higher proportion of consuming the recommended number of servings (47.9%). School type of ownership and the mother's level of education remained statistically significant in the final multilevel logistic regression model. Being in a JM school increased the probability of consuming the recommended quantity of vegetables and fruit by 1.55 times (OR=1.53, 95%CI=0.76-1.96). Having a mother with a diploma or higher education increased it by 1.8

times (OR=1.80, 95%CI=1.25-2.60). The mother's employment status, religion, and crowding index were found to have no effect.

School ownership had a significant effect (P<0.001) on daily milk consumption, with private schools having the highest consumption (52%). Another predictor was the crowding index, which was inversely associated (P<0.001).

Most of the schoolchildren had lunch as the main meal which they ate with at least one parent.

Physical activity

The majority of schoolchildren reported walking to and from the school (67.6% and 72.9%, respectively). There was a significant difference between school ownership type (Table2), with UNRWA schools having the highest level (93.4% and 97.1%, respectively, P<0.001).

The overall reported physical activity in schoolchildren showed that pupils were only slightly active in sport. About 14% of schoolchildren reported being active at least five days a week (Table 2). This proportion was significantly inversely associated with the crowding index (20.2%, 16.5%, and 16.5% for up to one, between 1-2, and more than two, respectively, P=0.006). A positive significant association was also found with mothers' level of education (12.9%, 13.4% and 21.5% for less than secondary, secondary and diploma or higher education, respectively, P=0.027). No other tested variables were associated with physical activity.

Sedentary behaviours

One-third of the students (33.9%) viewed TV for \geq 4 hours a day and this was significantly associated with the school ownership (P<0.001). The highest percentages reporting viewing television were found in UNRWA and Private Schools (38.2% and 38.0%, respectively). (Table 2). Sedentary behaviour was not associated with the crowding index, mothers' education or employment. No correlation was found between television viewing and being physically active.

Body weight

The overall prevalence of overweight and obesity was 22.2% and 7.6%, respectively. The difference between school ownership types was statistically significant (P<0.001), where the highest proportion was among Private schoolchildren (42.4%). More Christian schoolchildren in the private schools (47.1%) were overweight and obese compared to Muslim schoolchildren (39.2%). About 1% of schoolchildren were underweight, with highest rates among PA schoolchildren (3%) (Table 2). A significant higher prevalence of overweight and obesity was noticed with the first child in the family. The other independent determinants of overweight and obesity (logistic regression) were: watching TV more than four hours a day (OR=4.13, 95%CI=2.93-5.82); being physically inactive (less than five days a week) (OR=1.95, 95%CI=1.17-3.24) and always eating while watching TV (OR=3.42, 95%CI=2.27-5.13) (Table 4).

No association was found with crowding index, mothers' level of education or employment. About 75% of overweight/obese children considered their weight as normal, whereas 66% of those who perceived themselves as "high weight for their age" were actually overweight/obese children (data not shown).

Variable	Number	OR	P-value	95%CI
Family order:	1 (unit) (1	U	$0.003(3)^{\dagger}$	<i>ye n</i> er
	195	1.00	0.005 (5)	rafaranaa
1	185	1.00	-	reference
2-3	343	0.48	0.001	0.31-0.74
4	136	0.91	0.74	0.54-1.56
≥5	231	0.57	0.024	0.35-0.93
School ownership:			<0.001 (3)	
JM	399	1.00	-	reference
PA	235	0.38	< 0.001	0.24-0.59
UNRWA	136	0.90	0.660	0.56-1.45
Private	125	1.71	0.026	1.07-2.75
Physical activity:				
<5 days/week	761	1.95	0.010	1.17-3.24
≥5 days/week	135	1.00		Reference
TV viewing:				
≤4 hours/day	597	1.00	< 0.001	2.93-5.82
>4 hours/day	299	4.13		Reference
Eating while watching TV:			<0.001 (2)	
Never	315	1.00	-	reference
Several times a week	534	0.71	0.010	0.48-1.07
Every day	266	3.42	< 0.001	2.27-5.13

Table 4. Determ	inants of over	weight and	obesity _]	logistic r	egression	models
Table 4. Determ	manus or over	weight and	obcarty 1	logistic i	cgression	moucis

* Overweight and obesity were combined. The last variables left of the stepwise forward logistic regression were entered into the logistic regression model.

[†]Overall p-value and degrees of freedom (in parentheses).

Discussion

The aim of this study was to provide baseline information of schoolchildren living in East Jerusalem as the first stage of a randomized controlled intervention programme. The results showed that most children fail to meet the international dietary and physical activity recommendations. There was a significant independent difference between school ownership and socio-economic groups, measured by the crowding index, but no significant difference was observed between grades for all the studied variables.

Approximately one third (36.6%) of female schoolchildren ate breakfast before school. This finding is consistent with the finding of dietary habits among Palestinian adolescents where 34.7% ate breakfast (9). Most of the schoolchildren reported "not feeling hungry" as the main reason for skipping breakfast, which is a growing concern worldwide, especially among females (10). In private schools, although the pupils come from higher social classes and are assumed to be in a better position to provide good food for their children, the level of skipping breakfast was the highest.

Za'ater and olive oil with bread is the most commonly consumed breakfast meal. This could be because of its prominent role in cultural heritage, due to the widely held belief that za'ater helps to keep mind alert especially prior to exams or school. Olive oil is known to be a main component of the Mediterranean diet, a rich source of monounsaturated fatty acids and an antioxidant agent, which has several beneficial biological functions for health (11). Studies also have proved that olive oil intake is associated with the reduced risk of cardiovascular disease and mortality in individuals at high risk (12).

Drinking milk was reported only by 40% of schoolchildren. Adequate calcium intake for children is essential for the development of bone mass and mineral density (13) and in the maintenance of health and prevention of chronic diseases (14). Strategies to encourage milk consumption by schoolchildren need special attention.

The reported fruit and vegetable intake was lower in our study than that found in the 2004 Palestinian HBSC survey (6). This could be due to rapid and progressive shifting among Palestinian adults to Western-style food patterns (9). Less than one third of schoolchildren reached the recommended daily dietary intake of five servings of fruits and vegetables (1). This means that these children may fail to obtain appropriate nutritional intakes of vitamins, mineral and fiber to protect them from diet-related chronic diseases (15), including overweight and obesity (16,17), despite the fact that Palestinian markets have a wide variety of vegetables and fruits at low prices. Therefore, the need to promote the consumption of more vegetables and fruits is viable and a public health priority.

Regular physical activity plays an important role in improving the quality of life. Although more than two thirds of schoolchildren reported walking in the morning to and from school, respondents did not engage in regular sport and physical activity in leisure time. Therefore, they do not achieve the recommended level of being one hour or more physically active per day (18). In Arab countries, including Palestine, women are prohibited by the socio-cultural norms from participation in outdoor sports activities. Therefore, there is a need to develop good physical education practices (e.g. skipping, which can be performed at home) to increase physical activities among girls.

In parallel, there is an increase in sedentary behaviours among schoolchildren, which is due mainly to time spent watching television, as in many other countries (15). This is because television is so accessible and available. Current recommendations are that children should spend no more than two hours watching television a day (19).

The problem of obesity

The prevalence of overweight and obesity is high among Palestinian schoolchildren, associated with lack of physical activity and increased sedentary behaviours. Childhood obesity is an increasingly worldwide problem. This study found that the prevalence of overweight is 22.2% and obesity is 7.6% which is higher than adolescents in the Gaza strip (17.0% and 5.45%, respectively) (20), Ramallah (18.9% and 3.3%, respectively), Hebron (14.9% and 2.0%, respectively) (9), but slightly lower than a previous study conducted in East Jerusalem in 2002 (24.3% and 9.9%, respectively) (21).

The overweight/obese schoolchildren were found more likely to watch television for more than four hours. This is in accordance with several cross-sectional and longitudinal studies showing very strong associations between television viewing and childhood obesity (22,23). Significant positive associations were found between eating while watching television and the risk of becoming overweight/obese. Watching television for many hours may lead to a snacking while watching (24), which is independently associated with overweight/obesity among children (25).

Schoolchildren in private schools have higher standards of living. Several studies have demonstrated that socioeconomic status is directly related to childhood obesity in developing countries (26), which is higher in urban areas (27,28). The discussed culture restrictions placed on girls which results in their staying at home with easy access to food, contribute to their increased risk of overweight and obesity. Evidence suggests that measures should be introduced as early as possible, so that healthy lifestyle habits are learnt from childhood (29).

Study limitations

The study involved a cross-sectional design, and therefore cannot address causality. Another limitation is using a self-reported questionnaire from schoolchildren in grades 4 and 5 which could have influenced its validity and reliability. However, studies show that results from self-administered questionnaires tend to minimize social desirability bias compared to interviewer-administered questionnaires (30).

Conclusion

This study shows that Palestinian girls miss breakfast, eat less fruits and vegetables than the recommended requirements, and have sedentary behaviours, which is associated with high prevalence of overweight and obesity. There is a need for developing effective intervention programmes to promote healthy eating and physical activity among Palestinian schoolchildren.

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ORIGINAL RESEARCH

An educational initiative for Mexican school-aged children to promote the consumption of fruit, vegetables and physical activity

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Abstract

Aim: To present the results of a community initiative focused on strengthening physical activity and the consumption of fruits, vegetables and natural water while discouraging the use of highly energetic food and sugary drinks in public schools of Morelos.

Methods: A quasi-experimental study with an educational initiative focused on the school community of two primary schools and two junior high schools. Pre- and-post initiative measurements were made. The study took place in the municipality of Yautepec, Morelos, Mexico, in a rural area and an urban area, from August 2010 to July 2011.

Results: Water consumption among school-aged children increased from 15.1% to 20.1% and soda consumption decreased from 21.4% to 13.2%. A slight increase in the consumption of fruits and vegetables was also measured (oranges, jicamas, bananas, tomatoes, prickly pear pads, lettuces), that are accessible in the region. It was found that the supply of fresh food is limited and that high energy density foods have an oversupply in both study areas. Physical activity increased with actions such as football and dancing, in accordance with the baseline measurement. No changes were observed in the nutritional condition of school-aged children (n=150; 13.3% with overweight and 7.3% with emaciation), or in adults who presented a body mass index higher than normal, 60.2% to 88.4%.

Conclusion: In addition to educational activities, schools need to implement strategies to improve the access and availability of fresh foods while limiting the access of high energy-density foods.

Keywords: diet, educational initiative, Mexico, nutritional condition, school-aged children.

Conflicts of interest: None.

Introduction

Currently, the number of Mexican children and adolescents with overweight and obesity (O/O) is a public health problem (1), which has increased in school-aged children aged from 5 to 11 years. According to The National Nutrition Survey (ENN in Spanish) in 1999, the increase was of 19.5%. The National Survey of Health and Nutrition (ENSANUT in Spanish) in 2006 reached 26%, and the ENSANUT 2012 went up to 34.4%, representing an increase of over 80% (1-3).

The "Health in the World 2002" report of the World Health Organization (WHO), has pointed out health risks in different continents. In Latin America, addictions, blood pressure, low weight, together with overweight and obesity, represent one sixth of the morbidity burden. In this report, different cost-effective actions are mentioned to reduce the risks, such as decreasing salt and saturated fats intake to diminish the risks associated with cardiovascular diseases. It also states that one of the priority actions is to promote healthy environments for children (4).

Strategies for healthy communities and schools consider that cities, towns and schools are the most adequate spaces to promote healthy lifestyles for the entire population and specifically for school-aged children. Since children and young people are in a formative stage of life, schools become an ideal place for educational initiatives, so that they can incorporate knowledge, skills and health practices that not only circumvent risk behaviours, but improve health (5).

Various studies report educational initiatives aimed at school-aged children in their educational atmosphere. Some of these studies focus on increasing the knowledge of school-aged children in relation to healthy food (6,7). There are also researches about school-aged children's food intake preferences, which indicate that vegetables are not the food of their choice (8). Other initiatives are aimed at increasing school-aged children consumption of fruits, vegetables and reduce the consumption of beverages and high-energy density products and increase physical activity (9-13). Some authors mention that in the educational initiatives they have carried out, they focus on the entire school community (school-aged children, parents and teachers) in order to obtain better results and because parents and teachers help shape school-aged children behaviour (9-11).

The objective of this manuscript is to present the results of an educational initiative focused on strengthening physical activity and the consumption of fruits, vegetables and natural water, while discouraging the intake of highly energetic food and sugary drinks in the school community of public schools in Morelos, Mexico.

Methods

A quasi-experimental study through an educational initiative focused on the school community of elementary and junior high schools was implemented. Previous and post-initiative measurements were made. The study was conducted in the municipality of Yautepec, Morelos, in a rural area and an urban area, from August 2010 to July 2011. We employed a convenience sampling (n=150 students and n=178 adults) across rural and urban areas, and applied a pre-post test design based on quantitative and qualitative data. The educational initiative was carried out with students of the 4th, 5th and 6th grades of elementary school, and the 1st, 2nd and 3rd grades of junior high school located within the localities. In addition to school-aged children, teachers, managers and administrative staff of the schools,

as well as parents were included in order to strengthen the changes proposed for school-aged children and make them sustainable (9-11).

Tools and techniques for data collection

School-aged children

The following measurements were taken at the beginning and at the end of the study: weight and height using a standardized anthropometric methodology (14). The weight was measured with an electronic scale (Tanita brand, model 1583, Tokyo, Japan) with capacity of 140 kg and accuracy of 100g. Height was measured using a wooden stadiometer with capacity of 2 meters and precision of 1 mm. The ages and dates of birth were provided by the school-aged children and corroborated by their teachers or mothers. Anthropometric measurements were taken by the research team, which was previously trained according to standard techniques (15). The anthropometric indicators used to assess the nutritional condition of school-aged children were weight/height and height/age. Length and weight data were transformed into *z*scores by using the WHO/ANTHROPLUS (16). A cut-off of -2.0 SD was used for classifying children as stunted based on individual height-for-age z-scores. A cut-off of +2 SD was used to classify children as overweight or obese, based on individual weight-forheight- age-z-scores (BMI)-for-age, according to international standards, sex- and agespecific.

Questionnaires applied at the beginning and at the end of the study included (17): i) *dietary information:* Food Frequency Questionnaire (FFQ). This questionnaire was taken from the school-aged children section of the 2006 National Health and Nutrition Survey, which is validated and was applied in all the regions of Mexico. The information was obtained using a 7-day semi-quantitative FFQ. For each food item, the number of days of intake per week, times-a-day, portion size (very small, small, medium, large, and very large), and number of portions consumed were asked. The food groups were as follows: milk and dairy, fruits, vegetables, sugar sweetened beverages and sugar-free beverages, water and sweets and candy, as well as consumption of fruits and vegetables; ii) *physical activity* questionnaire for school-aged children.

Adults

Initially, measurements of weight, height and waist and hip circumferences were made. The applied technique was in agreement with Lohman and Martorell and standardization was according to Habicht (6,7). Weight and height were measured with the same instruments used with school-aged children. Adults' waist was measured at the midpoint between the lower rib and upper margin of the iliac crest; it was taken with a rigid tape brand "Seca" with capacity of 2 meters and precision of 1mm. Hip circumference was measured horizontally at the widest portion of the buttocks. The indicators used to assess the nutritional status of adults were the Body Mass Index (BMI) and waist-to-hip ratio (WHR) circumference index. The classification used to categorize the BMI was taken from the WHO standards (18), which identifies four categories: malnutrition (<18.5kg/m²) normal BMI (18.5 to 24.9kg/m²), overweight (25.0 to 29.9 kg/m²), and obesity (\geq 30.0kg/m²). The classification of the International Diabetes Federation was used as a reference for the waist circumferences, which defines as cut-off waist circumference of >80 cm for women and >90 cm for men (19). WHR was calculated as waist circumference divided by the hip circumference, and a WHR \geq 0.90 in men or a WHR \geq 0.85 in women was classified as that representing abdominal obesity (20).

Schools and communities

In schools and communities there were carried out: i) observation guides for the ethnographic record; ii) guided focus-group interviews, and; iii) community mapping.

Description of educational activities

The educational initiative was based on the Paulo Freire's empowerment education theory, which departs of the knowledge, practices and circumstances of the population involved, and secondly is enriched with theory (new knowledge), so that people can make changes in their environment later on (21-23).

During the educational sessions with school-aged children, participatory and playful techniques were used to promote collective reflection. The sessions were coordinated by facilitators previously trained and lasted 50 minutes. Overall, 15 sessions were held once a week, in each of the school grades (4th, 5th and 6th grades of elementary school and 1st, 2nd and 3rd grades of junior high school). The sessions were divided into two axes: diet and physical activity.

Under the first axis, the following topics were addressed: *a*) the healthy eating plate (24); *b*) the importance of eating fresh fruits and vegetables; *c*) drinking natural water; *d*) the damage caused to the human body by high energy density foods and sugary drinks; *e*) personal commitments to increase the intake of fruits, vegetables and natural water, and; *f*) actions within their family, school and community for healthy eating.

For the second axis, the following topics were addressed: a) the importance of physical activity; b) the damage caused when being sedentary; c) personal commitments to carry out physical activity, and; d) actions within their family, school and community to perform physical activity.

School-aged children carried out a series of activities (mural newspaper, school radio, health fairs, community tours, poster competitions, murals, sports tournaments and races within the school and their community) to spread their knowledge and make practical actions, both in their school and in their community.

At the end of the educational sessions, a school committee was established in each school in order to address nutrition and physical activity issues. It also carried out advocacy actions with the schools' directors and local authorities to improve the type of food and beverages that are offered within the educational institutions and the community, as well as various other actions to promote physical activity. Workshops with parents were conducted in eight weekly sessions (two hours per week). With teachers and school staff, the workshops were held in four monthly sessions, where each session lasted five hours long. At the end of each workshop, the groups of parents and teachers made commitments to carry out actions aimed at improving diet and physical activity in various fields such as: personal, family, school and community.

Data analysis

Quantitative component: for the anthropometric analysis, anthropometric indexes based on the measurements of weight, height and age were used. The indicator used for children, adolescents and adults was the BMI. For the classification of children in various categories, BMI distributions were used as well as the criteria proposed by the International Obesity Task Force (IOTF). This system identifies specific BMI breakpoints for each age and gender. The Anthroplus program and the Stata v13 statistical package were used. Univariate and bivariate analyses were obtained from the questionnaires' data. Measures of central tendency were used for numerical variables, whereas frequency distributions were used for categorical variables. Percentages were analyzed and described at the beginning and at the end of the

initiative. The following statistical programs were used for the analysis: Stata v13, Excel 2007 and WinEpi.

Qualitative component: systematization of community mapping, ethnographic records and focus groups.

Results

The analysis was performed with 159 school-aged children with complete questionnaire data: food intake frequency, anthropometry, socio-demographic characteristics, and physical activity (pre- and post-intervention). Mean age was 12.3 ± 1.9 years. Anthropometric data were presented with 150 school-aged children. There were no substantial changes in the nutritional condition (Table 1).

		Ru	Urban		
Parameter	Total	Men	Women	Men	Women
	(n=150)	(n=17)	(n=19)	(n=59)	(n=55)
Overweight					
Pre	13.3	17.7	21.1	6.8	16.4
Post	13.3	17.7	15.8	11.9	12.7
Obesity					
Pre	1.3	5.9	0.0	1.7	0.0
Post	2.0	5.9	0.0	1.7	1.8
Emaciation					
Pre	7.3	11.8	15.8	3.4	7.3
Post	7.3	11.8	15.8	3.4	7.3

Table 1. School-aged children anthropometry: Body Mass Index (BMI) by community
according to gender (percentages)

The mean BMI in the pre-intervention phase was 19.4 ± 3.8 , whereas in the post-intervention phase it was 20.5 ± 4.0 . It was found that most of the adult population was above the normal range of the BMI. In the rural community (n=121), it was found that BMI was between 60.2% (community groups) and 85% (parents) above the cut-off that is considered adequate. In the urban community (n=77), BMI ranged from 69.8% (community groups) and 91.7% (parents). The results for teachers in rural schools were: BMI above normal in 88% of them. In urban schools it was 57.1% above the normal BMI.

In 87% of rural schools parents, a WHR \geq 0.85 was found and 90.5% of them had a >80 cm waist circumference. Parents in urban areas showed 83.3% WHR \geq 0.85 and a >80 cm waist circumference (data not shown).

Consumption changes of drinks, fruits, vegetables and highly energetic food

Natural water consumption increased (not significantly) in school-aged children (from 15.1% to 20.1%) in a 2-4 day range per week. Soda consumption significantly decreased in school-aged children who consumed it daily (from 21.4% to 13.2%) and significantly increased in those who never consumed it or did it once a week (from 8.2% to 9.4% for the first case and from 30.8% to 42.2% for the second case) (Table 2).

The consumption for at least once a week of some fruits and vegetables, increased regarding products that are common in the area, or inexpensive in certain periods of the year (jicama, apples, pineapples, lettuces, prickly pear pads, cucumbers, squashes and chayote). The intake of oranges, mangos and melons increased from once a week to 2-4 times per week. There was no increase in the consumption of broccoli, cauliflower, cabbage or green beans (Figures 1 and 2). No significant gender differences were found in the consumption analysis of water, soda, fruits and vegetables.

	Τα	Total		Rural		ban
Type of beverage	Pre	Post	Pre	Post	Pre	Post
	(n=	159)	(n=	:38)	(n=	121)
Natural water consumption per	week					
Never	3.8	0.6	7.9	0.0	2.4	0.8
1 day	13.8	10.7	21.1	7.9	11.6	11.6
From 2 to 4 days	15.1	20.1	7.9	29.0	17.4	17.4
From 5 to 6 days	15.1	15.7	7.9	18.4	17.4	14.9
7 days	50.9	51.0	52.6	42.1	50.4	53.7
Did not answer	1.3	1.9	2.6	2.6	0.8	1.6
Soda consumption per week						
Never	8.2	9.4	2.6	10.5	9.9	9.1
1 day	30.8	42.2	42.1	42.1	27.3	42.1
From 2 to 4 days	30.8	23.9	34.2	34.2	29.8	20.7
From 5 to 6 days	8.8	11.3	5.3	7.9	9.9	12.4
7 days	21.4	13.2	15.8	5.3	23.1	15.7

Table 2. Beverages' consumption of school-aged children per community according to intervention phase (percentages)

The frequency of fried food consumption decreased slightly (81.2% vs. 79.3%), as well as the intake of industrial pastries.

Figure 1. School-aged children's fruit consumption percentage per week days (n=159)



In schools, teachers promoted the accessibility of natural water for school-aged children, and also made modifications (increased the consumption of fresh food and decreased the intake of high energy density food) in the type of food offered to school-aged children.

Focus groups with school-aged children reported that they increased natural water and fruits intake. Simultaneously, they pointed out that they decreased their sugary drinks and junk food intake.



Figure 2. School-aged children' vegetables consumption percentage per week days (n=159)

In addition, drinking natural water sweetened with fruits and the absence of soft drinks was observed in the ethnographic record of the rural community:

"According to what was taught, did you do any changes?"

-"I drink more water and eat more fruits".

-"We hardly eat junk food now".

-"*I barely use Valentina sauce and I add less sugar to my coffee or tea*" (junior high school and rural elementary school focus group: 33-44).

Differences were observed in focus groups with teachers, who reported positive changes for the urban elementary school and the rural junior high school:

- "Did you notice any changes in the children?"

-"No doubt there were changes in the children and the school in general. Although, as you just said, only 4th, 5th and 6th graders participated in the educational activity, and now the children who were in 4th grade are in 6th grade. There were changes in the school: we no longer sell candy or soft drinks. There has been a change in the food that the school offers to students because of the advices and information that you gave us at the beginning of this project, along with the directions that have been implemented by the Basic Education Institute of the State of Morelos" (urban elementary school teachers' focus group).

In community mapping exercises of all groups, it was identified that there is a limited offer of fresh food, fruits and vegetables in both communities, while there is an oversupply of high energy density food and sugary drinks.

Physical activity and sedentary lifestyle

The calculation results of the metabolic rate measurement units (MET's) of the students were as follows: mild MET: mean (SD)=17.8 \pm 13.7, corresponding to cleaning, games, board games, chats, music, reading and working; moderate MET: 18.2 \pm 20.2 corresponding to games or sports with a moderate wear out (skating, gym, swimming, riding bikes or motorcycles); vigorous MET: 64.4 \pm 48.1 including high physical performance activities (soccer, basketball, dancing, running, tennis, and the like). Weekly hours dedicated to each of the activities were as follows: mild activities: mean (SD): 6.3 \pm 5.2 hours; moderate activities: 3.96 \pm 5.1 hours; vigorous activities: 8.5 \pm 7.1.

There was a significant increase in the school-aged children's physical activity like playing soccer (14% vs. 27%), and dancing (3% vs. 7%), among other activities, regarding the baseline.

Sedentary activities decreased: the percentage of students who did not watch movies increased (from 23.9% to 30.8%), or played videogames (from 40.9% to 44.0%), and the hours per week children used to watch movies decreased from 6 to 7 hours per week (from 3.8% to 0.6%).

Discussion

This study fostered changes in the eating habits of school-aged children, drinking natural water and eating more fruits and vegetables, while diminishing sedentary activities from the actions taken by the educational initiative.

There were no significant changes between the two anthropometric measurements carried out at the beginning and at the end of the initiative, which happens to be consistent with a study carried out with schoolchildren in Hawaii, who showed no significant changes between the measurements of BMI (25). Bayer et al. have reported similar results in a longitudinal study

in which no significant changes were obtained in the BMI (26). In a literature review of research carried out in Brazil, it was reported that there was an increase in the level of knowledge and food choices in school-aged children, but there were no changes in the nutritional status (27).

It was found that parents and teachers have high percentages of O/O, similar to the percentage reported by ENSANUT in 2012. This aspect is relevant since it points out that one of the factors associated with school-aged children O/O is the high BMI of their parents (28). Due to the above, it is important to incorporate parents and teachers into educational initiatives aimed at school-aged children so that dietary changes can be sustainable. In fact, the incorporation of parents and teachers has been reported in several studies (9-11), and in a study carried out in Mexico, the integration of parents and teachers was recommended since the beginning of the study in order to obtain better results (29).

The post educational initiative data showed an increase in water consumption and the elimination of sugary drinks at school, which is consistent with the findings of James et al. (30), who reported an increase in water consumption and a reduction of sugary drinks.

Other studies have reported an increase in healthy eating knowledge but without showing any changes in the nutritional condition, which is similar to the results of this research (6,31), but differs in that school-aged children made changes in their eating habits with the intake of fruits, vegetables and natural water, which was the main objective of the educational initiative. The results obtained in our study are similar to those reported in other studies (9,11-13).

Changes in the nutritional condition of school-aged children require the link between the educational initiative and structural social actions such as public policies addressing the type of food that is sold at schools and community environments, the production and manufacture of high-energy food and the strict regulations on food advertising aimed at this population. Wijesinha-Bettoni et al. have reported that, in Mexico, educational and health authorities do not have strategies or actions to provide vegetables and fruits to school-age children in food programs carried out in schools (32).

The information gathered from the teachers' focus groups showed that they appreciated the changes in school-aged children involved with the educational initiative, as well as their commitment and concern for school's diet, which is similar to what Schetzina et al. have previously reported (33).

Sedentary activities dropped after the initiative, which coincides with Veugelers et al. (34), and Lawlor et al. (11), who reported similar results in their studies.

The limitations of this study were: the educational initiative was targeted for the 4th, 5th and 6th graders; the implementation time was short and did not include another school for comparison. Other limitations of this study are related to the context of schools and communities, since the supply of fruits and vegetables is low in contrast to the oversupply of products and drinks of high energy density, and there are no spaces to perform physical activity. Due to the size of the population included in the study, the results cannot be extrapolated to other regions of the country.

Conclusions

This study shows that, although moderate, it is possible to achieve a change in behaviour with a specific educational initiative. This study should be expanded to increase the number of

educational sessions with school-aged children and with all members of the school community, to strengthen scientific evidence with diet and physical activity subjects that must be part of the school curriculum, to make progress on the health of this population group.

Educational activities that modify school-age children's behaviours are not enough for reducing overweight and obesity. The implementation of diverse and simultaneous actions is needed, such as an increase in the supply access and availability of fresh and healthy foods. This is why the promotion of policies and regulations regarding the type of food and diet at schools and communities is essential.

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ORIGINAL RESEARCH

Trajectories of life satisfaction during one-year period among university students: Relations with measures of achievement strategies and perception of criteria for adulthood

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Abstract

Aim: The aim of this study was to examine how university students' achievement strategies in an academic context and perceptions of criteria for adulthood relate to life satisfaction trajectories across one year.

Methods: A convenience sample of 143 young adults 18-28 years (mean age: 20.9 ± 2.7 years; 109 females and 34 males) attending the University of Turin in northwest Italy completed questionnaires at three points with a six-month interval between each measurement. Latent Growth Curve Modelling and Latent Class Growth Analysis were used to assess longitudinal changes in life satisfaction and the related heterogeneity within the current sample.

Results: Three trajectories of life satisfaction emerged: high stable (37%), moderate decreasing (57%), and low stable (6%). At every time point high success expectations were related to a high stable life satisfaction trajectory. In turn, those adopting achievement avoidance strategies were more likely to have low-stable or moderately decreasing life satisfaction trajectories. The perception of the criteria deemed important to be defined as adults did not change across time points or across life satisfaction trajectories' groups.

Conclusion: These findings suggest that self-reported measures of achievement strategies among university students relate longitudinally to life satisfaction levels. Positive and optimistic dimensions of personal striving may be protective factors against the risk of decrease of life satisfaction among university students.

Keywords: achievement strategies, criteria for adulthood, developmental trajectories, life satisfaction, person-oriented approach.

Conflicts of interest: None.

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Introduction

According to Diener, Emmons, Larsen, and Griffin (1) life satisfaction (LS) is defined as an individual's overall appraisals of the quality of his or her life. In the social and psychological sciences this construct has become a key variable for analyzing individuals overall subjective well-being (2). Longitudinal studies have shown that after adolescence the majority of people experience stability in LS over long periods of times (3). However, depending on the length of time, one may observe short-, intermediate- and long-term influences on LS (4). Indeed, in the field of life-span research, the development of LS over time has become a very important baseline through which more variegated trajectories of individual development are observed (5). Especially among older cohorts (i.e., aged 18 and above), given the relative stable differences in LS between observed latent growth groups in comparison with the more turbulent adolescence years, many have adopted a person-oriented approach (6,7) to describe which other characteristics unite individuals of a certain developmental trajectory of LS. For example, Ranta, Chow, and Salmela-Aro (8) have associated trajectories of LS among young adults to their self-perceived financial situation, concluding that positive LS trajectories relate to being in a positive self-perceived financial situation. Röcke and Lachman (3) observed how to maintain stable trajectories of positive LS individuals need intact social relations as well as a high sense of control. In addition, Salmela-Aro and Tuominen-Soini (9) and Salmela-Aro and Tynkkynen (7) found that education achievement during and after secondary education positively correlated with high stable LS.

Emerging adulthood research proposes that the growing acquisition of maturity regarding adulthood-related duties and roles such as the commitment to life-long relationships or the importance attributed to forming a family are parallel to a stable LS path (10). In general, in the age range 18-30 years, perceiving oneself as an adult correlates to higher levels of LS and positive affect (11). Such findings contributed to give credit to the theoretical assumption stating that among young adults the increasing acquisition of an adult identity and the endorsement of adulthood-related criteria are concurrent factors in determining positive outcomes at the individual level, as for example higher LS. At the same time, if we adopt a person-oriented approach to look at this issue, we might expect that others characteristics may define those young adults proceeding through transitions while exhibiting a mature adult identity and high LS. In an academic context, for example, the kinds of cognitive and attributional strategies individuals deploy provide a basis for their success in various situations (12), as well as for the positive development of their well-being (13). Accordingly, in the present study we aimed at integrating the research literature on the relationship between the attainment of adult maturity and well-being with indicators of individual achievement strategies typical of life-span studies. More specifically, through a longitudinal approach, we questioned whether university students' LS changes during a one year period and what kind of trajectories can be found. Secondly, we examined young adults' perception of the criteria deemed important for adulthood and achievement strategies in the academic context in relation to LS trajectories.

The Italian context

University students account for a good proportion of the population aged 18-30 years in Italy, although Italian national statistics show a steady decrease in the overall university enrolment rates (14). Moreover, Italy reports one of the highest rates of university withdrawals among OECD members (15), with some regional differences between north and south (with dropout rates being higher in the latter), but overall widespread across the country (16). Despite the considerable high social cost related to dropout rates during tertiary education and the interrelation between motivation, education attainment and well-being among young adults

(17), very few studies have examined from a longitudinal and psychological perspective how self-reported measures of well-being such as LS interact with motivational strategies in an academic context in Italy (18). Accordingly, the present study aimed to test the specific research hypothesis that positive motivational attitudes in an academic context relate to higher LS levels among young adults attending university and, possibly, to a higher acquisition of adulthood maturity.

Methods

Sample

The empirical data of the present study were collected through the submission at three time points of an online questionnaire to a convenience sample of university students in the northwestern Italian city of Turin. Participants were reached in various university settings of the Faculty of Psychology, including libraries, canteens, cafeterias and public leisure spaces. The criteria to take part in the study were being enrolled as a full-time university student, being Italian and aged between 18 to 30 years. Students provided their email contacts if they were interested in taking part in the study. Then, they received a link to the online questionnaire through email. At Time 1, 645 individuals (76% females; mean age: 22.1 years) completed the questionnaire. At Time 2, six months afterwards, 252 individuals (79% females; mean age: 22.3 years) completed again the same questionnaire. Finally, at Time 3, twelve months after Time 1, 150 individuals (77% females; mean age: 22.1 years) filled in the questionnaire. The very high dropping rate from Time 1 to Time 2 and Time 3 can be explained by the total absence of an incentive for the participants to take part in the study (e.g., money, or school credits). Therefore, it is reasonable to imagine that only those personally interested in the topic or in the research itself were willing to fill in the questionnaire. In fact, while the dropping rate from Time 1 to Time 2 was equal to 61%, from Time 2 to Time 3 it was equal to 41% (of the total number of participants at Time 2), indicating a significant decline in the number of people dropping out. This may be explained by the fact that at Time 2 the proportion of participants interested in the research was higher than at Time 1. Moreover, only the participants who filled in the questionnaire at Time 2 were contacted again at Time 3.

Measures

- Life satisfaction

LS was measured using the Satisfaction with Life Scale (1). Participants rated five items (for example, "I am satisfied with my life", and "The conditions of my life are excellent") on a 7-point Likert-type scale ranging from 1 (totally disagree) to 7 (totally agree). A mean score was calculated for all items. Cronbach's alphas ranged from 0.69 to 0.79 across the three measurement points, indicating a good level of internal consistency with respect to the LS variable.

- Achievement strategies

Four different types of achievement strategies in an academic context were assessed: success expectation, (Cronbach's alphas ranged from 0.68 to 0.73), measuring the extent to which people expect success and are not anxious about the possibility of failure (4 items, e.g., "When I get ready to start a task, I am usually certain that I will succeed in it"); task-irrelevant behaviour (α from 0.76 to 0.82), measuring the extent to which people tend to behave in a social situation in ways which prevent rather than promote involvement (7 items, e.g., "What often occurs is that I find something else to do when I have a difficult task in front of me"); seeking social support (α from 0.73 to 0.77) measuring the extent to which

people tend to seek social support from other people (6 items, e.g., "It is not worth complaining to others about your worries"); and avoidance (α from 0.77 to 0.76), measuring the extent to which people have a tendency to avoid social situations and feel anxious and uncomfortable in them (6 items, e.g., "I often feel uncomfortable in a large group of people"). The scales belong to the Strategy and Attribution Questionnaire (19).

- Criteria for adulthood

Participants rated the importance of 36 criteria for adulthood (20) on their degree of importance on a scale of 1 (not at all important) through 4 (very important). Based on previous research (10,20), these criteria were grouped into six categories: *interdependence* (α from 0.60 to 0.65; 5 items; e.g., "Committed to long-term love relationship"), *role transitions* (α from 0.84 to 0.86; 6 items; e.g., "Have at least one child"), *norm compliance* (α from 0.77 to 0.82; 8 items; e.g., "Avoid becoming drunk"), *age/biological transitions* (α from 0.70 to 0.74; 4 items; e.g., "Grow to full height"), *legal transitions*(α from 0.81 to 0.86; 5 items; e.g., "Have obtained license and can drive an automobile") and *family capacities* (α from 0.75 to 0.77; 8 items; e.g., "Become capable of caring for children").

Analysis

The analyses followed three steps. First, to examine how LS changes during a one-year period, Latent Growth Curve Modelling (LGCM) (21) estimated the average initial level and slope of LS among the participants. The following indicators assessed the goodness-of-fit of the estimated LGCM: γ^2 -test, the Comparative Fit Index (CFI) with a cut-off value of ≥ 0.95 , and the Standardized Root Mean Square Residual (SRMR) with a cut-off value of≤0 .09. Subsequently, to evidence whether different types of LS trajectories emerge from the total sample, the analyses of this longitudinal data set extended into Latent Class Growth Analysis (LCGA) (22). LCGA examines unobserved heterogeneity in the development of an outcome over time, by identifying homogeneous subpopulations that differ with respect to their developmental trajectories within the larger heterogeneous population. LCGA is exploratory by nature, which means that there are no specific a priori assumptions regarding the exact number of latent classes. When testing LCGA models, different class solutions are specified. The best-fitting model is then selected based on the goodness-of-fit indices and theoretical considerations. Here, the following goodness-of-fit indices evaluated the models: Akaise's Information Criteria (AIC), Bayesian Information Criteria (BIC) and Adjusted Bayesian Information Criteria (aBic) of the alternative models. Entropy values were also examined, with values close to 1 indicating a clear classification. Following Marsh, Lüdtke, Trautwein, and Morin (18), groups of $\geq 5\%$ of the sample were considered the smallest to give an acceptable solution.

Practical usefulness, theoretical justification and interpretability of the latent group solutions were also taken into consideration (23). The analyses were controlled for age, gender and self-perceived socio-economic status (participants were asked how they would rate their actual socio-economical position on a scale from $1 - not \ good \ at \ all \ to \ 5 - very \ good$).

Both LGCM and LCGA analyses were conducted with the Mplus 5.0 statistical software program.

At last, One-Way Analysis of Variance (ANOVA) examined if the LS trajectory groups differed in terms of their achievement strategies and importance attributed to criteria for adulthood. Post-hoc comparisons using the Games-Howell test examined differences between groups.

Results

Development of life satisfaction

The specified LGCM with a linear slope for LS change across the three time points fits the data well, $\chi^2=3.99(1)$, p<0.05; CFI=0.98; SRMR=0.04. In particular, while the intercept indicating the initial level of LS was statistically significant, the linear slope was not (Intercept M= 3.02, *SE*=0.05, p<0.001; Slope M = -0.11, *SE*=0.02, p>0.05). In addition, while the variance of the intercept was significant the variance of the slope was not (Intercept variance =0.15, p<0.001; Slope variance 0.01, p>0.05). Together these results indicate that first, on average, there was no significant longitudinal change in LS across the three measurement points, and second, that there was a significant individual variance in the initial levels but not in the rate of change. Thus, the significant heterogeneity among individuals was analyzed further adopting the person-oriented approach of Latent Class Growth Models. More specifically, these results suggest that, rather than investigating different rates of longitudinal change in LS within the overall sample, it would be more plausible to observe latent groups exhibiting stable trajectories of LS across time while being concurrently significantly different between each-other from baseline to the last follow-up.

Identifying life satisfaction trajectories

LCGA identified three sub-groups of individuals according to their levels of LS across measurement points. Table 1 shows the fit indices and class frequencies for different latent class growth solutions. The four-class solution was unacceptable given the presence of a group with zero individuals. The three-class solution was thus the most optimal given the numerical balance of the observed groups and its higher entropy value with respect to the two-class solution (i.e., values closed to zero are indicative of better fit). Figure 1 displays the estimated growth curves for the different latent trajectories of LS, whereas Table 1 reports LCGM results.



Figure 1. Life satisfaction trajectories (mean values in a scale 1-7)

Table 1. Fit indices and class frequencies based on estimated posterior probabilities for latent class growth models of life satisfaction with different numbers of latent trajectory groups

Number of groups	BIC	aBIC	AIC	Entropy
1	766.94	751.12	752.13	-
$2 (n_1 = 69\%, n_2 = 31\%)$	684.93	659.62	661.23	.747
$3 (n_1 = 37\%, n_2 = 6\%, n_3 = 57\%)$	652.44	617.64	619.85	.827
$4 (n_1 = 6\%, n_2 = 58\%, n_3 = 0\%, n_4 = 36\%)$	667.33	623.03	625.85	.863

Note. BIC = Bayesian Information Criteria; aBIC = Adjusted Bayesian Information Criteria; AIC = Akaike Information Criteria. The chosen option is marked in bold.

The latent trajectories of LS were labelled *high stable* (37%), *moderate decreasing* (57%), and *low stable* (6%). LS mean levels of the high and the low stable trajectory groups remained stable over time. On the other hand, the moderate decreasing group exhibited a significant decrease in LS mean levels over time (see Table 2). ANOVA and chi-square tests evidenced how the three sub-groups did not differ according to age, F(2, 150)=0.01, p>0.05, gender, X^2 (2, 150)=1.56, p>0.05, and self-perceived socio-economic position, X^2 (2, 150)=8.13, p>0.05.

 Table 2. Estimation results of the final Growth Mixture Model with five latent classes

 (unstandardized estimates; standard errors in parentheses)

	High stable (n=52; 37%)	Moderate decreasing (n=82; 57%)	Low stable (n=9; 6%)
Mean structure			
Level	3.42 (0.05)**	2.83 (0.05)**	1.91 (0.11)**
Change	09 (0.06)	25 (0.05)**	14 (0.20)

Note. Variance is kept equal across the different latent groups. $p \le .001$

Differences in achievement strategies and criteria for adulthood

The second analytical step consisted of testing whether the three observed LS trajectory groups were significantly different at each time point concerning self-reported achievement strategies outcomes in the academic context and the importance attributed to criteria for adulthood. Table 2 reports all effects and pairwise mean comparisons between LS groups. Since we did not observe any significant effect of LS trajectory group membership on the mean levels of the importance attributed to the criteria for adulthood, we decided not to report in a table such results for parsimony reasons. On the other hand, it appears clear how the three developmental trajectories groups consistently differed across time points regarding the types of achievement strategies they adopted in their academic activities. More specifically, from Time 1 to Time 3, the high stable group showed the highest levels of success expectation and the lowest levels of task irrelevant behaviour and avoidance. Diametrically opposite was the performance of individuals in the low stable group who consistently showed the lowest levels of success expectation and the highest levels of task irrelevant behaviour and avoidance. Finally, the moderate decreasing group reported a stable success expectation over time, but a slight increasing in avoidance. In fact, while at Time 1, the avoidance did not differ between the moderate and the high stable group, from Time 2 to Time 3, individuals in the moderate decreasing group showed the same level of avoidance as the individuals in the low stable group.

Ta	ble 3. Mean	differences	n achievem	ient strate	gies betweer	ı life satisf	action classes		
	Moderate d	ecreasing	High st	table	Low s	table	F	р	η^2
	Μ	SD	Μ	<i>SD</i>	Μ	SD			
T1 Achievement strategies									
Success expectation	2.38 _a	38	2.64 _b	37	1.93_{e}	.43	F(2, 140) = 16.22	000	19
Task irrelevant	2.20 _a	.52	1.96 _a	<u>59</u>	2.47 _b	.46	F(2, 140) = 4.91	600	.07
Seeking social support	3.01 _a	.49	3.00 _a	.55	2.54 _b	.32	F(2, 140) = 3.64	.029	<u>.</u> 05
Avoidance	2.26 _a	.54	2.11 _a	.56	2.94 _b	.62	F(2, 140) = 8.79	000	.11
T2 Achievement strategies									
Success expectation	2.36 _a	.35	2.56 _b	33	1.96 _a	.47	F(2, 140) = 12.87	000	.16
Task irrelevant	2.09 _a	.43	1.82 _b	.47	2.36 ₈	.40	F(2, 140) = 8.64	000	.11
Seeking social support	3.11 _a	.47	3.13 _ª	.47	2.44 _b	.33	F(2, 140) = 8.79	000	.11
Avoidance	2.22 _a	09.	1.92_{b}	.49	2.87 _a	.70	F(2, 140) = 11.97	000	<u>15</u>
T3 Achievement strategies									
Success expectation	2.40 _a	.34	2.62 _b	.35	1.94_{c}	.40	F(2, 140) = 16.51	000	19
Task irrelevant	2.02 _a	.43	1.75 _b	.47	2.44 _a	.71	F(2, 140) = 10.99	000	.14
Seeking social support	3.10 _a	.51	3.14 _a	.52	2.63 _b	.33	F(2, 140) = 4.02	.020	<u>.05</u>
Avoidance	2.22ª	-59	1.88 _b	.47	2.89 _a	.85	F(2, 140) = 14.28	000	.17
<i>Note</i> . Class means in a row	with different:	subscripts are st	atistically diff	erent at the p	<0.05 level acc	cording to the	e Games-Howell test.		

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Overall, these results indicate that the types of achievement strategies in the current sample are linked to different LS development trajectories. Furthermore, such measures of personal agency did not relate to different perceptions of the criteria deemed important for adulthood, nor the latter seem to correlate with LS developmental trajectories.

Discussion

The current research focused on a longitudinal convenience sample of young adults attending university in the north-western Italian city of Turin. The person-oriented model tested here provided theoretical evidence of the overtime interconnection between motivational strategies in an academic context and well-being among university students. The main contribution of the present study was the adoption of a person-oriented approach (6) to focus on the issue of the perception of adulthood among young adults. Indeed, to date, very few studies (24) have opted not to focus entirely on the relations between singular variables but instead to look at more elaborated systems of individual characteristics to draw a 'picture' of different 'types' of emerging adults in Western societies. Moreover, the longitudinal nature of the trajectory analysis contributed to test whether for emerging adults the perception of what it means to be considered adults nowadays is a stable construct over time, even if just across only one-year period. In particular, the latent curve growth analysis implemented here has represented a more fruitful way for examining young adults' individual development (22). Indeed, a single growth trajectory would have oversimplified the heterogeneity of the changes in emerging adults' life satisfaction over time, as some experience an increase and some a decrease in life satisfaction, although the majority seem to experience a significant stability (7). In this study, it was possible to identify meaningful latent classes of individuals according to the initial levels and the longitudinal changes in their life satisfaction across the three measurement points. Adopting this multiple trajectories approach resulted in a model of three developmental trajectories. Overall, two major conclusions can be drawn from the present study. First, starting from the non-significant findings, it appeared that the perception of the most important criteria for adulthood (i.e., family capacities, interdependence, norm compliance) are not correlated to life satisfaction trajectories, either low or high. Second, achievement strategies reflecting notions of agency were closely linked to life satisfaction, both about initial level and development. The first findings can reasonably be the result of the limited time span across which we aimed at observing developmental changes. Indeed, we already know that emerging adults are more prone to change their perception of adulthood especially in correspondence with crucial life events, such as getting married, experience of parenthood, finishing the studies and start working (10,11). Therefore, the impossibility to control for such events in the present study or simply the fact that the very small sample did not include a sufficient number of people going through specific transitions' thresholds, can explain why we did not observe significant differences across developmental groups who instead remained stable in their opinions over the curse of one year. However, we were not just interested in looking at changes, but we argued for stable differences across developmental trajectory groups. Again, despite the fact that we observed trajectory groups that showed significant differences in motivational strategies across time, these did not relate to adulthood self-perception. These results might confirm how the major sources of adulthood identity variation over time are significant experiences related to it.

The significant differences between groups in terms of achievement strategies suggest that these measures of motivation and life satisfaction are strictly related. Specifically, individuals with a high level of positive achievement approach strategies demonstrated high levels of life satisfaction. On the contrary, high levels of avoidance and irrelevant behaviours mostly

related to low levels of life satisfaction. A closer look revealed that individuals in the moderate decreasing life satisfaction trajectory maintained a more stable level of avoidance over time than the other two groups that both showed instead a decreasing in avoidance. Thus, personal strivings and strategies may be protective factors against a decrease in life satisfaction.

In summary, the findings from the current study are aligned with previous research work focusing on samples of young adults attending university and evidencing how individuals' achievement strategies measured during university studies affect subjective well-being outcomes (25,26), including life satisfaction (27,28). In particular, in accordance with our results, success expectations are positively associated with higher satisfaction (29) and poor engagement relate to low well-being (27). These evidences should guide future research with the aim of further investigating the role of different types of agentic personality traits among university students in relation to positive life outcomes and health behaviours as factors strongly related to subjective well-being outcomes.

Study limitations and conclusions

It is important to point out the main limitations of the current study. Firstly, owning to the person-oriented statistical approach and despite the study longitudinal design, the analyses did not explicitly report on any causal relationship between measures of achievement strategies and overall satisfaction with life. Future studies should look more specifically into cause-effect models using these types of self-reported measures of achievement strategies and various well-being outcomes. Secondly, the convenience sample of university students included in this study cannot be considered representative of the entire population of university students in the context of reference (i.e., the University of Turin in Italy). Accordingly, the generalizability of the current findings should be considered with caution while they may well represent a base to validate the theoretical framework according to which different motivational strategies among university students may positively or negatively influence well-being over time.

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REVIEW ARTICLE

Data gaps in adolescent fertility surveillance in middle-income countries in Latin America and South Eastern Europe: Barriers to evidence-based health promotion

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Abstract

Adolescent health is a major global priority. Yet, as recently described by the World Health Organization (WHO), increased recognition of the importance of adolescent health rarely transforms into action. One challenge is lack of data, particularly on adolescent fertility. Adolescent pregnancy and childbirth are widespread and affect lifetime health and social outcomes of women, men, and families. Other important components of adolescent fertility include abortion, miscarriage, and stillbirth. Access to reliable, consistently-collected data to understand the scope and complexity of adolescent fertility is critical for designing strong research, developing meaningful policies, building effective programs, and evaluating success in these domains. Vital surveillance data can be challenging to obtain in general, and particularly in low- and middle-income countries and other under-resourced settings (including rural and indigenous communities in high-income countries). Definitions also vary, making comparisons over time and across locations challenging. Informed by the Adolescence and Motherhood Research project in Brazil and considering relevance to the Southern Eastern European (SEE) context, this article focuses on challenges in surveillance data for adolescent fertility for middleincome countries. Specifically, we review the literature to: (1) discuss the importance of understanding adolescent fertility generally, and (2) highlight relevant challenges and complexity in collecting adolescent fertility data, then we (3) consider implications of data gaps on this topic for selected middle-income countries in Latin America and SEE, and (4) propose next steps to improve adolescent fertility data for evidence-based health promotion in the middle-income country context.

Keywords: adolescent health, fertility, health promotion, surveillance.

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Introduction

Adolescent health is a major global priority, particularly in the low- and middle-income countries where 90% of the 1.2 billion adolescents (aged 10-19 years) globally live, comprising over 20% of the total population in some countries (1,2). Recent work highlights urgent need for the comprehensive, integrated, and sustained investment in adolescent health (3-5). This can reap immediate rewards, and pay dividends into adult health and future generations (3-5). A major challenge towards this goal is access to reliable surveillance data, which is critical to designing effective policies, programs, and research and then evaluating their impacts across populations (2-5). Data gaps may be one critical reason why the growing recognition of the importance of adolescent health has not transformed into sufficient research, policy, and action (2-5).

Data limitations can be a specific problem in understanding adolescent fertility patterns, trends, and outcomes (6-13). Adolescent pregnancy and childbirth are widespread and affect lifetime health and social outcomes of women, men, and families (6-9). Other important components of adolescent fertility include abortion, miscarriage, and stillbirth (14-16). Data on these topics can be challenging to obtain given the considerable stigma, measurement complexities, and cultural, demographic, and legal variation across regions and countries (6-16). There is also considerable overlap and variation in the terminology used to describe aspects and outcomes of adolescent fertility (6-13). (For clarity, Table 1 describes key terminology as used in this article.)

Informed by the Adolescence and Motherhood Research (AMOR) project in Brazil (17) and considering the relevance to the Southern Eastern European (SEE) region, this article reviews the literature to: (1) discuss the importance of understanding adolescent fertility generally, and (2)highlight relevant challenges and complexity in collecting adolescent fertility data, then (3) considers implications of these data gaps for selected middle-income countries (MIC) specifically in Latin America and SEE, and (4) proposes next steps to improve adolescent fertility data for evidence-based health promotion in the MIC context.

Term	This Article
Adolescent Fertility	We use this term in a general sense to cover any pregnancy-
	related experience among those 10-19 years of age,
	including live birth, abortion, stillbirth, or miscarriage. The
	live birth could lead to parenting or to adoption. This can
	include multiple pregnancies during this time of life.
Adolescent Pregnancy	The terms describes a specific physiological state of
	pregnancy among those 10-19 years of age. Includes
	pregnancies ending in births, but also miscarriage and
	abortion [*] .
Adolescent Live Birth	The term describes a specific outcome from an adolescent
	pregnancy among women, specifically the outcome of
	delivering a living child among those 10-19 years of age [†] .
Adolescent Parenting	This term describes one outcome that might follow a live
	birth. In contrast to the other definitions that apply to

Table 1. Key Terminology as used in this article



women only, this term applies to both men and women.

* http://origin.who.int/healthinfo/indicators/2015/chi_2015_37_fertility_adolescent.pdf. † https://data.worldbank.org/indicator/sp.ado.tfrt.

Section 1: Importance of Understanding Adolescent Fertility Patterns and Trends

Three major health risks stem from adolescent fertility. First, pregnancy during adolescence is associated with increased risk of maternal death and disability across a variety of outcomes, with unsafe abortion as one of the foremost contributors (14,16,18-22). Legal and social restrictions on access to safe abortion prompt adolescents to resort to procedures administered by unskilled providers and/or in unsafe conditions (14,16,20,21). Secondly, pregnancy and delivery during adolescence is associated with elevated risks of respiratory diseases, bearing premature birth trauma. and newborns with low birth weight (22). Finally, adolescent pregnancies are correlated with long-term consequences for the mother, including cardiovascular disease, mobility limitations, incontinence, and chronic pain (23, 24).

There are also social consequences. Adolescent pregnancies, particularly those resulting in a child, may cause women to miss important life opportunities by dropping out of school and earning less over their lifetimes (1,2,25). Adolescent childbearing can also perpetuate intergenerational poverty through successive waves of adolescent mothers (26,27). It is additionally associated with interpersonal violence and contributes to higher risks of experiencing violence, with a number of negative impacts (28).

Understanding the patterns of adolescent fertility globally and within specific populations is thus vital for regional, national, and international public health. This is particularly true as the critical role of adolescence on health outcomes across the lifespan is increasingly recognized. As highlighted by Vinter et al (2015): "Adolescence is second only to fetal and infant life in the rapidity of growth and pervasiveness of change across body systems" (29).

Section 2: Adolescent Fertility Data Gaps and Challenges for MIC

Despite the critical importance of this topic, finding relevant data can be challenging and/or have hidden complexities that obscures patterns, trends, and outcomes. Others have documented critical gaps in adolescent fertility data surveillance and management (3,4,6,7,14,30).

Besides adolescent fertility, many other relevant metrics and measures exist around other aspects of adolescent reproductive health (1-8,30). Some relevant examples include: adolescent abortion rate; adolescent marriage rate; access to contraception; use of contraception; use of modern contraception, a SDG (Sustainable Development Goals) target goal for those 15-49 years (31); planning status of adolescent pregnancy (intended, mistimed, unwanted); age at the time of the last pregnancy under 20; age at the time of the first pregnancy; marital status during adolescent pregnancy; and fertility preferences of currently married teenage women (want a child now, within a year, 2 years, later). Other important, related topics include sexual exploitation, sexual preferences, identity, sexually gender (1-8,30). transmitted These diseases



measures share many of the same challenges described in this article but are beyond the scope to discuss in detail.

We highlight some issues with relevance to MIC.

Research. First, it is important to note that research on adolescent health generally lags behind research in both child and adult health (1). This may help explain why the decrease in global burden of disease as measured in disability-adjusted life years for adolescents was less than the decrease for adults (3) and why adolescent health gains have been less than those for children (5).

Indicators. There are many relevant indicators in adolescent fertility, which are vital health indicators (30). For instance, rate of adolescent live birth is one of the 12 headline indicators proposed by the Lancet Commission on Adolescent Health and Wellbeing and one of 13 global health target measures for the 2030 SDG (11,31).

A recent paper by Azzopardi et al (2019) provided definitive estimates across many nations for these SDG indicators, including adolescent live birth, and gave a cumulative accounting of 11.7 million live births to adolescents between 15–19 years old in 2016 worldwide (3). While rates of adolescent live birth are decreasing in most countries, patterns vary considerably (3). For instance, Albania was one of only ten countries with an increase in the rate of adolescent live birth between 1990 and 2016 (3).

It is important to note the complexity in the measure of adolescent live birth, including how "adolescent" is defined (11). In the Azzopardi et al (2019) paper, the SDG "annual birth rate per 1000 adolescents aged 10-19 years" metric was measured by "live births per 1000 adolescents in females aged

15-19 years" (3). Of course, across the 10-19 age range many pregnancies occurred that did not result in a live birth, which can have health consequences and are thus also important to measure.

Table 2 shows in detail three of the most common ways that relevant constructs in adolescent fertility are actually measured in surveillance, providing calculations for the measure, and targeted critiques for these metrics (adolescent fertility rate, adolescent pregnancy, and adolescent girl pregnancy) (30).

Comparative data. Comparative data is important to understand regional differences cumulative global needs. which and time necessitate similar frames and harmonized data (14). Adolescent health data in MIC can be found through national and cross-national surveillance systems. Many MIC publish their own vital statistics reports, but the quality of civil registration and vital statistics systems vary, even across MIC (32).

Many MIC also participate in cross-country surveillance systems toward global consensus indicators. including the Demographic and Health Survey (DHS), the Multiple Indicator Cluster Survey (MICS), and Reproductive Health Survey (RHS) (33-36). These are administered by national health systems in conjunction with USAID (DHS & RHS) and UNICEF (MICS) (33-36). They use similar definitions of adolescent fertility, and often, have been administered consistently for many years. International comparison information for adolescent fertility and related measures are also compiled into databases by major organizations, including the United Nations (UN) (37), the World Bank (38), and the Global Health Data Exchange (39). Major international efforts generate point estimates



for country-level comparisons, allowing for cumulative global calculations for key indicators (3,14,21,33,40).

Source	Indicator name(s)	Calculation	Comments Numerator	Comments Denominator
	Adolescent birth rate Adolescent fertility rate	Number of live births to women 15-19 years / Total number of women 15 to 19 years	Excludes very young adolescents (10-14-year- olds) Excludes miscarriages	Requires vital statistics for denominator, which can be challenging in very low income settings
V.	Age-specific		stillbirths, and abortions.	Assumption that all women 15-19 years are <i>at risk</i> of
UNFP	fertility rate		Measure of adolescent childbearing, not pregnancy	pregnancy and thus, presumably that all women in this age group have already hit puberty. This may not be the case in communities with elevated malnutrition or illness that affect pubertal timing.
UNFPA	Adolescent pregnancy Adolescent	Number of women aged 20-24 that had a live birth before the age of 18 / Total number of women aged 20 to 24	Excludes miscarriages, stillbirths, and abortions. Measure of adolescent childbearing, not pregnancy Excludes miscarriages	Excludes those who died <i>prior</i> to adulthood, such as those who died in childbirth and/or those living in violent communities. May underestimate adolescent pregnancy/childbirth in the most disadvantaged areas. Requires vital statistics for denominator, which can be challenging in very low income settings Similar to above. The issue
UNFPA	Adolescent girl pregnancy	that had a live birth before the age of 15 / Total number of women aged 20 to 24	Excludes miscarriages, stillbirths, and abortions. Measure of adolescent girl childbearing, not pregnancy	of deaths before reaching 20- 24 is particularly problematic in this group because of the very high risk of maternal mortality in low- income settings, among adolescents having children

Table 2. Selected definitions for adolescent fertility measures^{*}

* Loaiza E, Liang M. (2013). Adolescent pregnancy: A review of the evidence. New York, NY: UNFPA.

These readily available metrics are valuable, and provide vital comparative data, but as in the live birth example above, in the background is variation and complexity. Many MIC have incomplete data for adolescent reproductive health outcomes and/or contextual variables (income inequality, social determinants of health) to better understand variation, patterns, and reasons for those outcomes (12,13). The DHS, MICS, and RHS are not completed yearly, and some countries have not done them recently or at all. For instance, Brazil has not completed a post-2000 DHS (41).



Countries, who have cost sharing for these surveys, have autonomy to add questions and determine sampling frames, which may vary. For instance, many locations did not include unmarried adolescents in questions about sexual activity, use of contraception, or childbearing intentions in past DHS; this continues in a few DHS programs (33,36).

Additionally, while many global health indicators seem straightforward when presented in tables comparing outcomes across countries, plotted in useful maps (41) included in sophisticated or data visualizations (43), they are often obtained from very complex statistical models, different time periods, and/or may have missing data generated through sophisticated algorithms (3,14,19,33). In some cases, cross-national comparisons are created where at least some studies have national data extrapolated from smaller studies (14.19). These estimates often do not provide region or focal population specific statistics, which can vary in critical ways within a country. Whatever the indicator, there can be incentives to suppress data for political reasons (5), making the data unreliable in ways that will not be visible in public reports or comparisons.

Stigma. There are also critical gaps in adolescent fertility data due to underreporting (6). Many adolescents do not want to admit to sexual behavior. These actions and consequences are stigmatized and can be illegal, particularly induced abortion. The implications of these issues for data quality vary by country, and by context within countries (6). School-based youth risk behavior surveys may omit sensitive questions due to stigma and discomfort, exclude younger adolescents, and miss those who are not attending school, but who are particularly vulnerable (44). Informed consent at this age can be complex and parents may refuse to let their children participate in health surveys that include these issues.

Missing populations. Many major yearly public health surveillance instruments (e.g., BRFSS in the US) exclude those younger than 18 as primary respondents. As in school-based settings, adolescent sexuality questions may be deemed too sensitive (or unreliable) respondents. for proxy Population-based telephone surveys may also miss vulnerable communities, including refugee, migrant, homeless and street youth (6,7). School-based surveys miss students who have left school, including those who did so because they are parenting. Thus, many critical communities related to adolescent fertility are excluded from surveillance. There is also a lack of attention to adolescent male fathers. This is problematic because many assume parenting roles and after doing so, like their female counterparts, become adversely impacted. For example, younger age at birth of first child in men, as well as women, has been associated with greater risk of cardivascular disease (45). However, global data is insufficient on the quantity of adolescent pregnancies fathered by those 10-19 themselves. Some DHS programs do not survey adolescent men at all (46).

Adolescents less than 15 years of age. Adolescents younger than 15 are often left out of measurement for fertility issues. For instance, much DHS data uses the 15-19 age category to determine adolescent births, excluding the very young and high-risk births. This is a problem because younger girls generally have more complications



with pregnancy and childbirth versus older ones (44,46).

Repeat births. Limited guidance exists on repeat birth, especially rapid repeat pregnancy (within 2 years of the index pregnancy). Data on this is particularly limited in MIC, but evidence from higherincome settings indicate that rapid, unwanted repeat pregnancies are relatively common among adolescents (9).

Disaggregated data. There is a critical need to disaggregate data by community, vulnerability, and narrower age groups to identify true needs and risks (6). For instance, while adolescent health data is typically aggregated for 15-19-year-olds in many MIC, the pregnancy rate is higher among 18-19-yearolds than among 15-17-year-olds (14).

Abortions, miscarriages, and stillbirths. Especially given that a large percentage of adolescent pregnancies are unwanted or unintended (82% in a US study) (14), not all adolescent pregnancies end in a live birth. While birth data are generally complete, collection and evaluation of abortion data and estimation of miscarriages globally and by country are limited (14). Miscarriage among adolescents may go unrecognized (14). Stillbirths, a major issue in many MIC, can be hard to definitively quantify (47,48). These issues can vary greatly by location and reporting laws (voluntary or required, sanctions), and the role of the public and private health sectors; where abortion is legally or logistically restricted may be both the least likely to have relatable data on abortion as well as most likely to have unsafe abortions (14,16,20,21). Abortion policies can vary greatly in a short time period, impacting data reporting patterns, validity, and completeness over time (14). In places were abortion is illegal, there are clandestine clinics unknown to the health system and that do not provide information to national registries or researchers resulting in underestimates of true prevalence.

Cross-Sectional Data. The cross-sectional nature of data typically collected on adolescent fertility also impacts research consequences of adolescent into the related issues. pregnancy or as socioeconomic characteristics are measured at the time of the survey, not at birth or during pregnancy (49). In retrospective surveys, a woman's situation may have changed considerably. She may have experienced a socioeconomic downturn subsequent to the delivery; for instance, some adolescents are kicked out of their homes if they become pregnant. Cohort effects can also be an issue; yet, little longitudinal research exists on this topic, especially cross-cultural from large, populations (50).

Good Sexual Health. Most adolescent fertility surveillance metrics focus on risk and danger (pregnancy, sexually transmitted disease), treating all adolescent sexuality as negative (51,52). We know little about childbearing desires (6) or positive sexual health. In some communities, childbearing and marriage at this age are common and surveillance systems might build distrust by taking a completely negative perspective on this issue (7,53).

Consequences of these gaps and challenges. Many adolescent pregnancies and the negative consequences are preventable, but inconsistent and unreliable



data can make it hard to design effective solutions across all populations. Ignoring inequality between specific groups can hide critical disparities, including a fundamental cause of intergenerational cycles of poverty. There can be considerable variation in data quality across regions within countries, across countries, and across regional groupings of countries. This adds complexity (not always acknowledged) to comparisons, international and makesevidence-based policy and the evaluation of those policies challenging (4,5,54,55). Yet, better surveillance may bring unwelcome or unexpected findings as key metrics may increase, impacting funding priorities or political momentum. Without meaningful, nuanced. consistent data. including data sensitive to subtle and incremental change, it is challenging to design programs, policies, and research to address adolescent fertility issues and hard to measure intervention effects (49).

Section 3: Data Challenges in the MIC Context

We now specifically consider these adolescent reproductive health data challenges from experiences in the AMOR project in a Latin America context, followed by a consideration of these issues in the SEE context.

The Adolescence and Motherhood Research (AMOR) Project. The AMOR project (17) is a research initiative with two complementary study aims of improving quantitative health research capacity in a low-income rural area of Northeast Brazil, while completing a pilot project towards the long-term objective of building sustainable infrastructure for research to elucidate pathways between adolescent childbirth and adverse health conditions across the lifecourse (23). As part of this study, a pilot cohort of adolescents, pregnant for the first time, was recruited in the first trimester of pregnancy and followed over time.

Measurement/Regional Data. Brazil is a large MIC with substantial socioeconomic regional divides. Many states in Northeast Brazil, such as Rio Grande do Norte, rank last for income, education and social services, while other states in the south of the country, such as São Paulo, are relatively well off (56). In Brazil, the National Information System on Live Births (SINASC), implemented gradually in all states since 1990 (57), receives live birth information from all maternity hospitals and other health units.

Although there is increasing coverage of SINASC across the states, scale-up has occurred differentially across Brazil. For example, it was estimated that the coverage rate of SINASC reached almost 100% for the South, Southeast and Midwest regions in 2011, but it was between 70-90% for most of the poorer Northern and Northeastern states (58). Although SINASC provides useful data about rates of live birth for women of specific age-groups and regions over the years, incomplete data in some registers, particularly in the less advantaged regions, and the lack of information about miscarriages or abortions, limits its use for the understanding of adolescent pregnancies. The Brazilian Institutes of Geography and Statistics (IBGE) performs a demographic census in Brazil every decade and provide information about adolescent childbirth rates, but its use is limited given the large time lag between surveys. During the years between the censuses, the IBGE performs an annual National Household Sample Survey.



However, because data is collected on a sample of households for each state, information about the levels and patterns of adolescent fertility, as well as any spatial disaggregation generated by such estimates are limited by small sample sizes. Moreover, questions about adolescent fertility are directed only for girls aged 15 or older.

Study Recruitment. Planning the AMOR project recruitment was difficult due to such data gaps. Our target sample included adolescents in the first pregnancy aged between 13-18 years-old from the Trairi region of the Rio Grande do Norte state. Using information from SINASC, we identified the number of live births from adolescents in the target towns during the previous years, but the data regarding adolescents from 13-18 vears were aggregated into the 10-19-year age group. In particular, the number of adolescent pregancies increases dramatically when age 19 is included, showing the importance of relevant data disagregation.

Once the project was underway, we also needed adolescent birth rate for our focal location to understand the scope, representation, and success of our study recruitment. Again, aggregated information by age groups from SINASC prevented us from being able to do these estimates. We also were unable to estimate miscarriages, which were not included in the SINASC data, but were ultimately seen in 8% of our adolescent sample after baseline evaluation.

Latin America Context. Regional relevance important and knowledge are for consideration of these data gaps in Brazil. Adolescent fertility rates in the WHO Latin American and Caribbean region are the second highest in the world, much higher than in other regions with similar levels of development (49). While total fertility has dropped in recent decades, adolescent fertility rates have dropped much less sharply (46). The high rates of adolescent fertility can be seen in the Latin American Table 3.

Indicator	Latin America Examples			South Eastern European Examples			Notes
	Brazil	Colombia	Honduras	Albania	Romania	Serbia	
Azzopardi et al, 2019, Lancet article (data from 2016) [†]	66.8	41.6	72.6	21.8	32.2	16.1	Data is "Birth rate (live births per 1000 population per year) in females aged 15–19 years." Representing SDG Metric: "Annual birth rate per 1000 adolescents aged 10–19 years."
World Bank database adolescent fertility rates (data from 2016) [‡]	62.7	49.5	72.1	20.7	33.7	19.3	Yearly adolescent fertility rate since 1960 by countries with regional benchmarks.
Adolescent Birth Rate Map	65	85	99	18	36	22	Map with comparisons by countries. Per

 Table 3. Adolescent birth rate (births per 1,000 women ages 15-19) available by selected countries in Latin America and South Eastern Europe by source*



Adolescent Health UNICEF [¶]							website "Most recent estimates for each country taken from 2015 Update for the MDG Database: Adolescent Birth Rate (UNFPA/UN Population Division)."
United Nations age-specific fertility rates (2010-2015) [§]	67.0	57.7	77.8	20.7	36.4	21.0	5-year average age- specific fertility rates from 1950-1955 with regional benchmarks.
WHO Adolescent birth rate by WHO region, 2005- 2016**	60.8	71.6	101.0	18.9	35.3	16.4	Data visualization with comparisons by countries within WHO regions and global and regional benchmarks.
Demographic and Health Survey (DHS) ^{††} (date of most recent DHS included on website)	87.9 (1996)	85.1 (2010)	99.0 (2011)	19.6 (2008)	N/A	N/A	Adolescent birth rate information by country. Subnational information available by income quartiles and rural/urban.

* As Shown by Source as of March 15, 2019.

[†] Azzopardi PS, Hearps SJC, Francis KL, et al. Progress in adolescent health and wellbeing: tracking 12 headline indicators for 195 countries and territories, 1990–2016. Lancet 2019; published online March 12. http://dx.doi.org/10.1016/S0140-6736(18)32427-9.

* SP.ADO.TFRT from World Bank Website downloaded https://data.worldbank.org/indicator/sp.ado.tfrt 3.14.2019.

[¶] https://data.unicef.org/topic/maternal-health/adolescent-health/ -- Adolescent birth rate by country (number of annual births per 1000 adolescents aged 15-19).

§ https://population.un.org/wpp/Download/Standard/Fertility/ FERT/7: Age-specific fertility rates by region, subregion and country, 1950-2100 (births per 1,000 women).

** http://apps.who.int/gho/data/node.sdg.3-7-viz-2?lang=en SDG Target 3.7 World Health Statistics data visualizations dashboard SDG Target 3.7 | Sexual and reproductive health; Adolescent birth.

^{††} http://apps.who.int/gho/data/view.main.vURBADOBIRTHTOTv Adolescent birth rate Data by country; Per website: Last updated: 2016-03-23.

Though abortion and contraception are heavily restricted in this region, many occur nonetheless, often unsafely (46,49,59). Adolescent fertility is considered to be high with little use of modern contraceptives; there are an estimated 600,000 unplanned pregnancies in adolescents, and about half of women giving birth for the first time are in their teens (50). Many Latin American nations have adolescent pregnancy and health inequalities by population or region, but these disparities are hidden by aggregated national-level data (46). Genderbased violence is a significant problem in Latin America, though sexual coercion and abuse from adult males are not reliably or consistently recorded in adolescent health surveillance data (46).

Examples. To demonstrate an example of the general data complexity mentioned in section 2 applied to the Latin American context, Table 3 provides comparative data specifically for one metric (adolescent fertility rate) for three Latin American



Countries (Brazil, Colombia, and Honduras) taken from current online resources or recent, influential publications from reliable sources.

Data is also provided for three SEE countries (Albania, Romania, and Serbia). This table demonstrates inconsistent results, timing differences of data collection, and the importance of these issues on demonstrated trends. While some variation is to be expected over time, there are large differences across measures. For instance, measures for Honduras vary from 72.1 to over 100 per 1000 women. Table 4 summarizes some key challenges in the Latin America context in adolescent fertility surveillance.

Location	What is missing for	Context specific challenges	Specific areas in the
	surveillance?		country where there are
			data gaps and challenges
South Eastern Europe Examples	Pregnancies Teen pregnancies which end in abortion Adolescent births outside the marriage Teen pregnancies which end in miscarriages	Despite some standardized instruments there are differences in indicators used to monitor the problem. Different indicators used by EU (Eurostat) and UN DHS is not carried out by all SEE countries. It is not planned for the future and needs to be substituted by good surveillance data	Important discrepancies especially in abortion rates among surveillance and DHS/RHS. Limited studies in Serbia, Bulgaria and Albania show very high risk among Roma population compared to general. Most surveillance data do not allow specific monitoring of this ethnic group.
Latin American Examples	Data about abortion: According to the most recent estimate, about 99% of abortions in Colombia are performed outside the law (impossible to obtain direct data about these) Data on interpersonal violence in pregnancy Information relevant to infectious diseases such as Zika, which may have influenced abortions Stillbirths	Abortion in Brazil and Colombia are legal only in very specific circumstances. In Colombia this includes the following circumstances since 2006: The continuation of the pregnancy constitutes a danger to the life or health of the mother; The existence of life-threatening fetal malformations; The pregnancy is the result of rape, non-consensual artificial insemination or incest. Vulnerability is hidden and patterns of risk or illness may not reflect facts.	Northeastern Brazil has lower surveillance, with relevance to Adolescence and Motherhood Research study planning and recruitment evaluation, and to other studies on similar populations. While the rich in many Latin American countries may have access to abortions, this is not the case for the poor. Thus, more cases of microcephaly may have occurred from Zika that were not reported as those who were rich could have received abortions that were never recorded. This can impact regional estimates as well as surveillance generally.

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Southern Eastern European context. The SEE region is mostly made of MIC transitioning from ex-communist societies to European Union (EU) associates, including Albania, Bosnia and Herzegovina, Bulgaria,

Croatia, Northern Macedonia, Moldavia, Montenegro, Romania, Serbia, and Ukraine. This context has both similar and unique adolescent reproductive health data gaps to those discussed above (60,61). These



countries have a very different historical and economic background from the Latin American context.

While this region has some of the lowest rates of adolescent-girl pregnancies among all LMIC (31), rates remain higher than the EU average. Some Eastern European EU members in the SEE region, notably Romania and Bulgaria, have high rates of adolescent pregnancy relative to peer states (62). Also, although the SEE region is rated relatively high in terms of equality as measured by Gini index, the trends of 'adolescent-girl pregnancies' rates are disproportionally unfavorable among the poorest (31,62,63). Usage rates of contraceptive methods, including modern methods, remain very low in SEE (63). Abortion has dropped significantly in the region, since the 1990s, but reliance on abortion as a means of fertility control remains high in some countries (62,63).

Variation and measurement challenges are demonstrated in Table 3 for the SEE counties. Misinterpretation of indicators or in data can cause significant gaps inconsistencies in reporting of adolescent fertility rates across sources for the same country in the region (63,64). When comparing adolescent fertility rates among SEE countries, Albania appears to be the only one showing a reverse of the general decreasing trend during the last decade. Romania has one of the highest adolescent birth rates in the region. The three major surveillance instruments (DHS, RHS, and MICS) have been implemented in Albania, in consecutive rounds, with the most recent published on December 2018. The latest DHS or RHS reports from other SEE countries are from more than 10 years ago. Besides the metrics in Table 3. Albania also has official administrative data from birth registration. Accordingly, the adolescent fertility rate is 15.96 (65), considerably lower than estimates from other survey-based surveillance sources.

According to some estimations, Romania has one of the highest "young adolescent" birth rates in the world (14). Data from the 2005 Romanian RHS, which could be outdated, show regional variation with the rate of young adolescent births per 1000 to be 10 in urban areas compared to 46 in rural areas (66). Similarly, some data from the Serbian MICS 2014 allows detailed analyses of adolescent fertility indicators among Roma settlements where rates are exceptionally high compared to general population (67,68). In some Roma settlements, 32.8% of adolescents are having children (23.8% given birth; 9% pregnant) (68). As in Latin America, most SEE lack reliable country-level data on abortion (14). When they do, the data conflict. For instance, 2017 Albanian estimates of the adolescent abortion rate were 2.1 per 1000 live births among those 15-19 years from abortion surveillance data (69), while an estimate based on DHS is lower at 1 per 1000 women for those 15-19 years (70). Data from Romania is from 2005, which estimates the adolescent abortion rate (for three years prior to survey) at 10 per 1000 women 15-19 years, which is a decrease from 26 per 1000 women 15-19 in the RHS 2000.

One additional interesting issue is that this region is defined differently by various international organizations (60,61). Many other locations have similar benchmark/comparator issues. Table 4 also summarizes some key challenges for SEE region in adolescent fertility surveillance.



Section 4: Ideas for Solutions and Conversations

In order to design targeted interventions to improve adolescent health, there is a need to better understand data and needs around critical metrics of relevance to these population groups. Darroch et al (6) provide some excellent solutions. These include: using creative analyses of existing data to consider reporting by those over 15 of their experiences before 15, though this is subject to limitations in report and recollection, particularly over time; broadening existing national surveillance to better include excluded groups (younger women, nevermarried women); and creating focused, youth-targeted surveys especially including vulnerable communities. Harmonized data with systems also are needed consensus/standardization of various instruments used in various MIC, with buyin from relevant organizations, including WHO, UNICEF, UNFPA, World Bank, USAID, and Eurostat (1,71-73). Shared goals (such as SDG targets) can provide momentum to achieve these goals. Indeed, there are critical new movements towards health data collaboratives (1,71-73), though these have many challenges (74,75). Engaging the health system may help fill in some data gaps, such as increasing the stimuli for the health units/ providers to provide the information properly, to fill out the forms, making them understand its importance or giving some credits for who does. This should be a priority especially in countries where population surveys have failed to overcome stigma and produced lower rates than surveillance systems. Other options include using specific studies to represent larger regions, but these do not solve issues where there is no data or where it has critical gaps for underreported or missing groups. In fact, this could obscure these issues even more dramatically. Also, for better data, more longitudinal studies are needed with data about teen pregnancy and the consequences over time, physically, emotionally, and situationally.

One way to address these issues is to have conversations across settings. We invite interested readers with similar, or different, challenges to share their concerns to be compiled in future work. The survey will be open from April 1, 2019 to January 1, 2020: http://hawaiidphs.co1.qualtrics.com/jfe/form /SV_7UTmvPGiFHiQ5KJ.

Conclusions

Adolescent health is increasingly recognized as a major global priority, necessitating comprehensive, integrated, and sustained investment to allow this population to achieve their full potential and most optimal wellbeing (1,3). This investment can reap rewards. As the Lancet Commission on Adolescent Health and Wellbeing highlighted, this time period is foundational to physical, cognitive, emotional, social, and resources, concluding economic that: "Investments in adolescent health and wellbeing bring benefits today, for decades to come, and for the next generation" (5).

Variation in the measures, and the absence of other important metrics, may contribute to misleading conclusions about who is at risk, trends in rates, and the success or lack thereof of interventions. With improved collection of this health data, governments are better equipped and informed to prioritize health challenges, develop policies, deploy resources, and measure success (6,7,73-77). In the absence of this information, it is challenging to develop appropriate adolescent reproductive health programs and interventions.



While this paper focused on adolescent pregnancy, these data collection challenges could be relevant to many other adolescent health issues that are preventable but also neglected, such as mental health, drug abuse, intentional and unintentional injuries, or sexually transmitted infections (2). Other sexual and reproductive health problems, including HIV/AIDS, remain a major concern for adolescent health, particularly in some regions. Collecting substance use data

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and adolescent violence have related issues and also relationships with adolescent sexual choices and behaviors. These all share stigma. Yet these all appear in adolescence with considerable consequences to adolescent immediate and future health as well as their future families (2), and connect back to the recognition that adolescent health generally, and adolescent fertility specifically, are critical parts to a life-course perspective on adolescent health (1,5,9-11).

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Adogu P, Udigwe I, Nwabueze A, Adinma E, Udigwe G, Onwasigwe C. Sexual health knowledge, attitude and risk perception among in-school and out-of-school female adolescents in Onitsha, Anambra State, Nigeria (Original research). SEEJPH 2014, posted: 17 June 2014. DOI 10.12908/SEEJPH-2014-25

Sexual health knowledge, attitude and risk perception among in-school and out-of-school female adolescents in Onitsha, Anambra State, Nigeria

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Abstract

Aim: Young people need protective information and skills in order to reduce the risk associated with unsafe sex. This study assessed and compared the sexual health knowledge, attitude and risk perception of in-school and out-of-school female unmarried adolescents in Onitsha North Local Government Area, Anambra State, Nigeria.

Methods: A comparative cross-sectional design was used in which 391 in-school female adolescents (mean age: 15.9 ± 1.4 years) were selected from 25 private and 17 public schools in Onitsha North Local Government Area, Anambra State, Nigeria using multistage sampling method. A comparison group of 392 out-of school female adolescents (mean age: 15.5 ± 2.5 years) was also selected from a major market in the same Local Government Area using cluster sampling technique. Data was collected from the respondents with pre-tested, interviewer-administered questionnaires on reproductive and sexual health knowledge, risk perception and attitude, sexual behaviour, contraceptive knowledge and sources of sexual health information.

Results: In-school girls demonstrated better knowledge of sexual and reproductive health compared to their out-of-school counterparts. The awareness of fertile period, contraception methods, STI and HIV transmission and prevention were all significantly better among the in-school adolescents compared to their out-of-school counterparts (P<0.05). They also had markedly higher risk perception of getting pregnant (P<0.05) or acquiring HIV infection (P<0.05) compared to their out-of-school counterparts.

Conclusion: About 21% of adolescents in this study area were involved in risky sexual behaviour and this was higher among the out-of-school adolescents than their in-school counterparts. All stakeholders in the state and the Local Government Area should come together and develop interventions that would improve the sexual health knowledge and sexual risk perception of the adolescents.

Keywords: attitude, female adolescents, in-school, knowledge, Nigeria, Onitsha, out-of-school, risk perception, sexual health.

Adogu P, Udigwe I, Nwabueze A, Adinma E, Udigwe G, Onwasigwe C. Sexual health knowledge, attitude and risk perception among in-school and out-of-school female adolescents in Onitsha, Anambra State, Nigeria (Original research). SEEJPH 2014, posted: 17 June 2014. DOI 10.12908/SEEJPH-2014-25

Introduction

Adolescents (10-19 years), especially females, are most vulnerable to unsafe sex. They also bear the brunt of the consequences. It is estimated that nearly two-thirds of premature deaths and one-third of the total disease burden in adults are associated with behavioural factors that began in youth and unprotected sex is mentioned among these factors (1). Most studies and interventions on adolescents in sub-Saharan Africa and Nigeria target in-school adolescents because they are easily accessible, easier to organize and monitor compared to those who are not in school. However, most of the secondary school age youths in Nigeria are not in school (63% of boys and 79% of girls) (2). Worldwide, about 120 million school-aged children are out of school and slightly more than half of these are girls and one-third of these children are in Sub-Saharan Africa and 10% in Nigeria (3). A recent study in Anambra state, Nigeria, reported that 43% of pregnant girls were expelled from school and none was recalled back (4). Similar studies conducted in Botswana also reported that most pregnant teenagers drop out of school (5).

Studies have shown that most out-of-school adolescents do not live with their parents and are found most times on the street, market places or motor parks hawking or serving as shop assistants to others (6-9). This is why most are vulnerable to unsafe sex and have lower sexual health knowledge compared to their in-school counterparts. Adolescents seek reproductive and sexual health information from a variety of non-formal sources that include peers, pornography and magazines. The unguided youth usually experiment with the information received and often become exposed to STIs, unwanted pregnancy among others. Young people need protective information and skills in order to reduce the risk associated with unsafe sex. Studies in other parts of Nigeria showed in-school adolescents reporting teachers and parents as their main sources of information while out-of-school adolescents reported friends and the media as their main sources of information on sexual health (10,11). The findings are consistent with studies carried out in other African countries like in Uganda where as many as 69% of out-of-school adolescents receive their information from their peers compared to only 8% of their counterparts (12). Research has shown that the knowledge of out-of-school adolescents on sexual health issues is poor. A study carried out in Lagos reported that two-fifths of respondents did not know that pregnancy could occur during their first sexual intercourse, most felt there was no risk associated with sexual intercourse and some had misconceptions that abstinence after menarche was harmful. Many of participants also felt that having sex was necessary to show love in relationships (13). In various studies, preferred sources of sexuality information include the health workers and parents (10,14-16). This is because they give reliable information unlike peers who could give wrong and misleading information.

The out-of-school adolescents are not easily accessible, because they are always on the move and not available for follow-up activities (12). Therefore, it is important to clarify the needs of both groups taking into consideration the social and environmental factors, peer norms, beliefs and values of the different groups in order to develop and implement successful prevention programmes for the two groups.

Onitsha, Nigeria, holds the largest market in West Africa, and second only to Lagos in youth concentration. Therefore, an area of large youth concentration such as Onitsha is most suited for this proposed research. The objectives of this study were to assess and compare the sexual health knowledge, attitude and risk perception of in-school and out-of-school female unmarried adolescents in Onitsha North Local Government Area (LGA), Anambra State, Nigeria.
Methods

Design and study area

A cross-sectional, comparative study was carried out in 2012 including unmarried in-school and out-of-school female adolescents aged 10-19 years residing in Onitsha North LGA in Anambra State, Nigeria. The Onitsha main market, reputedly the largest in West Africa, enjoys large patronage by traders and visitors from all over Nigeria and virtually all West African countries. There are other satellite markets (about 30) to relieve the enormous pressure on the main market. Many out-of-school children are found in every part of the market hawking virtually anything. Some are in the market as shop assistants, while some are left entirely on their own in some stores. This constitutes the setting for the out-of-school aspects of this study. Also, the Onitsha North LGA has 25 private schools and 17 public schools, giving a total of 42 schools. There are 22 mixed schools, 12 boys' only schools and 8 girls' only schools. Some of the schools belong to the mission, some a government-owned, while the rest are private schools.

Study population

The study population consisted of unmarried female adolescents between the ages of 10-19 years and comprised: a) In-school adolescents and b) Out-of-school adolescents. For in-school, only those in Senior Secondary School One to Senior Secondary School Three (SSS1-SSS3) were considered for the study for comparison with their counterparts. This is because most of the out-of-school adolescents are within the age range of those in these classes than the classes below. For out-of-school adolescents, those that had never been to secondary school, finished primary school but did not continue or had dropped out of secondary school were considered eligible. The exclusion criteria included, for in-school, all the post-secondary school adolescents employed or unemployed who had finished secondary school and those with mental, hearing or speech disabilities.

Minimum required sample size was determined for comparison of two independent groups (in-school vs. out-of school female adolescents) (17). Based on reports from previous studies conducted in Nigeria (13,18) and an anticipated response rate of 90%, a total of 236 individuals constituted the minimum sample size. However, it was decided to recruit a total sample of 800 female adolescents (400 among in-school adolescents and 400 among out-of school adolescents) in order to considerably increase the power of the study.

Selection of in-school adolescents consisted of a two-staged sampling technique which employed stratified sampling method in the first stage and simple random sampling method in the second stage. Secondary schools in the area were stratified into four categories as follows: two female-only private, six female-only public, 17 mixed private and five mixed public schools. From each of the strata, one school was selected using stratified random sampling technique. From each selected school, 100 respondents were chosen using simple random sampling method and ensuring proportionate representation from classes SSS1-SSS3 reaching a total sample size of 400 respondents.

Out-of-school adolescents were selected using cluster sampling technique as was done in previous studies (12,19). The market is estimated to have more than 60 clusters. Clusters of 30 were selected by simple random sampling from the sampling frame containing the list of all the clusters twice (13). Using the WHO cluster sampling method, seven consenting adolescents were selected from each cluster until a total of 400 respondents was reached. Since the clusters were in different directions, a bottle was spun and the direction of its mouth was used to show the starting point of the study.

Data collection

The same pre-tested interviewer-administered questionnaires were used for both in-school and out-of-school adolescents to ensure uniformity. The questionnaires were pretested among 20 in-school adolescents and 20 out-of-school adolescents in Nnewi North LGA for suitability, reliability, acceptability and appropriateness.

The questionnaires were used to collect information on variables such as: demographic characteristics, sexual health knowledge, attitude and HIV risk perception, pattern of sexual behaviour, contraceptive use and sources of sexual health information.

Eight hundred questionnaires were handed out, but 783 were returned (391 for in-school and 392 for out-of-school) – yielding an overall response rate of approximately 97.9%.

Data analysis

SPSS version 17 was used for data entry and analysis. Chi-square test was used to compare proportions of the categorical variables and t-test for comparison of mean values of the numerical variables. Differences and associations yielding p-values ≤ 0.05 were considered statistically significant.

Results

The mean age of in-school girls was 15.9 ± 1.4 years and that of the out-of-school girls was 15.5 ± 2.5 years. Most respondents in both groups were Catholics, though more predominant among in-school girls (59.8%) as shown in Table 1. Majority (57.9%) of the out-of-school girls lived most of their time with relatives, either of the two parents, friends and boyfriend compared to 77.7% of the in-school girls who lived most of their time with both parents (P=0.001).

Socio-demographic characteristics	In-school (N=391)	Out-of-school (N=392)	P-value*
Age (in years):			
10-13	9 (2.4)	84 (21.4)	
14-15	135 (34.5)	91 (23.2)	0.001
16-17	204 (52.1)	118 (30.1)	
18-19	43 (11.0)	99 (25.3)	
Religion:			
Roman Catholic	234 (59.8)	187 (47.7)	
Protestant	90 (23.0)	132 (33.7)	0.001
Pentecostal	54 (13.8)	69 (17.6)	
Islam	4 (1.0)	4 (1.0)	
Others-Sabbath, Jehovah's Witness	9 (2.4)	0 (0.0)	
Who they live with most time?			
Both parents	297 (77.7)	162 (43.9)	
Relative	31 (8.4)	133 (35.7)	0.001
Either parent	33 (9.0)	55 (14.9)	0.001
Friends	4 (14.8)	23 (6.2)	
Boyfriend	1 (0.3)	9 (2.4)	
Other	2 (0.5)	0 (0)	

Tuble It botto utility fulling the state of the groups fullingers (common percentages)	Table 1.	Socio-demographi	c characteristics o	of the groups	[numbers	(column	percentages)
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* Chi-square test.

In-school girls demonstrated better knowledge of sexual health compared to their peers that were out-of-school, as shown in Table 2. They had statistically significant knowledge of

fertile period compared to their out-of-school counterparts (P=0.001). However, less than 30% of girls in both groups were aware of the fertile period in a woman's cycle. Also, the in-school respondents had better awareness of contraceptive methods, types of STIs and HIV transmission and prevention than the out-of-school respondents, all of which were statistically significant.

Knowledge of sexual health	In-school	Out-of-school	P *
Knowledge of fertile period:	,		
During menstruation	45 (11.5)	76 (19.4)	
Immediately after menstruation	124 (31.8)	95 (24.2)	0.001
Half way between two periods	108 (27.7)	40 (10.2)	
Don't know	109 (27.9)	181 (46.2)	
Knowledge/Awareness of contraceptive methods: [†]			
Condom	285 (72.9)	267 (68.1)	
Abstinence	120 (30.7)	98 (25.0)	
Oral Pills	84 (21.5)	60 (15.3)	
Safe period	57 (14.6)	14 (3.6)	0.001
Injectables	38 (9.7)	28 (7.1)	
Withdrawal	47 (12.0)	13 (3.3)	
Others	2 (0.5)	0 (0.0)	
None	52 (13.3)	75 (19.1)	
Knowledge/Awareness of HIV/ AIDS/STIs: [†]			
HIV/AIDS	383 (98.0)	383 (97.7)	
Gonorrhea	264 (67.5)	217 (55.4)	
Syphilis	190 (48.6)	163 (41.6)	
Candidiasis	143 (36.6)	108 (27.6)	0.002
Chlamydia	13 (3.3)	12 (3.1)	
Herpes	18 (4.6)	8 (2.0)	
Others	11(2.8)	8(2.0)	
None	41 (10.5)	75 (19.1)	
Knowledge of HIV: HIV transmission can be: [†]			
By blood transfusion and sharing of sharp needles or blade	302 (77.2)	315 (80.4)	
Through mother to child transmission	171 (43.7)	97 (27.8)	
By sharing food with a person with HIV	33 (8.4)	64 (16.3)	0.001
Through mosquito bite	24 (6.1)	66 (16.8)	0.001
By witchcraft or supernatural means	8 (2.1)	30 (7.7)	
Reduced by using condom	125 (32.0)	47 (12.0)	
Reduced by not having sex at all	151(38.6)	36 (9.2)	

 Table 2. Sexual health knowledge of the groups [numbers (percentages)]

* Chi-square test.

[†]Multiple responses.

The commonest methods of contraception known to both groups were condoms, followed by abstinence. Less than 50% in both groups were not aware of other methods of contraception. Almost all adolescents in both groups (98%) were aware of HIV as a type of STI, followed by gonorrhoea, syphilis and candidiasis. More than 50% of the girls in both groups knew that HIV can be transmitted by blood transfusion and sharing of sharp needles or blade. Sixteen percent of out-of-school girls had the misconception that HIV can be transmitted by sharing food with an infected person and also through mosquito bites compared to less than 10% of the in-school girls. Only 12% of the out-of school girls believed that HIV can be reduced

using condoms, and a lower proportion of 9% believed it can be reduced by not having sex at all. This is in comparison to in-school girls with 32.0% and 38.6%, respectively (Table 2).

Most of adolescents thought that a single sexual intercourse was enough for one to become pregnant or acquire HIV infection (Table 3). In-school girls had better perception of risk of getting pregnant (χ^2 =16.31, P=0.001) or acquiring HIV infection (χ^2 =21.98, P=0.001), following a single sexual exposure. However, a greater proportion of their out-of-school peers perceived their chance of acquiring HIV to be high (χ^2 =20.03, P=0.001). Although most of adolescents could not rate their risk of acquiring HIV infection, most of them felt that their chance of getting the disease is nil or low. Furthermore, although majority of adolescents believed that AIDS is real, in-school girls demonstrated better attitude. Two hundred and forty five (62.7%) in-school girls compared to 36.0% out-of-school girls did not agree that girls should be sexually experienced prior to marriage. Similarly, a significant proportion of adolescents agreed that unmarried couples should use condom sex (χ^2 =27.84, P=0.001) (Table 3).

Attitude and risk perception	In-school	Out-of-school	P *
Number of sex before one can become pregnant:			
Once	307 (78.5)	257 (65.6)	
2-5 times	54 (13.8)	55 (14.0)	0.001
>5 times	22 (5.6)	25 (6.4)	
Don't know	17 (4.4)	57 (14.5)	
Number of sex before one can get HIV infection:			
Once	312 (79.8)	254 (64.8)	
2-5 times	55 (14.1)	48(12.3)	0.001
>5 times	14 (3.6)	26 (6.6)	
Don't know	21 (5.4)	64 (16.3)	
Perceives self at risk of acquiring HIV infection:			
None	117 (29.9)	86 (21.9)	
Low	29 (7.4)	40 (10.2)	0.001
Moderate	15 (3.8)	8 (2.0)	0.001
High	9 (2.3)	30 (7.7)	
Don't know	221 (56.5)	228 (58.2)	
A girl should have sexual experience before marriage:			
Agree	105 (26.9)	89 (22.7)	0.001
DNK/Unsure	41(10.5)	162(41.3)	0.001
Disagree	245 (62.7)	141 (36.0)	
Do you believe that AIDS is real?			
Yes	372 (95.1)	358 (91.3)	0.020
No	9 (2.3)	24 (6.1)	0.029
Don't know	10 (2.6)	10 (2.6)	
Unmarried couples should use condom during sex:			
Agree	148 (37.9)	128 (32.7)	0.001
Disagree	159 (40.7)	113 (28.8)	0.001
Don't know	84 (21.5)	150 (38.3)	

Table 3.	Knowledge.	attitude and	risk perce	ntion <i>Inun</i>	nbers (columi	n nercentages)]
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* Chi-square test.

Discussion

A major threat to health of the adolescent stems primarily from their sexual behaviour which is partly influenced by lack of knowledge of reproductive health issues. For example, only a

small proportion of both groups knew that a woman is likely to become pregnant half way between periods and even a smaller proportion of out-of-school respondents (10%) significantly differed from in-school adolescent (28%) in this regard. This is consistent with the finding of the NDHS (2008) where only 19% of all women knew the women's' fertile period (20). The study conducted in the northern part of Nigeria showed a lower result because only 3.1% knew when ovulation occurs (21). In South-Africa (22), it is 11%, while it is higher in Ethiopia (23) with 48%. This poor knowledge of fertile period amongst Nigerian adolescents may be the reason why the level of unwanted pregnancies and abortions is high. Currently, it is estimated that 23% of adolescents in Nigeria have begun child bearing (20). This finding strengthens the need to educate adolescents on reproductive and sexual health issues. However, a large proportion of both groups in this study knew that pregnancy is likely to occur at first sexual contact. This finding is consistent with the studies carried out in three states in Northern-Eastern Nigeria (49%) (15) and Lagos (60.5%) (24), but slightly lower with that carried out in Ethiopia (48%) (23).

A higher percentage of the in-school girls had better awareness of contraceptive methods than the out-of-school girls. The condom is mostly known by both groups followed by abstinence and oral pills. This agrees with findings of other studies conducted among adolescents (6,25-30). Adolescents and most young people have high awareness of condoms than most contraceptive methods (26). This is probably due to the much publicity given to preventive measures such as the condom with the onset of HIV pandemic; sometimes it is even distributed free of charge to the sexually active individuals. Ninety-eight percent of the two groups were aware of HIV/AIDS and this is consistent with the figures from the 2008 NDHS (20) and also with findings of studies carried out in Ghana (25), Malawi (27) and Uganda (28). Overall, the in-school adolescents significantly had better knowledge of HIV transmission and prevention than the out-of-school counterparts, 16.8% believed that mosquitoes can transmit HIV and only 9.2% believed that condom can prevent HIV transmission. This is not surprising as educational attainment is positively associated with increased awareness of HIV methods as reported in the 2008 NDHS (8) and other African countries (25,27-28). Both groups had better awareness of HIV than other STIs. This is common with most studies involving adolescents and is not surprising because of the pandemic nature and publicity given to HIV infection (13,16,25,27,28).

It is a common finding in studies involving the youth to discover that most do not consider themselves at risk of contracting HIV (25,27,28). In this study, more than half of the respondents in both groups do not consider themselves at risk or do not know that they are at risk of acquiring HIV infection. Misconceptions, ignorance, poverty, desire for pleasure and sex under the influence of alcohol amidst other factors may provide the possible explanation for the low risk perception (31). However, the in-school girls significantly had better perception of risk of getting pregnant (χ^2 =16.31, P<0.05), or acquiring HIV infection (χ^2 =21.98, P<0.05). They also had better attitude than their out-of-school counterparts. Overall, most disagree that girls should have sexual intercourse before marriage. Studies done in Lagos (13), Ethiopia (23) and Portugal (32) have also reported a similar finding.

Ninety-nine percent of the respondents affirmed that people had talked to them on issues of sexuality. In-school respondents had received their information mainly from parents and school teachers, while out-of-school girls had received information from youth organizations, parents and friends. This is consistent with results of similar studies done in Owerri (10), Benin (11) and in four other African countries (16). In this study, in-school adolescents significantly had more knowledge on sexual health than out-of-school adolescents. Involvement in schools and plans to attend higher education are all related to less sexual risk-

taking and lower pregnancy. However, their knowledge of many sexual health issues was poor; a significant number of both groups did not know their fertile period and had some misconceptions of HIV/AIDS.

Our study may have some limitations. Due to the sensitive nature of the topic, some respondents found it difficult to respond to some questions. Furthermore, some of the parents were not willing to allow their adolescent children to be interviewed, especially for the out-of-school girls. There was also the problem of privacy in the market. However, in order to circumvent these problems, painstaking explanations on the purpose and benefits of the study were offered to all adolescents and a good number responded positively thereafter. In addition, our findings should be interpreted with caution due to the cross-sectional nature of our study design.

In conclusion, this study has revealed that in-school respondents showed higher knowledge of sexual and reproductive health issues than their out-of-school counterparts, probably because of the effect of the school environment. They had better knowledge of HIV transmission and prevention methods, STIs and contraception. However, both groups had low knowledge of fertile period and other forms of contraception. The in-schools girls also had better risk perception of HIV/AIDs and demonstrated better attitudes than the out-of-school girls towards pre-marital sex and condom use.

It is therefore recommended that out-of-school adolescents should be targeted to go through behavioural change communication (BCC) on sexual and reproductive health issues. Using the findings of the study as a baseline data, the Ministry of Health and Education, faith organizations, international and non-governmental bodies and all adolescent stakeholders should be encouraged to collaborate and cooperate with opinion leaders into impacting and improving the reproductive and sexual health knowledge of adolescents more so for the outof-school adolescents. These could also happen by training and retraining more teachers and peer educators on issues of reproductive and sexual health for impartation on their students and their out-of-school counterparts.

Parents are the primary sexual educators of the children. Parents should be sensitized on the importance of providing a supportive home environment; maintaining strong ties with them and giving appropriate information on sexual issues according to their ages. This will bring about a level of family connectedness that will effect positive changes in the sexual behaviour of the adolescents. The responsibility of sensitizing parents can be taken up by the Ministry of Women Affairs with cooperation from faith-based organizations, representatives of market women, parents, teachers association and other bodies.

Conflict of interest: None declared.

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Ethical consideration and permission: Ethical clearance was secured from the Ethics Committee of the Nnamdi Azikiwe University Teaching Hospital Nnewi. Official permission was also obtained from Anambra State Education Commission, Onitsha North Local Government authorities, each selected school authority and the authorities in charge of the market. Informed consents were obtained from the adolescents' parent/guardian especially for out-of-school respondents and from all respondents after explaining the purpose,

objectives and benefits of the research to them. They were assured of no harm in participation and were told that participation is entirely voluntary.

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EDITORIAL

Future directions for research on neglect, abuse and violence against older women

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The elder abuse field has developed significantly since its inception as a field of practice along with gerontology in the 1970s. Research on elder abuse evolved later, stimulated by the work of the late Rosalie Wolf, considered a founder of the elder mistreatment field (1). Much of this work has been interdisciplinary, with medicine, law, nursing, psychiatry and social work collaborating, as well as sociology. As a result, important research initiatives have significantly broadened our understanding of prevalence, and other dimensions of elder abuse, within aging and vulnerable adult frameworks. However, some aspects of elder abuse remain underdeveloped and open for further exploration.

Feminist perspective/domestic violence

Much work still needs to be done to bring elder abuse into the domestic violence field. Feminist scholars particularly in the disciplines of sociology, social work and psychology in the 1980s and 1990s began to consider elder abuse within a feminist perspective (2). Some limited intervention research on elder abuse in this frame was initiated (3,4).

Feminist gerontology has also been developing as a perspective (5). Coming out of social gerontology and critical theory, this perspective seeks to focus on gender relations in gerontology and builds on the pioneering work of Mary Bricker-Jenkins and feminist social work practice (6). Bringing elder abuse within the domestic violence framework has resulted in increased understanding of why older women have been invisible as victims and survivors of intimate partner abuse (7).

Some novel research methodologies have emerged from the European Union (8) and the World Health Organization (9) in examining prevalence of abuse experienced by older women. Another direction that has yet to be fully explored in the elder abuse literature with respect to older women and abuse is that of the application of complex trauma to an understanding of neglect, abuse and violence against women in later life (10-15).

Life course perspective

Bringing a life course trauma-focused perspective may also address another gap in the literature on older women and abuse: the failure of gerontology and the vulnerable adult fields to focus on older women and abuse in spite of evidence that abuse is more prevalent for women of all ages, compared with men; and the failure of the domestic violence field to include women above the age of 49 in prevalence studies and to relegate older women in an "other" category (Susan B. Somers, President, International Network for the Prevention of Elder Abuse, Personal Communication, January 5, 2019).

To place elder abuse within the field of family violence, we need to move beyond a siloed approach to understanding abuse only as child abuse (vulnerable dependent) and spouse/partner abuse (reproductive age women as victims/survivors). These siloes when applied to elder abuse have resulted in a misunderstanding of older adults as frail care dependent victims or as experiencing negligible intimate partner violence in later life. It has also obscured an identified risk factor in elder abuse: abuse experienced earlier in the lifespan of elder abuse victims (16).

Trauma-informed care

Only very recently has trauma been considered a factor in elder abuse (14,17). Social work is a leading profession that has placed trauma-focused care as a practice model in the fields of child abuse and spouse/partner abuse. However, the medical model dominating elder abuse has resulted in a lack of understanding of the role of trauma in elder abuse. Both feminist gerontology and a life course



perspective require a feminist perspective and an understanding of domestic violence as part of the life course. While theory has laggedobservation, a growing body of research has identified a correlation between abuse early in the lifespan and abuse (16,18). This required elder challenging the ageist bias in the field of domestic violence, as well as the wellmeaning but misguided effort to address a perceived sexist bias in gerontology research by applying a gender neutral lens (19).

Practitioners and researchers are beginning to develop and assess trauma-focused interventions and care. Among promising psycho-educational models include groups, groups promoting support spirituality among older women who have experienced familial abuse, and interventions intended to target depression and abuse (4,20,21).

Acknowledgement of trauma as a central factor in abuse for girls and women of all ages not only provides an explanatory framework for what has been identified as a risk factor for elder abuse, experiencing abuse as a child, but can also provide a practice framework for interventions across the lifespan. It also has the potential for integrating older women into a life course perspective on neglect, abuse and violence against girls and women: older women are too often relegated to an "other" category as though old age renders older women gender neutral (see Susan B. Somers, above). Interventions for children who have experienced abuse, as well as younger women who are victims of domestic violence, may mitigate against vulnerability to abuse in later life as older women. Also, interest in unresolved trauma in later life has led to models of intervention that can begin to address late life trauma or earlier unresolved trauma.

Theoretical advances in understanding neglect, abuse and violence across the life course

The field of elder abuse research has been hampered by lack of a unifying theory that explains abuse of older adults in domestic settings (22). This is also the case for understanding neglect, abuse and violence against older women from a life course perspective, and in explaining how abuse experienced in childhood can be a risk factor for abuse in later life. An understanding of trauma across the life course provides one framework for conceptually linking abuse experienced earlier in life to risk of late life abuse (23). Research has found that the effects of childhood trauma may persist or surface intermittently with mental or physical effects that include continued revictimization (24). Early life trauma has been associated with later life physical and mental health problems; in addition, the broad scope of early traumatic experience is also evident in risk behavior studies. One comprehensive literature review found that the correlates and consequences later of childhood trauma on life consequences is compelling (25). The effects of early trauma can be life-course persistent and negatively affect the wellof individuals. being families and communities. Understanding this from a life course perspective can help to identify multiple points of intervention, with trauma-informed research and practice models.

Childhood trauma effects can persist into old age (26). The Adverse Childhood Experiences (ACE) Study conducted by Kaiser Permanente in California has found that the more adverse experiences subjects reported experienced in childhood, the more difficulties they reported encountering in later life (27). In addition,



older women who report interpersonal violence earlier in their lives experience adverse cumulative emotional and health symptoms that affect wellbeing later in life (28,29).

Lifetime prevalence of gender-based violence in women and the relationship with mental disorder and psychosocial often overlooked functioning is prevalence studies of neglect, abuse and violence against older women (30). Survey questions about interpersonal abuse within the past year or even five years might lead to misleading conclusions that older women experience minimal if any genderbased violence compared to younger ones, when in fact abuse experienced earlier in life can continue to be vividly experienced in late life as well.

Complex trauma and relevance to abuse in later life

Individuals with a history of interpersonal trauma rarely experience only a single event, and traumatic mav have experienced exposure sustained, to repeated or multiple traumas: this has been proposed to lead to a complex symptom that includes presentation not only posttraumatic stress symptoms but also those predominately in affective and interpersonal domains (31). This is known as complex trauma, a type of trauma that occurs repeatedly and cumulatively and within specific relationships and contexts (32). While initially thought to be related to child abuse, including child sexual abuse, the expanded understanding now extends to all forms of domestic violence. including emotional abuse, and attachment trauma occurring with the context of family and other intimate relationships over extended periods of time (33,34).

While complex trauma (developmental disorder for children) has been proposed as a diagnostic category for the DSM-5, to date it has not been accepted as a distinct diagnostic category (35). The 11th revision

World Health Organization's to the International Classification of Diseases (ICD-11) does include Complex Post Traumatic Stress Disorder (CPTSD) as a diagnostic category distinct from PTSD (36). The ICD-11 CPTSD includes not only the three symptom clusters associated with PTSD (re-experiencing the trauma in the here and now; avoidance of traumatic reminders; and a persistent sense of current threat manifested by exaggerated startle and hypervigilance) but in addition three additional clusters, identified as disturbances in self-organization. These include affective dysregulation; negative and disturbances self-concept; in relationships (37).

The basis of the concept of complex (developmental) trauma is attachment theory, originally formulated by Bowlby (38). Other clinicians and theorists began to examine the developmental timing of trauma exposure and emotional dysregulation in adulthood (39,40), the impact of the developmental timing of trauma exposure on PTSD symptoms and psychosocial functioning among older adults (10), and the relationship between childhood trauma and complex posttraumatic stress disorder symptoms in older adults (15).

With a theoretical basis for understanding complex trauma from a developmental perspective, researchers and practitioners have begun to understand the links childhood between experiences of interpersonal trauma and abuse with experiences across the lifespan, including old age (14,17,31). As this understanding developed, intervention strategies evolved with gerontologists taking the lead in implementing and evaluating them (20). In addition, translational collaborations between researchers and clinicians have resulted in formulating clinical applications of the attachment framework (13) as well as designing phase-oriented clinical interventions (41).



Interventions for later life interpersonal victimization related to lifetime trauma necessarily require cognitive history capacity, access to treatment modalities with skilled practitioners, and motivation on the part of the victim, and may also require access to safe living alternatives and other community and social supports (42). Cultural beliefs about the role of girls and women within the family, as well as perceived responsibilities of older mothers toward impaired adult children who are abusive (43,44), are salient, even without past histories of abuse. Abuse of older women with dementia and/or severe physical care needs, particularly within settings, requires different care intervention strategies targeted to institutional or criminal justice remedies (45). However, for cognitively unimpaired victims living in the community who are struggling to resolve chronic abuse particularly as perpetrated by family members or trusted others, and who disclose a history of abuse as children and

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young adults, trauma focused interventions may be indicated.

Conclusion

Chronic interpersonal abuse experienced earlier in life, particularly if not within an enabling environment and if left unaddressed and unresolved, may predispose some victims to continued trauma during their lives, according to trauma-informed researchers (16.18).Adoption of a public health framework to address trauma can assist researchers, practitioners and policy makers to develop a theoretically informed multi-faceted prevention and intervention strategy to address what is known as complex trauma (14). Recently evolved methodologies for assessing, measuring (46,47) and treating this in older adults, including older adult victims of abuse, are beginning to make this feasible.

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REVIEW ARTICLE

Neglect, abuse and violence against older women: Definitions and research frameworks

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Abstract

The aging of the global population with women living longer than men, resulting in the feminization of aging, focuses attention on the intersection of gender and age. Women across the lifespan can be victims of violence but there has been little attention to date to the neglect, abuse and violence against older women. Because of this gap in knowledge and remedies, little is known about neglect, abuse and violence against older women, particularly its prevalence as well as evidence-based prevention and intervention strategies. Several definitions of neglect, abuse and violence are reviewed here, along with conceptual frameworks that operationalize these definitions differently, resulting in differences in findings on prevalence as well as fragmentation in the way that older women victims of abuse are viewed. Three definitions of older adult abuse are discussed, including those formulated by the Toronto Declaration, the National Research Council, and the United States Center for Disease Control. Each focuses on a different aspect of abuse of older women: active ageing, old age dependency, and domestic violence in later life. A fourth conceptual framework, the human rights perspective, shows promise for addressing abuse of older women in a more holistic manner than the other definitions, but Is not fully developed as a way of understanding neglect, abuse and violence against older women. This is the first of a four-part series on older women and abuse.

Keywords: ageing, elder abuse, neglect, older women, violence.

Older women, socio-demographics, and human rights

Population aging is a global trend that is changing economies and societies around the world (1). In 2012, people aged 60 years and older represented almost 11.5% of the global population and by 2050 this is expected to double to 22%. Older women outnumber older men: in 2012 for every 100 women aged 60, there were 84 men, and for every 100 older women aged 80 and above, there were only 61 men. The feminization of aging, representing the intersection of age and gender, has important implications for policy as the world continues to age. Gender discrimination across the lifespan has a cumulative effect, and neglect, abuse and violence across the lifespan results in a high lifetime rate for older women. Neglect, abuse and violence against older women have been largely overlooked as a focus of research; this is in spite of the fact that unique and compounded disadvantages are experienced by older women (2). Older women aged 60 years and older have been identified as subject to discrimination by the Convention to Eliminate All Forms of Discrimination Against Women (CEDAW) experts in 2010 and by the United Nations (UN) Department of Economic and Social Affairs (DESA) in their 10-year review of the implementation of the Madrid International Plan of Action on Ageing (3). One area of discrimination in the form of human rights violations that has been largely overlooked by policy makers, researchers and advocates for girls' and women's rights is neglect, abuse and violence of older women.

Because of this gap in knowledge and remedies, little is known about neglect, abuse and violence against older women, particularly its prevalence as well as evidence-based prevention and intervention strategies. In November 2013, to begin to address this gap, the UN DESA held an Expert Group Meeting (EGM) inviting researchers and other experts from around the world to New York City to review the state of knowledge, gaps and next steps to address this area of human rights violations against women and older people.

One of the recommendations in the final report, "Neglect, Abuse and Violence Against Older Women", prepared by the UN DESA Department of Social Policy and Development, is that *"while both quantitative and qualitative research have begun to develop salient factors in cultural differences, age-related differences and service needs and gaps for older women victims"* (2), more data are needed both on prevalence as well as practices to prevent neglect, abuse and violence against older women. In addition, unifying themes that connect older women in developing and developed countries, and in both modern and traditional societies, should be identified along with unifying themes that connect women of all ages.

Discrimination against older women

Women across the lifespan can be victims of violence, but neither the women's domestic violence movement nor the aging empowerment movement has mobilized to end violence against older women. While elder abuse has been the object of many studies, abuse of older women has had only modest attention in the gender based literature (4). Older women have lacked status as battered women in domestic violence research and activism. Older women are often excluded in studies of violence against women and often completely absent as though older women do not belong in the category of women.

Older women are often absent from discussions about shelters and hotlines, and there is the lack of a debate on circumstances and special needs of older women victims of abuse that may affect help seeking behavior. However, a gender analysis of violence against women and girls focuses on male dominance and subordination of women, and subordination seems especially relevant for older women (4). Is the women's domestic violence movement ageist? Why haven't older people taken ownership of mistreatment of their peers (5)? Why hasn't the professional leadership in this field joined with older people to form a grass roots movement like the women's movement to speak out against elder abuse? Could social ambivalence

about old age be one reason, and the double jeopardy of sexism and ageism another? Abuse of older women is neglected by advocates of gender equity, women's rights activists and aging advocates. Is it because the link to frailty and dependency makes older abused women appear to lack agency?

Gender inequality and the life course

The United Nations Special Rapporteur on Violence against Women observes that the inequality and discrimination experienced by women intensifies with old age (6). Discrimination against older women on the basis of age and gender can result in situations where they experience neglect, abuse and violence (7).

Ageism

Ageism is defined as "the systematic stereotyping and discrimination against older people because they are old, just as racism and sexism accomplished this with skin color and gender" (8). Ageism reinforces systems of oppression in two ways. It focuses on individual perspectives and actions and leaves hidden insidious forms of discrimination. Age blindness implicitly uses the privileged as the norm and judges others by that standard (9). Ageism and sexism create a socially constructed dependency in old age of which feminization of poverty is a key factor. These factors make discrimination and disadvantage seem inevitable. For older women, invisibility is symbolic of this process (10). Whittaker (10) suggests that the failure of gender experts to do this analysis is a measure of the entrenched ageism within the women's movement.

Cultural norms and social expectations

Social expectations and changing social norms can also create a perception of abuse toward older family members (11). In studies of older adult abuse in Asia and South Asia, the daughter-in-law is often identified as an abuser for not serving a traditional role of caregiving in the home while engaging in paid work or a career (12).

Public policy and availability of social and health programs

Political decisions about social protections for older women, and availability of health, mental health, criminal justice and other resources can limit options within families and communities for addressing issues of neglect, abuse and violence, according to Shankardass (13).

Multi-dimensional nature of neglect, abuse, and violence against older women

Manjoo (6) argues for a holistic approach to understanding abuse of older women and how to address it. Recognizing intersectionality and the continuum of violence against older women requires analysis of violence in four spheres: violence in the family; violence in the community; violence that is perpetrated or condoned by the State, including custodial settings like care homes and hospitals; and violence in the transnational sphere as it affects migrant, refugee and asylum seeking older women (6).

Gender inclusion

While abuse can affect all older adults, older women are arguably more likely to experience many of these forms and levels of abuse than older men. First, women live longer and with chronic impairments for which they may need support in the home and community. Second, older women are less likely to have adequate pensions and other benefits than older men, giving them fewer resources to ensure their independence. Finally, women across the lifespan

experience cumulative disadvantages and lower status than men, leaving them more vulnerable to abuse and neglect in old age.

Purpose

The purpose of this series of articles is to discuss the current state of knowledge about abuse of older women. It explores various definitions of neglect, abuse and violence against older adults and discusses whether there are agreed upon definitions of neglect, abuse and violence against older women. It addresses main forms or categories, prevalence and risk factors of neglect, abuse and violence against older women, as well as health consequences of violence and abuse, and data sources along with problems in collecting such information. It also provides an overview of needs of older women survivors of neglect, abuse and violence. It discusses preventive measures to address the issue, presenting evaluations of their effectiveness where available. It provides an overview of main approaches to addressing abuse of older women, and key interventions including policies and programs for the protection of older women victims of abuse along with outcomes where evaluations have been completed. Finally, recommendations are offered for further improvement of policies in these areas.

This paper focuses on definitions of neglect, abuse and violence against older adults based on current conceptualizations of abuse. It proposes that there are three dominant conceptual frameworks for understanding neglect, abuse and violence against older women. These are: older adult mistreatment, informed by social gerontology and using a definition proposed in the Toronto Declaration on Elder Mistreatment (14); older adult protection, informed by geriatrics using a definition that was formalized by the National Research Council (15); and intimate partner violence or domestic violence against older women, informed by feminist gerontology and adapting a definition originally formulated by the USA Centers for Disease Control (CDC) (16). A fourth, a human rights perspective, is an emergent framework for examining abuse of older women, and is currently under development (17) (Bridget Sleap, Senior Policy Advisor, HelpAge International, Personal Communication, August 8, 2013). Differing definitions have led to research findings, policy responses, and programs and practices that may appear contradictory and confusing to those not familiar with the field of elder abuse and neglect (18). Each is linked to different assumptions and theoretical explanations for abuse of older women, and interventions including policies, and programs and practices to prevent and end neglect, abuse and violence against older women.

Forms of abuse

Main forms of abuse used to categorize mistreatment of older women include: physical, sexual, psychological (also called emotional, verbal and non-physical) abuse, financial (also called material) exploitation, neglect, and violation of personal rights (19). Different conceptual frameworks use a combination of different forms to operationalize abuse. The Elder Mistreatment and Older Adult Protection frames use most of the forms cited above, with the possible exception of violation of personal rights, sometimes termed social abuse (20). The Intimate Partner Violence (IPV) frame uses physical, sexual, and psychological forms of abuse, and sometimes violation of personal rights, but not neglect and usually not financial exploitation (unless included in a measure of psychological abuse) (16).

Physical/Sexual: Some studies of older women and abuse categorize sexual abuse as a sub-set of physical abuse. Physical abuse includes actions intended to cause physical pain or injury to an older adult, such as pushing, grabbing, slapping, hitting, or assaulting with a weapon or thrown object. Sexual abuse can include offensive sexual behaviors as well as physical contact of a sexual nature (14).

Psychological: This form of abuse is also called verbal or emotional abuse, which may be further defined as active or passive. This describes actions intended to inflict mental pain, anguish or distress on an older person (19).

Qualitative research studies have examined forms of psychological abuse against women in greater depth. Montminy (21) found 14 types of psychological abuse, which can be active or passive, perpetrated by intimate partners against older women. These include: control, denigrate, deprive, intimidate, threaten, abdicate responsibility, manipulate, blame, harass, negate victim's reality, sulk, infantilize, show indifference, and provoke guilt. In IPV studies, financial exploitation or material abuse (use of property or possessions without victims' permission) can be a subset of psychological abuse. Also in IPV research, psychological abuse may be limited to threats of physical or sexual violence.

Neglect: The National Research Council (NRC) definition of elder abuse, with its inclusion of vulnerability as a core concept associated with victims, provides the most explicit link with neglect of older care dependent adults. This definition is further operationalized to include neglect as an "omission by responsible caregivers that constitutes 'neglect' under applicable federal or state law" and caregiver as "a person who bears or has assumed responsibility for providing care or living assistance to an adult in need of such care or assistance" (15). It is further operationalized as refusal or failure of these responsible for providing a caredependent older adult with assistance in daily living tasks or essential supports such as food, clothing, shelter, health and medical care. This can also include desertion of a care dependent older adult, also called abandonment (14).

There is no overarching theoretical framework for elder abuse (22). This makes it difficult to operationalize neglect of older women as part of a larger discussion of neglect, abuse and violence. In addition, in spite of a general observation that older adult caregiving dyads are most likely female (23), there is a paucity of studies that focus on neglect as a form of elder abuse perpetrated against elderly care dependent women by female formal or informal caregivers. Research and discussions that link caregiving of care dependent older adults and neglect by caregivers in general are either gender neutral or treat gender as a study variable.

Financial exploitation and material abuse: This form of abuse describes actions of illegal or improper use of an older person's money, property or assets. Women have been found to be especially vulnerable to this form of abuse and were twice as likely to be victims of financial abuse as men in a recent study conducted in the USA (24). Most victims in this study were between the ages of 80 and 89 years old, lived alone, and had some care needs that required help in their homes.

Violation of Personal Rights: Linked to the concept of individual human rights, this form of abuse includes the infringement of personal rights as a form of elder abuse (19). It includes behaviors that violate an older person's right to privacy, right to autonomy and freedom, and right to have access to family and friends. This form of abuse is also known as *social abuse* (20).

Definitions, differences and agreements

Most professionals in the field of elder abuse agree that lack of a generally accepted definition of abuse, mistreatment or maltreatment of older adults is a barrier to understanding this social problem. The lack of a commonly accepted definition of elder or older adult abuse is also a challenge for understanding the abuse of older women from a global perspective. Because definitions tend to use similar language in different frameworks, it can be confusing to differentiate among them. The discussion below attempts to clarify some of this definitional confusion.

Purposes of definitions

Definitions of elder abuse and neglect are used for research, particularly prevalence and population studies, policy and program development, and practice. Three influential definitions reflecting divergent underlying assumptions about elder abuse and abuse of older women have guided research and policy decision making. They are presented here.

Mistreatment of older adults (elder mistreatment)

In the Toronto Declaration on the Global Prevention of Elder Abuse, elder abuse is defined as "a single or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person. It can be of various forms: physical, psychological, emotional, sexual, and financial or simply reflect intentional or unintentional neglect" (14). This is linked to the active ageing concept of older adulthood, in which older women and men are considered to have the capacity to be productive contributors to society (25).

This definition originated with a United Kingdom NGO, Action on Elder Abuse in 1995 (26), and was adopted by an expert group on elder abuse from the International Network for the Prevention of Elder Abuse (INPEA) and the World Health Organization (WHO) that met in Toronto, Canada in 2002. Age of the victim is not defined as part of this definition but is usually 60 years of age and older in studies that use this definition, because they tend to focus on older adults living in the community. This definition used in elder abuse research, policy and practice formulation is influenced by social gerontology.

Critics of the WHO definition state that while it has become popular for policy purposes, it is difficult for researchers to operationalize and includes data elements, such as 'appropriate action', 'expectation of trust', and 'distress', which are largely subjective. The use of 'a single or repeated acts' as a baseline measure has been identified as ambiguous (26). 'Trusting relationship' is a key concept in both Elder Mistreatment and Older Adult Protection frameworks. This speaks to the nature of the relationship between older adult victims and perpetrators of abuse: crimes committed against older women by strangers are not defined as elder abuse in these research frames. This is not the case in IPV research, where rape and other forms of violence can be perpetrated against girls and women of all ages through casual dating experiences and by strangers.

Abuse of vulnerable adults (older adult protection)

Abuse of vulnerable older adults refers to "intentional actions that cause harm or create a serious risk of harm (whether or not harm is intended) to a vulnerable elder by a caregiver or other person who stands in a trust relationship to the elder, or failure by a caregiver to satisfy the elder's basic needs or protect the elder from harm" (15).

This definition of elder abuse was developed by an expert panel (Panel to Review Risk and Prevalence of Elder Abuse and Neglect) convened by the National Research Council of the United States National Academy of Science for the purpose of creating a suggested uniform definition and operationalized data elements on elder abuse for research, policy, and program development and practice purposes. In this definition, self-neglect, victimization by strangers, and intimate partner abuse of older adults, unless vulnerability exists above and beyond old age, is not considered elder mistreatment (27).

The conceptualization of elder abuse victims as frail and vulnerable older adults in need of protection falls under this definition. Care dependent older adults in home or institutional care settings with physical, mental or cognitive impairments, including Alzheimer's disease, may be viewed as potential victims of physical or emotional abuse, neglect, or financial

exploitation by family or professional caregivers with whom they have the expectation of a relationship of trust.

The vulnerable older adult conceptualization of elder abuse has been criticized as reflecting too closely the measures used in child abuse (18). While the Toronto definition is broad, the definition promoted by the US National Research Council on Elder Mistreatment has been criticized as overly narrow in defining victims as vulnerable, rendering it unusable for studies on late life domestic violence life, which can be experienced by able-bodied older people (26), and in precluding self-neglect. It has also been criticized as too broad in other definitional elements, such as "any harm ... and - can include but is not limited to", which allows too much discretion and latitude (26).

The concept of vulnerable adult, which is a key dimension of the NRC definition, has been criticized for being ambiguous and meaning different things in different frames. Goergen & Beaulier (28) have engaged in a critical analysis to better understand the concept of vulnerability within the context of elder mistreatment. In the Elder Mistreatment frame, older adults may range from unimpaired and independent to impaired and dependent, with only the latter group identified as vulnerable. In the contemporary feminist frame, often older women are assumed to be vulnerable based on age alone, and grouped with other categories of marginalized women as reflected in the panel for International Women's Day sponsored by UN Women at the United Nations, New York, on March 8, 2013.

Intimate partner violence against girls and women of all ages

Intimate partner abuse is defined as violence against women that "incorporates intimate partner violence (IPV), sexual violence by any perpetrator, and other forms of violence against women, such as physical violence committed by acquaintances or strangers (28).

This definition was developed by an expert panel convened by the United States Centers for Disease Control and Prevention in 1996 to formulate a uniform definition and recommended data elements for gathering surveillance data on intimate partner violence. It was intended to promote consistency in data collection for public health surveillance and as a technical reference for automation of the surveillance data (29).

Operationalized data elements broaden the scope of this definition somewhat. The victim is anyone who is the target of violence or abuse. The perpetrator is the person who inflicts the violence or abuse or causes the violence or abuse to be inflicted on the identified victim. In this definitional set, the perpetrator is assumed to be an intimate partner, defined as current or former spouse or common-law spouse, and current or former non-marital partner including dating partner (heterosexual or same sex), boyfriend or girlfriend. Violence can include physical, sexual, threat of physical or sexual violence, and psychological or emotional abuse.

Psychological abuse is defined apart from threat of physical or sexual abuse to include humiliating the victim, controlling the victim's behavior, withholding information from the victim, getting annoyed if the victim disagrees with perpetrator, deliberately doing something that makes the victim feel diminished, using the victims' money, taking advantage of the victim, disregarding what the victim wants, isolating the victim from family or friends, prohibiting the victim's access to transportation or telephone, getting the victim to engage in illegal activities, using the victims' children to control victims' behavior, threatening loss of custody of children, smashing objects or destroying property, denying the victim access to money or other basic necessities, and disclosing information that would tarnish the victims' reputation. It also includes consequences such as impairment, injury, disability and use of health, mental health and substance abuse services (29).

This conceptualization of abuse is not necessarily gender or age specific although it typically is applied to analyses of abuse and violence toward women of reproductive age. It does not

define the victim as incapacitated or care dependent. Financial or material exploitation if included at all is defined as a form of psychological abuse. It assumes a power and control relationship between the victim and perpetrator. According to this definition, sexual abuse could be perpetrated by an acquaintance or stranger; physical abuse could be perpetrated by a one-time date.

Violence

The World Health Organization (WHO) has used another definition of violence for a multicountry study of intimate partner violence against women. In this definition, violence is defined as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that results in or has a high likelihood of resulting in injury, death, psychological harm, or deprivation (30). It links intentionality with the commitment of the violent act, and] links the acts to a power relationship. This includes threats and intimidation as well as physical violence. It also includes neglect and all types of physical, sexual and psychological abuse, as well as selfabusive acts such as suicide (31).

This definition of violence against women was used in the WHO Multi-country study on women's Health and Domestic Violence against Women focused on intimate partner abuse of women that includes physical and sexual violence, emotional abuse, controlling behaviors and physical violence in pregnancy. It also includes a life course perspective on violence by non-partners since 15 years of age, and childhood sexual abuse before 15 years of age. Victim subjects were defined as ever partnered (currently or in the past) and even though the definition of victim did not specify age, in this study subjects were between the ages of 15-49 (22). Lifetime abuse prevalence is sometimes calculated across the lifespan for girls and women of all ages: this provides a relatively standardized prevalence measure that can be used to compare abuse rates across cohorts of women into old age (32).

Human rights and abuse of older people

Human rights is a recent conceptual framework that was the subject of discussion in fora like the Expert Group Meeting on Neglect, Abuse and Violence of Older Women and the Elder Abuse Symposium sponsored by the Elder Abuse Interest Group at the 2013 Gerontological Society of America meeting. The human rights framework is believed by some elder abuse experts to hold promise for understanding neglect, abuse and violence against older women in a holistic way without the potential for fragmentation of other frameworks (33).

While it is still too early to propose a human rights theory of neglect, abuse and violence against older women, some of the elements of such a theory can be tested using existing data. This includes applying a life course perspective using longitudinal data, and focusing on the experiences of older women specifically, not older people in general or women in general. It also includes awareness of intersectionality, specifically related to gender and age, but also including race/ethnicity, class, access to health and mental health, and relationships.

Including the concept of intersectionality begins to draw on a human rights framework. This states that human rights are interdependent and the level of enjoyment of any one right is dependent on the level of realization of the other rights. The Convention for the Elimination of all Forms of Discrimination Against Women (CEDAW) and the CEDAW General Recommendation No. 27 (human rights of older women) lay out the rights of older women to live lives of dignity free of discrimination and abuse (34).

The human rights framework defines older adults as rights bearers, because they have a right to live lives of dignity, free of abuse, and family members and caregivers as duty bearers, to explain their obligation to ensure that older adults to whom they are related or to whom they

have a commitment to provide care. The State (government) is a duty enforcer, with the obligation to ensure that the rights of older people are upheld, and sometimes are duty bearers, when the State is directly responsible for older people's care. The most recent research on older adults and abuse using this framework has been undertaken by HelpAge International in collaboration with the London School of Economics.

Each of the frameworks used to study and understand neglect, abuse and violence against older women leads to different and conflicting findings, including prevalence and risk factors associated with the neglect, abuse and violence. In the next issue of the journal, findings from prevalence and qualitative studies as well as risk factors will be presented and discussed.

Acknowledgment

Dr. Patricia Brownell served as consultant to The United Nations Department of Economic and Social Affairs (DESA) in drafting a paper on neglect, abuse and violence against older women. In November 2013, the UN DESA held an Expert Group Meeting (EGM) inviting researchers and other experts from around the world to New York City to review the state of knowledge, gaps and next steps to address this area of human rights violations against women and older people.

Conflicts of interest: none declared.

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ORIGINAL RESEARCH

Adverse effects of maternal age, weight and smoking during pregnancy in Pleven, Bulgaria

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Abstract

Aim: This paper aims to study the relationship between mothers' age, body mass index (BMI), gestational weight gain (GWG) and smoking and the risk for premature birth in Pleven, Bulgaria.

Methods: A case-control study was conducted in Pleven in 2007. The study was comprehensive for all premature children (N=58) and representative for full-term infants (N=192, or 10.4% of all of the 1827 full-term children) born in 2007 at the University Hospital of Pleven and resident in the city of Pleven. Retrospective data on determinants under study were collected from all the mothers included in this study (N=250).

Results: Mothers of premature children were more likely to be above 35 years old (27.6%), with a BMI \geq 25 kg/m² (23.1%), GWG below the recommended value (38.5%) and to smoke during pregnancy (37.9%). The odds of being a smoker during pregnancy were five times higher among mothers with low birth weight (LBW) newborns compared with their counterparts with normal birth weight newborns (OR=5.1, 95%CI=2.4-10.6). There was a positive association between BMI and LBW in infants whose mothers were overweight (OR=2.1, 95%CI=1.0-4.0). The risk of LBW increased when GWG was less than recommended (OR=1.8, 95%CI=1.0-3.1).

Conclusion: Our results indicate that pre-pregnancy BMI ≥ 25 kg/m², less than recommended GWG and smoking during pregnancy are risk factors for premature birth in Pleven region. Findings from this study suggest the need for active health and educational actions by health professionals in order to avoid premature births in Bulgaria.

Keywords: Bulgaria, lifestyle, Pleven, premature birth, risk factors.

Conflicts of interest: None.

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Introduction

Premature birth (PB) is a major public health problem worldwide (1). Furthermore, PB is rated as one of the most important single causes of the global burden of diseases in neonatal period (2). It is associated with increased infant mortality, short and long-term negative effects on health and additional costly care needs (3).

The interest of researchers in personal characteristics and lifestyle factors of the mothers is due to the fact that they are modifiable and they affect the incidence of premature birth. The challenge is to accurately measure the impact of these factors because of their complexity (4). Several studies have shown young maternal age as a significant risk factor for premature birth (5,6). It has not been established with certainty yet, whether this risk is associated primarily with the biological immaturity of young mothers, or an increased incidence of certain risk factors associated with socioeconomic status such as age-appropriate educational level, parity, smoking status, prenatal care utilization and poverty status (7,8). Women over the age of 35 years are also at increased risk of pre-term birth. Astolfi and Zonta (2002) found a 64% increase in the probability of giving premature birth for women over 35 years after controlling for educational status, birth order, and sex of the newborns (9).

Low or high pre-pregnancy body mass index (BMI) and inadequate or excess gestational weight gain (GWG) are linked to an increased risk of adverse neonatal outcomes (10,11). The weight of a woman before the pregnancy is related to her diet, quantity and quality of food (4). Studies have shown that low weight of women before pregnancy is associated with an increased risk of preterm birth (12). Campbell et al. (2012) found a link between low prepregnancy BMI and the birth of a premature baby, with a relative risk of >2.5 (6). A study conducted in 2010 in Bulgaria on the role of some risk factors for preterm birth failed to establish a statistically significant difference in the weight of women bearing preterm children and those with to term births (13).

Smoking is defined as one of the most common and preventable causes of adverse outcomes of pregnancy (14,15). Many chemicals in maternal smoking pass from the pregnant woman to the fetus through the placenta (16). Smoking is associated with placental abruption and inadequate weight gain during pregnancy, but this relationship with the birth of a premature baby is not conclusive and is not proven in all studies. The probable reason for this is that the impact of smoking depends on its duration and intensity, and decreases in women who stop smoking at the beginning of pregnancy (17). Some studies have found a strong causal association between smoking and PB of a child (18). A large number of studies have found a moderate influence of smoking in relation to PB of a baby (14,16,17).

Bulgaria is a country that is characterized by one of the highest indicators of age-specific fertility rate (above 40 per 1000) in Europe in the age-group 15-20 years, which is a risk factor for giving birth to a premature baby (19). According to Manolova (2004), 42.3% of women in Bulgaria smoked during pregnancy (20). However, prematurity as a public health issue has not been subject to scientific inquiry in Bulgaria in the past two decades. Yet, there are a small number of scientific publications in terms of risk factors for PB in Bulgarian children (21).

In this context, there is a need to determine the lifestyle characteristics of mothers as important factors for PB in Bulgaria. This paper aims at studying the relationship between mothers' age, BMI, GWG and smoking during pregnancy and the risk for PB in the city of Pleven, Bulgaria. We hypothesized a positive association between PB and younger or older age and smoking habits of the mothers. Furthermore, we assumed a positive link between low BMI and low weight gain during pregnancy and PB.

Methods

Study design

A case-control study was carried out in 2007 in the city of Pleven, Bulgaria. Pleven is a typical township, located in Central North Bulgaria. At the beginning of the study (in 2007) the size of the population of the city was 139,573 people. In the same year, the birth rate was 8.96‰. Maternal care was carried out only by the University Hospital. There were 2004 children born at the University Hospital, of whom, 1981 were live births. The proportion of preterm infants among all live births was 7.7%.

Study population

The anticipated sample size for inclusion in this study consisted of 250 newborns. The study was comprehensive for all premature children (N=58) and representative for full-term infants (192, or 10.4% of all 1827 full-term children) born in 2007 at the University Hospital of Pleven and resident in the city of Pleven.

Cases: 58 premature infants weighing 2500 g or less at birth. Their gestational age was 37 weeks or less, and they resided in Pleven.

Controls: 192 term infants who were matched to premature infants by date of birth. They were selected randomly among preterm children born on the same date. They weighed more than 2500 g. Their gestational age was more than 37 weeks and they also resided in Pleven.

Data collection

Document analysis: The information on birth weight, gestational age and home addresses of newborns was derived from medical records in a neonatal clinic at the University Hospital-Pleven.

Interview: The information for mother's age, weight of women before the pregnancy, weight gain during pregnancy and smoking habits was gathered retrospectively by interviewing mothers during home visits. Such information was not available in the records of mothers in the obstetrics ward, and not all women retained documents from antenatal visits.

Special questionnaires were designed for the purpose of the study. They were part of a larger study on risk factors for premature birth in the region of Pleven, Bulgaria. The questionnaire used for the documents' analysis contained 39 questions, four of which were related to demographic and socio-economic status of the mother. The questionnaire for the interview comprised 92 questions, nine of which were about the lifestyle factors of the mother. For the validation of the questionnaires, a pilot study was conducted. Before and after the pilot study questionnaires were discussed and approved by experts, pediatricians, obstetricians and public health professionals.

All included mothers answered the questionnaire in the process of an interview. All data in this study were based on women's reports during the survey interviews.

Ethical considerations

The study was conducted under the supervision of the Chair of the IRB (Institutional Review Board). The right of privacy of the studied subjects was guaranteed. Only the leading investigator had access to the identifying information. Mothers expressed their free will for participation and signed an informed consent before the interview.

Outcomes

We studied two outcomes: preterm birth (PB<37 weeks completed gestation and birth weight <2500 g) and low birth weight (LBW: birth weight <2500 g).

Determinants

Age of the mothers was determined as: \leq 24 years, 25-29 years, 30-34 years and \geq 35 years. Pre-pregnancy BMI was categorized according to the World Health Organization (WHO) as

either being underweight (BMI<18.5kg/m²), normal weight (18.5 \leq BMI \leq 24.9), overweight (25 \leq BMI \leq 29.9), or obese (BMI \geq 30).

We utilized the 2009 Institute of Medicine guidelines on GWG to categorize women's weight gain for their BMI as below, within, or above the recommended value (22).

Smoking during pregnancy was determined based on the question "*Did you smoke during pregnancy*?". Women who responded "*yes*" or "*rarely*" were categorized as "regular smokers" and "occasional smokers".

Statistical analysis

The survey data was processed with the statistical software packages SPSS (Statistical Package for Social Sciences), version 11.5, STATGRAPHICS and EXCEL for Windows.

The results were described using tables. Percentages were used to report the observed distribution of age of the mothers, BMI, GWG, smoking during pregnancy and other maternal characteristics.

Parametric tests for hypotheses testing at normal and near to normal distribution of cases: Ttest, ANOVA with post hoc tests (LSD, Tukey, Scheffe, Bonferroni, Newman-Keuls, Duncan) and nonparametric tests in other than normal distribution of cases Pearson χ^2 -test, Mann-Whitney, Kruskal-Wallis H-test were applied. Regression models for modeling and predicting of correlations and multiple logistic regression analyses controlled for covariates estimated the odds ratios with 95% confidence intervals of PB and LBW were used.

Using multivariable linear regression we assessed the relationships of studied determinants with outcomes (PB, LBW). Odds ratios (OR) were calculated to determine the effect of the age, weight and smoking during pregnancy, as factors for preterm birth.

In all cases, a value of $P \le 0.05$ was considered as statistically significant.

Results

Table 1 presents the distribution of basic characteristics of the participants by PB status. The distribution of maternal characteristics varied across mothers with PB and term birth.

Overall, 17.2% of women were above 35 years old. The share of older mothers was two times higher among those with PB compared to women with term-birth. Overall, 23.3% of women were underweight and 12.5% were either overweight or obese. The proportion of overweight was more than two times higher among mothers with PB (19.2%) compared to mothers with term-birth (9.6%). Around half (48.8%) of women gained above than the recommended weight for their BMI and a quarter (24.6%) gained less than the recommended weight. About 39% of women with PB compared to 21% of mothers with term-birth gained less than the recommended weight. Smoking was reported by 38% of women: 16% of them were regular smokers and 22% occasional smokers. The proportion of mothers with PB who smoked (38%) was about four times higher compared to smoking women with term-birth (10%).

Compared to mothers with term-born infants, mothers of premature children were more likely to be above 35 years (27.6%), have a BMI \geq 25 (23,1%), have a GWG below the recommended value (38.5%), smoke during pregnancy (37.9%) and deliver PB children after the third delivery (17.2%). Significant differences among mothers with PB were identified for maternal age, pre-pregnancy BMI, GWG, maternal smoking during pregnancy and birth order. Conversely, there was no significant difference between groups with regard to their income level.

Characteristics	All women (N=250)	Mothers with premature birth (N=58)	Mothers with term birth (N=192)	Р
Maternal age				
≤24 years	25.8	10.4	30.5	0.001
25-29 years	27.4	37.9	24.2	0.049
30-34 years	29.1	24.1	30.5	NS
\geq 35 years	17.2	27.6	14.8	0.047
Pre-pregnancy BMI				
$<18.5 \text{ kg/m}^2$	23.3	15.4	25.5	NS
$18.5-24.9 \text{ kg/m}^2$	64.2	61.5	64.9	NS
$25.0-29.9 \text{ kg/m}^2$	11.7	19.2	9.6	NS
$\geq 30 \text{ kg/m}^2$	0.8	3.9	-	-
Gestational weight gain				
<recommended< td=""><td>24.6</td><td>38.5</td><td>20.7</td><td>0.010</td></recommended<>	24.6	38.5	20.7	0.010
= recommended	26.7	26.9	26.6	NS
> recommended	48.8	34.6	52.7	0.020
Smoking during pregnancy				
Regularly	16.1	37.9	9.5	0.001
Occasionally	21.8	10.3	25.3	0.002
No	62.1	51.8	65.2	NS
Per capita income				
Lowest (0-125 Euro)	36.0	41.4	34.4	NS
Middle (126-250 Euro)	46.4	41.4	47.9	NS
Highest (>250 Euro)	17.6	17.2	17.7	NS
Birth order				
1	52.4	41.4	55.8	0.050
2-3	41.2	41.4	41.1	NS
<u>≥</u> 4	6.4	17.2	3.1	0.005

Table 1. Distribution of maternal characteristics

Table 2. Maternal characteristics correlated with normal birth-weight and low birth-weight (g)

	Linear regression			Logistic regress	sion			
Characteristics	All (n=2	ll (n=250) Low birth weight Norn (N=58)		ight Normal birtl (N=19)		Low birth weight	Р	
	Mean±SE	Р	Mean±SE	Р	Mean±SE	Р	OR (95%CI)	
Maternal age								
25-29	3120±85	-	2297±45	-	3491±46	-	Reference	-
≤24	3219±69	NS	2256±47	NS	3318±62	NS	0.22 (0.08-0.58)	0.001
30-34	3168 ± 71	NS	2361±43	NS	3318±53	NS	0.50 (0.23-0.99)	0.048
≥35	2790±127	0.007	1876 ± 88	0.001	3312±71	0.005	1.19 (0.54-2,65)	0.600
Pre-pregnancy BMI								
18.5-24.9	3185±59	-	2149±90	-	3427±41	-	Reference	-
<18.5	3124±72	NS	2163±72	NS	3284±56	NS	0.64 (0.27-1.48)	0.280
25.0-29.9	2844 ± 101	0.040	2296±45	NS	3148 ± 96	0.001	2.12 (1.02-4.03)	0.049
$\geq 30^*$	2400±0	0.010	2400±0	NS	-	-	-	-
Gestational weight gain								
= recommended	3158±84	-	2300±44	-	3347±64	-	Reference	-
<recommended< td=""><td>2955±74</td><td>0.020</td><td>2307±40</td><td>NS</td><td>3287±61</td><td>NS</td><td>1.83 (1.04-3.08)</td><td>0.048</td></recommended<>	2955±74	0.020	2307±40	NS	3287±61	NS	1.83 (1.04-3.08)	0.048
> recommended	3191±66	NS	1971 ± 146	0.002	3402 ± 46	NS	0.65 (0.30-1.41)	0.270
Smoking during pregnancy								
No	3192±60	-	2065±92	-	3437 ± 40	-	Reference	-
Regularly	2666±72	0.001	2328±29	0.030	3080 ± 86	0.001	5.05 (2.41-10.58)	0.001
Occasionally	3162±66	NS	2333±58	NS	3265±58	0.001	0.52 (0.20-1.32)	0.160
*								

Only two children weighing 2400 g were born from mothers with BMI≥30.

Table 2 shows that maternal age at delivery, GWG and smoking during pregnancy were significantly associated with LBW.

Mothers who smoked regularly had a significant fivefold increase in LBW risk compared with nonsmoking mothers (OR=5.05, 95%CI=2.41-10.58, P=0.001). The association between BMI and LBW was evident among infants whose mothers' were overweight (OR=2.12, 95%CI=1.02=4.03, P=0.049). We did not assess obesity as a risk factor for LBW, because there were no mothers of children with normal birth weight who had a BMI \geq 30. The risk of LBW increased when GWG was less than the recommended value (OR=1.83, 95%CI=1.04-3.08, P=0.048).

Age of the mothers upon delivery less than 24 years (OR=0.22, 95%CI=0.08- 0.58, P=0.001) and between 30-34 years (OR=0.50, 95%CI=0.23-0.99, P=0.048) was found as a protective factor for LBW.

Table 3 shows the results of fitting a multiple linear regression model to describe the relationship between prematurity and three independent variables: pre-pregnancy BMI, GWG and maternal age. The model explains 93% of the variability in PB.

The equation of the fitted model was as follows:

Table 3. Multiple regression analysis: Pre-pregnancy BMI, GWG and maternal age correlated	
with premature birth	

Dependent variable: premature birth								
Parameter	Estimate	Standard Error	T Statistic		Р			
Pre-pregnancy BMI	87.6117	12.4486	7.03787		0.001			
Gestational weight gain	41.0981	7.13523	5.75988		0.001			
Maternal age	19.6293	8.4454	2.32426		0.021			
	Anal	lysis of Variance						
Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value			
Model	2.30485E9	3	7.68283E8	1050 52	0.001			
Residual	1.70403E8	235	725119.0	1039.33				
Total	2.47525E9	238						

R-squared = 93.1157 %; R-squared (adjusted for d.f.) = 93.0571 %; Standard Error of Est. = 851.539; Mean absolute error = 646.141; Durbin-Watson statistic = 1.04712.

Discussion

This study provides useful evidence about PB and LBW in the region of Pleven, Bulgaria. Our results indicate that pre-pregnancy BMI, GWG related with personal BMI and smoking during pregnancy are important characteristics for PB in this population.

The age of the mother is essential for normal pregnancy and delivery with a favorable outcome. From a biological point of view, the best age for childbirth is 20-29 years (8). The average age of women in our study was 26.3 ± 5.8 years which was non-significantly lower than the average age for childbirth established in Bulgaria (27.9 years of age) (23) and also lower than that established by Yankova and Dimitrov (2010) who stated an average age of 28 years at birth (24). The results for more than a twofold increased risk of premature birth to mothers aged under 20 years were reported by Branum and Schoendorf in 2005 (25). The association between the risk of a preterm labor and mother's age is reported to be inverse (21,26), but we did not establish this. We found the age of the mothers at delivery less than 34 years as a protective factor for LBW.

We did not find a significant difference between the mean weight of mothers of premature (55 kg) and to term infants (54 kg) before pregnancy. We found a more than two times higher risk for LBW among mothers with pre-pregnancy BMI 25.0-29.9 kg/m², but there was no effect found of pre-pregnancy BMI<18.5 kg/m². The results of our study are compatible with the findings of a recent meta-analysis on the existence of a weak association or lack of association between low BMI before pregnancy and the birth of a premature baby (27).

According to our results, the probability of giving birth to a premature baby in women who have had GWG less than recommended is around two times higher compared with mothers with recommended GWG. The insufficient weight gain during pregnancy increases the risk of having a premature baby, especially amongst women with low BMI before pregnancy: RR=1.5-2.5 (27). Our results are similar to those of Schieve LA et al. (2000), who found out a three times higher risk of giving birth to a premature baby in women with a normal BMI, but not enough weight gain during pregnancy compared with women of normal weight and with adequate weight gain during pregnancy (28).

Our results concerning smoking during pregnancy (around 40% of all mothers) are close to a previous study from Bulgaria conducted by Manolova (2004), which reported that about 42% of all women smoked during the whole pregnancy (20). Yet, the proportion of smoking mothers in our study was higher than a previous study conducted in Bulgaria in 2007, which reported a prevalence of 33% (23).

Smoking is regarded as one of the most common and preventable causes of poor pregnancy outcomes (17). There is variability in the reported results for the relationship between smoking and PB, but a large number of studies establish an RR=1.2-1.5 when daily consumption of cigarettes is 10-20, and an RR=1.5-2.0 when more than 20 cigarettes are smoked per day. The same results were obtained by Andriani and Kuo for smoking mothers who lived in urban areas (17). Our survey revealed a greater than fivefold increase in the risk of LBW among mothers who smoked during pregnancy, a finding which is in line with previous reports about the influence of smoking on the PB risk (14,17).

Study limitations

This study may have several limitations. Firstly, reports of the characteristics of mothers were retrospective after the child was born. Additionally, self-reported data on BMI, GWG and smoking are highly correlated with PB and LBW, but they tend to underestimate these measures. Women who smoked were categorized into three groups based on qualitative variables, and not according to the number of cigarettes smoked per day. The dissemination of information on adverse outcomes of smoking may have discouraged some mothers from disclosing it.

Secondly, because the place of study was an urban area we did not find enough mothers less than 19 years old. The result was that we did not establish the association between young maternal age and PB.

Thirdly, we utilized the Institute of Medicine guidelines to categorize women's weight gain as below, within, or above recommended value (22), which maybe is not appropriate for Bulgaria, but there are no other recommendations to be used.

Finally, we excluded from the analysis some women with either missing information on the principal determinants of interest (age, BMI, GWG, smoking), or missing information on gestational age and birth weight (needed for outcome variables), but the number of missing values was small.
Kamburova MS, Hristova PA, Georgieva SL, Khan A. Adverse effects of maternal age, weight and smoking during pregnancy in Pleven, Bulgaria (Original research). SEEJPH 2015, posted: 30 June 2015. DOI 10.12908/SEEJPH-2014-51

Obviously, there is a need for prospective studies from the registration of the pregnancy, in Pleven and in other regions of Bulgaria, in which such data should be collected in a standardized manner and the number of mothers and their children should be higher.

Conclusion

Our results confirm our research hypothesis that pre-pregnancy BMI>25 kg/m², less than recommended GWG related with their personal BMI and smoking during pregnancy are risk factors for PB. Age of the mothers at delivery <34 years was a protective factor for LBW.

This analysis was part of a study on the risk factors for PB and their impact on development and health status of children <3 years in Bulgaria. Our findings highlight the public health importance of promoting a healthy lifestyle of mothers in order to reduce the level of PB in Bulgaria.

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CASE STUDY

Women leadership for public health: The added value and needs of women driving public health system reform in Ukraine

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Abstract

The Ukrainian health care system is undergoing reforms. Although women constitute a driving force in the Ukrainian health system transformation, their economic and decision-making participation remains extremely low. The existence of barriers such as: work/life balance, gender bias, stereotypes, lack of confidence, lack of mentoring, and lack of adequate networking and equal access to opportunities prevent women from reaching high leadership positions.

With the aim to empower the current and future female public health leaders, the Ministry of Health of Ukraine and WHO held a seminar entitled "Women's Leadership in Public Health" in Kyiv on 16-18 May 2017. The seminar was based on the assumption that contemporary public health demands require a more inclusive and less hierarchical style of leadership – focused on developing and working with stakeholder networks. Such a leadership style is more effective in achieving public health goals.

The international, interdisciplinary and inter-professional faculty engaged in the interactive meaning making around such topics as: *the self-assessment of leadership competencies, public health leadership, leadership theories, system thinking, dealing with interests, power and stakeholders, barriers to women leadership and methods to address them, special leadership tools for women empowerment and leading change, communication and impact.* Strengthening health systems for better health was the red throughout the whole seminar.

Keywords: leadership, public health, Ukraine, women.

Conflict of interest: None.

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Introduction

The Ukrainian health care system is undergoing through reforms. One of the main objectives of the new reforms is the shift towards a policy of strengthening and maintaining health and preventing diseases through the life-course. Women constitute a driving force in the Ukrainian health system transformation however, according to the Global Gender Gap Report by the World Economic Forum (1), Ukraine ranks 64th in terms of women's income level, 22ndin terms of women's education and 34thon economic participation and opportunities. Women's participation in decision-making remains extremely low. Women hold only 12% of seats in the parliament and make 11% of the Cabinet of Ministers. The European Parliament stated that gender mainstreaming constitutes an essential factor for the achievement of a sustainable and inclusive society (2) and smart, sustainable and inclusive growth require higher gender equality scores (3). The United Nations (UN) included gender equality and the empowerment of women in its sustainable development goals (SGDs) (Goal No 5) for the 2030 Agenda. Both Global Gender Gap Report (1) and EU Progress Report (2012) (4) examine barriers existing in relation to women leadership such as work/life balance, gender bias and stereotypes, lack of confidence, lack of mentoring, and lack of adequate networking and equal access to opportunities.

The recent publication of the World Bank on Gender Assessment in Ukraine (5) pointed out clear misbalances such as: male domination at the top managerial positions, political representation and decision making, persistent 'glass ceiling' in access to chief executive positions in public administration, stereotypes - traditional roles of men and women, lower wages and devaluated social prestige often associated with female economic activity, vulnerability at the labour market and poverty risks, prevalent part-time employment, unequal income opportunities, limited access to business activities and financial resource, public tolerance to spousal violence, gender-based violence and trafficking to name a few.

With the aim to empower and support the development of current and future female leaders who drive public health reform, the Ministry of Health of Ukraine held a seminar entitled "Women's Leadership in Public Health" in Kyiv on 16-18 May 2017. It organized the seminar with technical support from WHO, contributions from the Association of Schools of Public Health in the European Region (ASPHER) and Maastricht University, the Netherlands, and financial support from the Swiss Agency for Development and Cooperation. The seminar was delivered in the context of the implementation of the WHO European Action Plan to Strengthen Public Health Services and Capacities and the WHO Strategy on women's health and well-being in the WHO European Region. The seminar contributed directly to the implementation of the SDGs by developing a workforce with 21st century public health competencies.

The seminar

Concept, mission, objectives and content

The seminar was based on the assumption that contemporary public health demands a more inclusive, less hierarchical style of leadership – focused on developing and working with stakeholder networks to be effective in achieving public health goals (6,7). Public health leaders "*must be the transcendent, collaborative "servant leaders*" (8) able to: articulate shared values, acknowledge the unfamiliarity, ambiguity, and paradox, combine administrative excellence with a strong sense of professional commitment (8), show passion, drive and perseverance in leading for change.

The concept of the seminar was linked to the Merizow's Transformative Learning Theory (9), according to which learning is "...the process by which we transform our taken-for-granted

frames of reference (meaning perspectives, habits of mind, mind sets) to make them more inclusive, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action." (9).

The seminar was competency-based, structured around modern leadership theories especially suited to develop women leaders, reflecting real life experiences of role-models. It included the topics identified through research and local needs analysis. The seminar was supported by the executive coaching provided to the participants with the objective to develop, enhance and build personal leadership attributes for the successful career and growth in health care environment and develop the ability to set individual career goals to the benefit of population heath outcomes.

The main topics included: *self-assessment of leadership competencies, public health leadership and leadership theories, system thinking, dealing with interests, power and stakeholders, barriers to women leadership and methods to address them, special leadership tools for women empowerment and leading change, communication and impact.* Strengthening health systems for better health was the red throughout the whole seminar.

The content was presented during the two and a half day training which included interactive lectures, discussions, group work and experiential learning. The core of the programme was reinforced with the leadership development life stories from female health professional leaders

Trainers and participants

Five lecturers and trainers came from various professional fields: policy, academia, public health practice, government and business. They also came from different countries to assure variety of perspectives and experience. They represented: the Netherlands, Greece, Sweden, Finland, Canada and Ukraine. The lead trainer was responsible for the design, main content, cohesion and coaching whereas other trainers presented specific topics and illustrations from their public health practice as well as their leadership development stories. All presenters engaged in the discussion with the participants. The consecutive high quality professional translation was provided which allowed for good communication and satisfaction from the learning and teaching experience.

There were 22 participating women leaders who were carefully selected by the Ministry of Health in Ukraine based on their role or potential new position in relation to the introduction of public health reforms. The women came from different regions of Ukraine and represented a range of organisations which are vital in the change process including the Ministry of Health of Ukraine, Public Health Centre of the Ministry of Health of Ukraine, regional Health Centres and hospitals, non-governmental organizations, and the like.

Evaluation method

In order to gather the feedback from the participants we used a short open-ended questionnaire addressing the following dimensions: usefulness of the seminar for the public health reform and for personal development, satisfaction with the content, form and instructors, the highlights of the course and areas for improvement, further needs concerning a follow-up on women leadership in public health training and specific areas which the participants would like to cover. We also gave space for personal reflections about the course. 14 out of 22 participants filled in the questionnaires and five shared their observations face-to-face with the course leader with a help of a professional interpreter. The atmosphere was open and relaxed, building on trust and opinion sharing. The evaluation was carried out after the course and before the individual coaching sessions. The feedback on coaching was

obtained in a follow-up conversation after the coaching sessions. The evaluation forms were filled in Ukrainian language. The anonymity of responses was assured. The collected data was translated into English, analysed and synthesized according to the leading questions. Next conventional content analysis was used (10) to develop categories and arrange the data around them. The five categories include: *opinions about the course, aspects of special value, satisfaction with the trainer, areas for improvement and further training needs.*

Feedback from the participants

Opinions about the course

It was the first seminar about the leadership in public Health for women. All the respondents were "100% positive" and found the seminar of high quality, extremely useful both form and content wise. It was very interesting, helpful, informative, comprehensive and consistent. The participants felt that "...*Three days passed with one breath*". New theories and different leadership tools that can be used at work in the field of public health combined with the leader experience of the participants helped them structure all previously gained knowledge. The participating women leaders had a unique opportunity to do self-assessment and self-appraise their leadership qualities which help them reveal the strong and weaker sides and discuss the ways to improve them as well as see themselves from the leadership prospective. They also valued learning about Emotional Intelligence and how to manage emotions "...*I have a desire to invite the psychologist to work with us at the hospital*...". This helped them also understand why the authoritarian style is not the best approach especially when you work in an interdisciplinary team or if you are newly appointed to lead a department.

The participants stated that owing to this training they realized that the inner power of women is able to move or change things which may seem unchangeable. They especially valued familiarity and open communication with other women leaders and professional trainers who provided useful information and tips for troubleshooting the situational problems and barriers. Moreover, the experience of getting to know the colleagues from other regions who are inspired, fulfilled, beautiful women striving to use their skills as well as spiritual and cultural values for the general development of the country was very powerful. The presence, facilitation and sharing of experience of the international faculty was greatly appreciated. "...it showed the openness of the world towards my country Ukraine from a different perspective".

Aspects of special value

The participants especially valued some specific aspects of the training. These included: the scientific evidence on which the public health leadership course for women was based, realizing the added value of women power in leading people regardless of age and position, systematically presented content, examples from personal lives of trainers and coaches which allowed for making comparisons with their own life experiences, possibility to improve oneself, importance of developing the vision and understanding what kind of a leader you want to be. *"The value for me personally is that I realized my personal complexes, my claims toward myself which I have in my thoughts that I shouldn't have"*. The new theories of leadership, practical exercises on system thinking using a "red ribbon" (a role play illustrating system thinking using a red ribbon to connect the elements of a system) and "thinking hats" (the de Bono "six thinking hats") technique provided the information that a woman-leader needs at work. *"When I return to work, I will try to put into practice all gained knowledge and skills and will put special attention to my personal qualities"*.

Satisfaction with the trainers

The participants were very satisfied with the speakers' performance. The presenters and trainers were pleasant, open-minded, attracted their attention, very outspoken, showing excellent knowledge of the subject matter and professionalism, they served as examples or role-models. "I realized how to work on myself to become better and on what to work on concerning my personality." The combination of women's stories from real life or previous experience, attractive way of presenting the material, availability and genuine interest to answer the questions were inspirational. The trainers were open to dialogue and able to merge with the participants due to their high level of qualification, commitment to the job, high motivation, integrity and gratitude. Each speaker was an individuality holding their own position in the society and their own positive world view. Their honesty, openness and equal attention to all the participants greatly contributed to the satisfaction from the course. On the whole "….everything was good, time flew fast and the emotions were running high, it was generally hard to say goodbye to them. I love them. Good luck to them".

Areas for improvement

Although everything was interesting and highly satisfactory, the participants identified some areas which might be improved in the future courses. They would generally welcome more time to get to know each other better, to have more possibility for discussions and communication with the speakers as well as time to solve some situational problems from their individual professional practice, using real-life examples and getting feedback on them from other colleagues. They would also appreciate more situational games, exercises and active group work like the ones with the "ribbon" and "hats" and have more space to delve into the emotional intelligence topic and more life stories or research on women leaders in medical sphere even if it means inviting more teachers.

Further training needs

There was a strong conviction that the course on women leadership in public health needs to be continued in the context of theoretical knowledge and extended practical application with mentoring and coaching. The participants would be interested in getting more acquainted with such topics as: emotional intelligence, communication and social marketing, theory of negotiations, general management and time management to become more efficient and effective, short, consistent personal coaching, how to develop as a future leader and practical application of women leadership in public health practice including the dress code and personal preparedness for a role as a woman leader, leading change in the organisation, how to create a successful and effective team for a new public health centre in the region. They would also like to learn and practice how to lead public health system transformation in Ukraine, how to collaborate with different sectors and stakeholders for the benefit of public health reform, how to use evidence for informed decision making, how to practically apply women leadership competences in specific public health practice and importantly how to reach a high level position *"I have my personal need to get a high level job: just give me an opportunity and I will turn the world."*

The list of needs is long which shows that there is a great need for such a training especially for women. The course on women leadership for public health in Ukraine was a small drop filling a huge niche which is open. The participating women would like to be informed and invited for similar events in the future. Some of them would like to be involved and collaborate with WHO in preparing future programmes to assure the inclusion of current and real issues of concern in Ukraine.

Concluding remarks and recommendations

The initiative proved to be empowering not only for the participants of the seminar but also for the trainers who were able to challenge their own frames of reference and show the added value of women leadership in times of transformation in the context of Ukrainian health care and public health reforms. The women leaders from different regions of Ukraine had a unique opportunity to build social capital around women leadership and develop their own professional public health network which, in order to be sustainable, needs further support and more focused and in-depth training. This initiative has further provided evidence of the need for practical, context-specific development of female public health leaders in Ukraine. The programme will benefit from developing trainers and mentors from among the participants who can replicate the training model to meet the need of women working in the field of health in Ukraine.

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REVIEW ARTICLE

Maternal and new-born health policy indicators for low-resourced countries: The example of Liberia

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Abstract

Aim: Over the past two decades, two catastrophic events caused a steep decline in health services in Liberia: the long-lasting civil war (1989-2003) and the weak response of the health system to the Ebola Viral Disease (EVD) outbreak (2013-2015). In early 2015 The Liberian Government reacted and developed a strategic health policy framework. This paper reviews that framework with a focus on maternal and newborn health.

Methods: The study is designed as a narrative review executed during the second half of 2017 in Monrovia. It takes advantage of triangulation, derived from recent international and national documents, relevant literature, and available information from primary and secondary sources and databases.

Results: In 2015 the severely compromised health system infrastructure included lack of functional refrigerators, low availability of vaccines and child immunization guidelines, high stock-out rates, and an absence of the cold chain minimum requirements in 46% of health facilities. The public health workforce on payroll during 2014/15 included only 117 physicians. Skilled birth attendance as an indicator of maternal health services performance was 61%. Presently, approximately 4.5 women die each day in Liberia due to complications of pregnancy, delivery, and during the post-partum period, equalling about 1,100 women per 100,000 live births. Of particular note is the adolescent birth rate of 147 per 1000 women aged 15-19 years, three times higher than the world average of 44. Additionally, with a neonatal mortality rate of 19.2 neonatal deaths per 1,000 live births, Liberia stands higher than the world average as well. The high mortality rates are caused by multiple factors, including a delay in recognition of complications and the need for medical care, the time it takes to reach a health facility due to a lack of suitable roads and transportation, and a delay in receiving competent care in the health facilities.

Conclusions: The fact that performance is above average for some indicators and far below for other points to unexplained discrepancies and a mismatch of international and national definitions or validity of data. Therefore, it is recommended to concentrate on the core of tracer indicators adopted at the global level for Universal Health Coverage and the Sustainable Development Goals to enable a permanent update of relevant information for policymaking and adjustment. At present all health policy documents miss a thorough application of the SMART objectives (Specific, Measurable, Attainable, Relevant and Timely), notably missing in most documents are realistic and detailed budgeting and obligatory timelines for set targets.

Keywords: health system, Liberia, maternal and newborn health, maternal mortality, policies, strategies.



Introduction

The Liberian population is comprised of the descendants of the immigration from the United States in the early 19th century and of 17 major tribal affiliations. Half of the population lives in urban areas (1), the majority being Christians, a minority of about one-tenth are Muslims. The civil war from 1989 to 2003 generated a death toll of about 18% of the population of 4.5 million and nearly one million displaced persons (2). Living standards dropped considerably also as a consequence of the weak response of the health system to the subsequent outbreak of Ebola Viral Disease (EVD) 2013-2015 (3). Accordingly resources for health services missed the so-called Abuja target of 15% (4) by 2.6 percentage points. A restart and overhaul of the health system became mandatory.

Health system oriented towards women and children obtained particular attention of the Liberian government (5). The "Global Strategy for Women's, Children's and Adolescents' Health" (2016-2030) (6) the context of the Agenda for in Sustainable Development (7) identify 9 areas for 'Reproductive, Maternal, Newborn, Children, and Adolescent Health' policies. (RMNCAH) calling on initiatives and governmental country leadership, financing for health, health system resilience, individual potential, community engagement, multi-sector action, humanitarian and fragile settings, research and innovation, and accountability for results, resources and Similarly, Universal rights. Health identifies availability, Coverage accessibility, acceptability, and quality of services (8). These target areas for RMNCAH are of similar priority for almost all countries in the Economic Community of West African States (ECOWAS) as recently analyzed (9).

Our narrative review investigates maternal and new-born health policies. Also, review addresses the basic components of reproductive health specific for Liberia as an example for other low-resourced especially countries in West-Africa: fertility (actual bearing of live offspring), safe motherhood (pregnancy and delivery without risk for own life and child's life), family planning, prevention of unwanted pregnancies and abortions, as well as characteristic diseases for women in their reproductive age.

Methods

We make use of a combination of quantitative and qualitative methodologies. А participatory process involving governmental stakeholders through several interviews was particularly helpful and supportive in ensuring that issues were explored across sectors to provide a holistic understanding of the situation. Also, the paper takes advantage of triangulation based on national and international sources and publications as well as on data and documents of the Government of Liberia predominantly the Ministry of Health and the Liberia Institute of Statistics and Geo-Information Services. We emplov further the current methodology proposed by the Maternal Mortality Estimation Inter-Agency Group (MMEIG) (10).

The main framework of analysis is following steps of the policy cycle (11) as necessary, moving towards universal coverage. All policy health actual documents are analyzed looking at 1) agenda-setting with problem definition and situation analysis, 2) policy formulation with goals and objectives. 3) implementation by government action and 4) monitoring/evaluation with revised agenda setting.



Results

1) Review of health policy documents related to Maternal & New-born Health (MNH)

The key documents in this context are the "Investment Plan for Building a Resilient Health System 2015-2021" (12)in line with the "National Health and Social Welfare Policy and Plan 2011–2021" (13). Also, recently the Ministry of Health (MoH) in cooperation with national and international partners drafted and endorsed a document, the "Investment Case for Reproductive, Maternal, Neonatal, Child and Adolescent Health 2016-2020" (14) aiming to support high impact intervention for improving MNH (Maternal and Newborn Health). We have retrieved in total 28 policy documents, which all involve maternal and new-born health, either as a general or specific priority health problem under concern and in need for accelerated action (Table 1), as maternal mortality in Liberia is among the highest worldwide being 1,072/100,000 live-births during the seven years preceding the 2013 LDHS (15). According to the 2007 LDHS, maternal mortality was even slightly less than today being 994/100,000 (16). Approximately 4.5 women die each day in Liberia due to complications of pregnancy, delivery, and during the postpartum period (17), equalling about 11 women for every 1.000 live births.

No	Title of the Policy Document	Time Frame	Source (Internet pages or references)			
1	National Health and Social Welfare Policy	2011-2021	http://moh.gov.lr/category/policies/			
	and Plan					
	 National Health and Social Welfare Policy 					
	 National Health and Social Welfare Plan 					
2	National Health and Social Welfare Financing	2011-2021	http://moh.gov.lr/category/policies/			
	Policy and Plan					
3	National Human Resources Policy and Plan	2011-2021	http://moh.gov.lr/category/policies/			
	for Health and Social Welfare					
4	National Health and Social Welfare	2011-2021	Not online			
	Decentralization Policy and Strategy					
5	Investment Plan for Building a Resilient	2015-2021	http://moh.gov.lr/cabinet-endorses-investment-			
	Health System		plan-for-building-a-resilient-health-system/			
6	Investment Case for Reproductive, Maternal,	2016-2020	http://www.globalfinancingfacility.org/sites/gff			
	New-Born, Child, and Adolescent Health		_new/files/documents/Liberia%20RMNCAH%			
			20Investment%20Case%202016%20-			
			%202020.pdf			
7	Liberia community health road map	2014-2017	Not online			
8	Revised National Community Health Services	2016-2021	Not online			
	Strategic Plan					
9	National Policy and Strategic Plan on Health	2016-2021	http://www.afro.who.int/en/liberia/liberia-			
	Promotion		publications.html			
10	National HIV & AIDS Strategic Plan	2015-2020	http://www.nacliberia.org/doc/Liberia%20NSP			
			%202015-			
			2020%20Final%20_Authorized_%20OK.pdf			
11	National Malaria Control Program. Malaria	2016-2020	http://www.thehealthcompass.org/sites/default/f			
	Communication Strategy		iles/project_examples/Liberia%20NMCS%2020			
			16-2020.pdf			
12	National Leprosy and Tuberculosis Strategic	2014-2018	http://www.lcm.org.lr/doc/TB%20and%20Lepr			

 Table 1. Liberian policy documents embracing MNH



	Plan		osy%20Strategic%20Plan%202014- 2018%20consolidated%20(1)%20(1).pdf
13	The National Traditional Medicine Policy and Strategy (2015-2019)	2015-2019	http://moh.gov.lr/category/policies/
14	Strategic Plan for Integrated Case Management of Neglected Tropical Diseases (NTDs)	2016-2020	Not online
15	Consolidated Operational Plan (FY 2016/17)	2016-2017	http://moh.gov.lr/wp- content/uploads/2017/04/Operational-Plan_FY- 17martin.pdf and: http://www.seejph.com/public/books/Consolidat ed_Operational_Plan_2016-17.pdf
16	Joint Annual Health Sector Review Report 2016.	2016	http://www.seejph.com/public/books/Joint_Ann ual_Health_Sector_Review_Report_2016.pdf
17	Family Planning 2020 Commitment	2011-2020	http://ec2-54-210-230-186.compute- 1.amazonaws.com/wp- content/uploads/2016/10/Govtof-Liberia- FP2020-Commitment-2012.pdf
18	National Gender Policy 2010-2020	2010-2020	http://www.africanchildforum.org/clr/policy%2 0per%20country/liberia/liberia_gender_2009_e n.pdf
19	National Therapeutic Guidelines for Liberia and Essential Medicine List	2011- ongoing	https://www.medbox.org/countries/national- therapeutic-guidelines-for-liberia-and-essential- medicines-list/preview?q=
20	Essential Package of Health Services (EPHS)	2011- ongoing	http://apps.who.int/medicinedocs/documents/s1 9420en/s19420en.pdf
21	Road Map for Accelerating the Reduction of Maternal and New-born Morbidity and Mortality in Liberia (2011-2015)(18)	2011-2015	Ministry of Health and Social Welfare, Republic of Liberia. Roadmap for Accelerating the Reduction of Maternal and New-born Mortality 2011-2015 (an updated version of the original publication in 2007). Monrovia, Liberia: Ministry of Health, 2011.
22	Accelerated Action Plan to Reduce Maternal and Neonatal Mortality 2012-2016 (19)	2012-2016	Ministry of Health and Social Welfare, Family Health Division. Accelerated Action Plan to Reduce Maternal and Neonatal Mortality. Monrovia, Liberia: Ministry of Health and Social Welfare, 2012 July.
23	The National Roadmap for maternal mortality reduction "the Reach Every Pregnant Woman (REP) Strategy"	2007	http://apps.who.int/pmnch/media/events/2013/li beria_mnh_roadmap.pdf
24	National Strategy for Child Survival in Liberia	2008-2011	http://liberiamohsw.org/Policies%20&%20Plans /National%20Strategy%20for%20Child%20Sur vival.pdf
25	National Sexual & Reproductive Health Policy	2010	http://liberiamohsw.org/Policies%20&%20Plans /National%20Sexual%20&%20Reproductive%2 0Health%20Policy.pdf
26	Poverty Reduction Strategy	2008	http://www.emansion.gov.lr/doc/Final%20PRS. pdf
27	National Policy and Strategic Plan on Integrated Vector Management	2012-2017	http://pdf.usaid.gov/pdf_docs/PA00J21W.pdf
28	Liberia Health System Assessment (20)	2015	Ministry of Health, Republic of Liberia. Liberia Health System Assessment. Monrovia, Liberia: Ministry of Health, 2015.



The most recent situation analysis is the "Liberia Service presented in Availability and Readiness Assessment and Quality of Care report (SARA and QOC)" (21), while the most recent documents covering MNH policy implementation are the "Joint Annual Health Sector Review Report 2016" (22) and the "Consolidated Operational Plan (FY 2016/17)" (23).

The most important of the documents listed in table 1 is the Investment Plan (number 5) for the period 2015-2021 making use of the more recent data of the DHS 2013. The political decision-maker drafting it employed the MDG targets and indicators (24) but not yet the more recent SDG indicators (25). The method of stating targets is not explained, in spite of the recommendation to tailor targets towards local context and embrace a more approach. As an example, realistic Liberian policymakers envisioned a goal to reduce maternal mortality by three quarters between 1990 and 2015 as set in MDG-5. That would be equal to - looking at the upper bound level in 1990 (figure 1 below) -1,980 maternal deaths to be reduced to 495 per 100,000 live-births in 2015, which is at the same time close to the national target of 497 maternal deaths per 100,000 live-births set as a desirable goal only for 2021. Due to such weaknesses and inconsistencies, it may be assumed that the selection of Liberian objectives and targets in these documents often have been set at random. Such assumption is mirrored in the recent MGDs assessments (26) that criticize too ambitious MDGs, which do not take into account infrastructure and health system capacity in general, which is a strong request of the Global Strategy for Women's, Children's and Adolescents' Health (2016-2030) (27-29).

To enhance increased investment into health systems of resource-limited countries, IHP+ has been transformed into the International Health Partnership for Universal Health Coverage (UHC) 2030, based on the 2005 Paris Declaration on Aid Effectiveness and the 2011 Busan Partnership Agreement(30).During the first meeting of the UHC-2030 working group in March 2017 (31), the main focus was on low and middle-income countries facing many threats to their health systems including decrease in the external financial support. Liberia potentially faces similar threats in the near future but joined IHP+ only in March 2016, however, a significant amount of donor support (about 75%) (32) remains off-budget with various parallel implementation arrangements. Nevertheless, progress is visible in spite of the recent Ebola crisis (2014/15), mainly due to the efforts of the Liberian government to implement an Essential Package of Health Services (EPHS) - since 2011 (33,34).

2) Analysis of Maternal and Neonatal mortality

Looking at time trends, from 1985 to 2015 (Figure 1), the period of the first civil war (1989-1996) was when maternal mortality experienced a peak. In 1994 mortality ratios were 1,890 deaths per 100,000 livebirths (with the upper bound of 2,470 and a lower bound of 1,320). After a significant recovery, the second civil war (1999-2003) again caused a negligence to MNH and retardation of improvement. Today Liberian reproductive women have a 3 times higher chance than the average global population of women to experience premature death due to complications during pregnancy, delivery, and the postpartum period. Between 2000 and 2015, the global maternal mortality ratio, or a number of maternal deaths per 100,000 live births, declined by 37 percent - to an estimated ratio of 216 per 100,000 live births in 2015. In Liberia maternal



mortality in the same period declined by 43% from 1,270 to an estimated ratio of 725 per 100,000 live births in 2015, indicating considerable improvement since the civil wars ended, although still higher than the global average. The national data based on the DHSs published in 2008 and 2013 represent maternal mortality during the 7 preceding years. The main reason for differences is insufficient death statistics in Liberia, with many failing to register the majority of causes of deaths in the population. The Liberian MoH information

summarises: "The Liberian Public Health Law of 1976 mandates the MoH to register all deaths within 24 hours. As a result of inadequate access. the coverage of registration has always been below 5% annually. Death certificates are usually processed in Liberia with the intent to obtain insurance benefits. to settle inheritance issues and not as a requirement for burial and documentation of the cause of death." (35).As an example: in 2013, only 659 deaths were registered according to the rules.

Figure 1. Maternal Mortality Ratio in Liberia (9,15)



Data on maternal mortality presented in Figure 1 are obtained from databases maintained by the WHO, UNDP, UNICEF, and World Bank Group.

Some of the earlier policy documents stated several reasons for high maternal mortality rates mainly related to the insufficient quantity and quality of the Liberian human resources for health and health facilities' performance (36). Some of the problems cited were an inadequate number of skilled human resources for health general in and of experienced, skilled birth attendants specifically also inadequate emergency obstetric and new-born care services, inadequate referral mechanisms, inadequate essential drugs, equipment, and supplies were cited. The major non health factors include a lack of clearly defined community referral, lack of health financing mechanisms, and socio-cultural



inequities. There are significant delays which also contribute to maternal and newborn mortality: delays in recognition of danger signs and making the decision to seek health care, delays in reaching a health facility via an insufficient road system (37), and delays in receiving care at the health facility. Consequentially, the leading causes of maternal deaths are haemorrhage (25%) and hypertension (16%) followed by sepsis and abortion (each 10%). The next important indicator of MNH in the SDG framework is neonatal mortality. With 24.1 neonates' deaths up to 28 days per 1,000 live-births, Liberia is still above the world average (19.2 per 1,000 livebirths). However, the historical decrease in neonatal mortality is significant (Figure 2). The main causes of neonatal deaths are preterm birth complications (10%) and intrapartum related events: asphyxia (9%), and sepsis (8%).



Figure 2. Neonatal Mortality Rate in Liberia (15,38)

Legend: Lower, Median and Upper refer to the lower, median and upper bound of a 90% uncertainty interval.

Despite these results, policymakers should carefully consider whether the relatively low neonatal mortality could be due to the

insufficient Liberian deaths registration (potential entrap of under-registration). The framework for SDG monitoring includes 27 indicators for monitoring of



SDG-3 ("Ensure healthy lives and promote well-being for all at all ages"), out of which a group of 16 indicatorsis directly related to health status (39). Though all indirectly are relevant for MNH, a particularly important indicator, within SDG-3, is the adolescent birth rate per 1,000 women aged 15-19 years. The main rationale for the recognition of this indicator is: "Preventing unintended pregnancy and reducing adolescent childbearing through universal access to and reproductive health-care sexual services are critical to further advances in the health of women, children, and adolescents. Childbearing in adolescence has steadily declined in almost all regions, but wide disparities persist: in 2015, the birth rate among adolescent girls aged 15 to 19 ranged from 7 births per 1,000 girls in Eastern Asia to 102 births per 1,000 girls in sub-Saharan Africa" (40). In Liberia, this rate was even higher in 2015 and also higher than in ECOWAS and the African region. With 147 adolescent girls per 1,000 aged 15-19 years who gave birth to a baby, Liberian female population is at 3 times higher risk in this regard than the world average (44.1 per 1,000) (41).

3) Status of health services

The second group of relevant indicators for the situation analysis of MNH in relation to SDG-3 is related to health system strengthening. These indicators refer to health system structure, quality, and effectiveness of performance, which holds a prominent place in the situation analyses of many Liberian health policy documents. The Investment Plan for Building a Resilient Health System (2015-2021) has been marked already as one of the best health policy documents in Liberia. Following this report (3), the public health workforce on payroll, during 2014/15, only 117 physicians, included 436

physician assistants, 2,137 nurses (RN/LPN), and 659 midwives (1.2 per 10,000 population). Also 2,856 Trained Traditional Midwives (TTM) are listed. TTMs belong to the corpus of 8,052 community health volunteers (based on the 2013 mapping exercise). Today, health density varies significantly workers' between counties in Liberia, the lowest being in Nimba and the highest in Bomi. Though improvement in quantity is visible from 2010 to 2015, still numbers are far below the levels proposed by WHO to avoid critical shortage: 23 health workers per 10,000 are considered as necessary to secure essential maternal and child health services to the entire population (42). The Roadmap for scaling up human resources for improved health service delivery in the African region 2012-2025 has determined the same threshold (43).

Skilled health professionals' density is 25 per 10,000 globally, but in Liberia almost nine times less (2.9 per 10,000). The difference stems partly from different definitions of a skilled health professional, and consequently, different counting in WHO and national statistics. For international comparison, WHO includes as skilled health professionals only the following: nurses. midwives and physicians (44). There Liberia with 2.9/1.000 is the fourth to last place in the ECOWAS community and much below its nationally calculated average of 6.4/1.000 of skilled health professionals.

Maternal health services performance assessed by the proportion of births attended by skilled health personnel in Liberia at 61% is better than the ECOWAS average of 57% and the average of the African region. According to these statistics, Liberia still performs at a lower level than the global average where 3 out of 4 births (73%) were assisted by skilled personnel 2015. health-care in Performance is above average for some Page 9 of 17



indicators and far below for others (e.g., maternal vs. neo-natal mortality), the unexplained disparity points to mismatch discrepancies and of international and national definitions or validity of data. For example a comparison of maternal and neonatal mortality throughout historical periods in Liberia is misleading: researchers and authors of LDHS-2013 (page 285) (45) have rightfully warned that comparison is possible only with LDHS-2007, due to the fact that methods of estimates were significantly changed in 2007 and cannot serve for comparison with previous surveys - LSDH-1999/2000. Furthermore, the interpretation of indicators does not account for the fact that LDHS provides direct estimates of maternal mortality for the seven years preceding each survey.

Finally, a tracer indicator, relevant for MNH and SDG-3, may serve to describe the status of the Liberian health system its infrastructure best: "Infants and receiving three doses of hepatitis B vaccine". In Liberia, only 50% of children received the vaccination in 2014 (46) (ECOWAS average 78%). Such situation is well explained in a national situation analysis (47) as a consequence of the EVD (with declines crisis not only of immunizations but also all other MNH services). The recent SARA report (48) clarifies the situation by severely compromised health system infrastructure: lack of functional refrigerators, low availability of vaccines and child immunization guidelines, high stock-out

rates, and absence of the cold chain minimum requirements in even 46% health facilities. 13% are also without direct access to water, 43% without incinerator, and 45% without regular electricity.

Discussion

A main observation with regard to this policy analysis is that significant weaknesses national policy of the documents derive from missing links objectives, realistic between and measurable targets, activities with a quantifiable input, precise and controlled timelines for their implementation, and appropriate reliable budgetary allocation (49). An example of necessary links is given in figure 3.

Furthermore, Liberia (in spite of the country's low capacity) could use available opportunities to improve the insufficient registration of birth and death events. An immediate option is provided by the Multiple Indicator Cluster Survey organized and (MICS), funded by UNICEF. Preparation for the MICS 6 is ongoing in many countries (50), while Liberia implemented only the first round in 1995, with only three counties at the time (Montserrado, parts of Margibi and Bassa) though with 60% of the total Liberian population living in the same areas) (51). MICS is a valuable data source covering the reproductive health of women, health outcomes for children and adolescents, child mortality, education, water, and sanitation.



Figure 3. The complex linkage between a health problem, its determinants, areas of intervention, the regulatory framework and SMART activities



Based on the model Healthy Plan-itTM of CDC Atlanta.

A final evaluation will only be possible upon completion of all planned activities in 2021. Liberian MoH policymakers should consider more closely (during monitoring activities) the international developments, which received a final endorsement in 2017. The Universal Health Coverage (UHC) Indicators for the Sustainable Development Goals (SDGs) Monitoring Framework have been agreed on March 13, 2017 (52). The global indicator framework has been formally adopted by the United Nations General Assembly through the United Nations Economic and Social Council and will be instrumental for the national and international monitoring, evaluation, and comparison of achievements. Particularly relevant for Liberia is the SDG index, with tracer indicators that serve both for health workforce and health services' monitoring. The index comprises only 12 indicators and for both national serves and comparisons. international The latest examples of such utilization can be found in the Global strategy on human resources for health - Workforce 2030 and the Global Strategy for Women's, Children's and Adolescents' Health (2016-2030).

Conclusions and recommendations

There are well-developed strategies in almost all health areas, but most of them are missing defined action plans with publicized targets following SMART principles, therefore correspondingly there



is a severe gap in implementation. Also, data used should be referenced, crosschecked, and critically evaluated regarding reliability and validity. It is recommended to go beyond simple presentation and analyze differences in outcomes for statistical significance, including multiple identify regressions to significant determinants of health outcomes. Analyses and the discussion of their results should always be compared to West African, African, and global parameters, not restricted to the national perspective. For intra-national comparisons, the same data sources have to be used as otherwise comparability and conclusions are jeopardized.

It is further recommended to initiate as soon as possible a process of developing new health policy documents in Liberia for implementation after 2021 - by MoH stakeholders, involving inter-sectoral representation and independent expertise. multidisciplinary team of health Α policymakers should analyze opportunities and strengths, based on existing National Development Plans (especially the Liberia Agenda for Transformation: Steps towards Liberia Rising 2030 (53)). The main intention is to have health policy documents fitting the local context and the new movement towards SDGs, strictly applying SMART principles, especially obligatory timelines and budgetary allocation as a key element of the SMART realistic principle in planning. Acknowledging the local context, already now a first step could be the revision of the welfare health and social national decentralization policy and strategy:

• Development of a roadmap 2030 for the SDGs. which will allow for implementation and monitoring after 2021 (providing transparency of fragmented implementation and a database of ongoing projects in counties) is one of the immediate tasks for the Liberian MoH.

- Strengthening of policy planning at the county level is also a priority in policy formulation, preferably by using one of the proven models for programme planning, such as Healthy Plan-itTM by CDC (Atlanta).
- Invited international expertise should be given full access to data, and Technical Assistance should have access (observer status) to policy meetings like the Health Sector Coordination Committee (HSCC) and the Pool-Fund meetings (as otherwise a lateral and vertical information exchange within the MoH is severely inhibited).

Derived from Liberian health policy documents, the situation analysis, and the literature review, the following areas may be prioritized regarding MNH services (54):

- Ensure timely, equitable, respectful, evidence-based, and safe maternal– perinatal health care, delivered through context-appropriate implementation strategies;
- Build linkages within and between maternal-perinatal and other healthcare services to address the increasing diversity of the burden of poor maternal health;
- Increase the resilience and strength of health systems by optimizing the health workforce and improving facility capability;
- Guarantee sustainable financing for maternal-perinatal health; and
- Accelerate progress through evidence, advocacy, and accountability by:
 - developing improved metrics, and support implementation research to promote accountable, evidencebased maternal health care and



- translating evidence into action through effective advocacy and accountability for maternal health.

Finally, there is a significant opportunity for Liberia and all African countries to make use of the new WHO leadership and Dr. Tedros Adhanom Ghebreyesus, WHO Director-General, who recently pointed out (55):

"Universal health coverage is ultimately a political choice. It is the responsibility of every country and national government to pursue it. Countries have unique needs, and tailored political negotiations will determine domestic resource mobilisation. WHO will catalyse proactive engagement and advocacy with global, regional, and national political structures and leaders including heads of state and national parliaments".

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ORIGINAL RESEARCH

Switching emergency contraceptives to non-prescription status and unwanted pregnancy among adult and teenage women: A long-term European comparative study

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Abstract

Aim: Unwanted pregnancy is an important social issue, not least among teenagers. Emergency contraceptives (EMCs) can prevent from unintended pregnancy, if taken quickly after unprotected sex. This study's objective was assessing abortion/birth rates among adult and teenage women in Europe before/after an EMC switch to non-prescription status.

Methods: National authorities were consulted for EMC consumption data and abortion/live birth statistics. Rates (n=26 countries) in the year before the switch (= year of reference) were compared with rates before/after the change (up to ± 15 years). The focus was laid on the European Union and further countries closely related to the European Union.

Results: All countries with available data (n=12) experienced a substantial increase of EMC consumption after the switch. On average, abortion rates among women aged 15–49 years were 83% higher 15 years before (compared with the year of reference) and 14% lower 15 years after the switch. Correspondingly, teenage abortion rates were 35% higher 15 years before and 40% lower 15 years after the switch. In 2017, no country had higher teen abortion rates than at time of the switch. Teen birth rates continued decreasing at almost the same rate after the switch as before. **Conclusion**: An EMC switch to non-prescription status increases EMC use and may contribute reducing unwanted pregnancy among teenage girls.

Keywords: Emergency contraceptives, Europe, levonorgestrel, over-the-counter, prescription status, ulipristal acetate.

Conflicts of interest: None declared.



Introduction

For 2008, about 41% of pregnancies worldwide were estimated to be unplanned (1). Four years later, this proportion was stable at 40%, highest in Latin America (56%) (2). Unwanted pregnancies are an important social issue in Europe as well (rate estimated at 45%), and many are likely to end in induced abortion (50%) or unplanned birth (about 38%). Especially among teenagers, the rate of unintended pregnancy is supposed to be very high (roughly 80% of all pregnancies among American teenagers are unwanted) (1). Using long lasting oral reversible hormonal contraceptives regularly could be an ongoing protection from unwanted pregnancy, but this reliable method is not used by all fertile women (in 2012, by 82.5% in Portugal, but only by 33.2% in Lithuania) (3). One effective option avoiding unintended pregnancy after unprotected sex is quickly taking an emergency contraceptive (EMC). In Europe, mainly two active ingredients are used for emergency contraception, levonorgestrel (LNG) and ulipristal acetate (UPA), which have to be taken within 72 hours (LNG) or 120 hours (UPA) after unprotected sex.

As time is a crucial factor and EMCs are considered to have a good safety profile, the Medicines Agency European (EMA) recommended switching UPA (ellaOne®) from prescription-only to non-prescription status in November 2014 to speed up access to EMCs. The following legally binding decision of the European Commission valid (in principle) throughout the European Union (EU) made UPA available as an over-thecounter (OTC) drug across the EU (3,4). About 20 years ago, when LNG or UPA were not (freely) available for emergency contraception, pregnancy rates among teenagers were higher in many European countries compared to 2017, e.g. 55 per 1000 adolescents aged 15–19 years (England and Wales), or 68 per 1000 adolescents aged 15– 19 years in Hungary (5), and most teen pregnancies ended in abortions or presumably unplanned births.

One hope linked with facilitated access to EMCs was reducing abortion/teen births also However, concerns rates. were expressed regarding prescription-free availability of EMCs, moral worries as well as medical fears, e.g. that changes in sexual behaviour especially among adolescents could also lead to misuse and hence increase abortion rates instead of decreasing them (6), or that sexually transmitted infections might rise again (7,8).

This study's objective was to analyse the potential impact of an EMC switch to nonprescription status on unwanted pregnancy. This was done by assessing abortion rates among women aged 15-49 years and abortion and live birth rates among adolescents <20 years in Europe since and also before the switch of EMCs to nonprescription status. Within Europe, we mainly focused on the European Union (EU) and the European Free Trade Association (EFTA). A further aim was collecting EMC consumption data since their market introduction.

Methods

Consumption of EMCs

EMC consumption was investigated at the national medicines authorities (direct contact or yearly consumption reports). Another source for data on EMC use were drug consumption databases and EMC-related publications (9,10).

Year of reference



Following EMCs with their Anatomical Therapeutic Chemical Classification codes (ATC) were under research:

- 1. ATC code G03AD01 (LNG); approved first in Eastern Europe in 1979 and marketed in Western Europe since the 1990s.
- 2. ATC code G03AD02 (UPA); approved in Europe in 2009 and recommended by the EMA in November 2014 to have nonprescription status.
- 3. ATC code G03AA07 (levonorgestrel ethinylestradiol); dedicated +preparations (brand names PC4[®]) Tetragynon[®], Schering marketed prescription-only as products several European in countries (since the 1980s) and first EMC with non-prescription status in Iceland (in 1998).

The year/month of an EMC switch to nonprescription status (date one out of the three EMCs mentioned above was made available without medical prescription for the first time) was checked at the national medicines authorities (homepage or contact by e-mail). Additionally, EMC-related publications were screened. The year preceding the switch was defined as 'Year of reference' for comparing development of rates after/before the switch, if the switch became operative between January and October. For countries where the switch came into force in November or December, the year of switch was defined as 'Year of reference', as a switch towards the end of the year may hardly have had an impact on the same year's abortion statistics. The year of switch was defined being the first year 'after' a switch. Hence, statistics after the switch were compared with figures in the 'Year of reference' ended. Correspondingly, to take into account long-term trends, also rates in the years before the switch were compared with rates of the 'Year of reference' ended.

Analysis of rates

To obtain statistics on abortions and teen births, the homepages of national statistical offices were consulted or respective authorities were contacted directly (data sources available as supplementary material). For analysis of induced abortion rates (spontaneous abortions were not considered, as not mentioned in many abortion statistics) among the whole fertile female population, the total number of legally induced abortions was sought and referred to 1000 women aged 15-49 years. If stratified data were available, induced abortions performed to the countries' residents only were considered. Population structures were obtained from national statistical offices. Respectively, the number of induced abortions and live births (still births were excluded, since not available for all countries) among adolescents <20 years was referred to 1000 women aged 15-19 years.

If absolute numbers for abortions/live births were not available, rates were adopted as reported by the countries' authorities.

Generally, abortion and live birth rates for women aged 15–19 years presented in this study mostly include the figures for girls <15 years, as this is mainly the method how authorities report the rates for this age group. However, abortion/birth figures for girls <15 years are almost negligible for the calculation of teenage abortion/birth rates.

Abortion statistics for residents from Ireland and Northern Ireland were extracted from the annual abortion reports of the United Kingdom, since Ireland and Northern Ireland



have very restrictive abortion laws and only few abortions were performed in Ireland and Northern Ireland.

Rates for countries (e.g. England and Wales, the Netherlands, Sweden) generally reporting rates among women aged 15-44 years (instead of 15-49 years) were recalculated for the 15 to 49-year-old female population. For some years, figures on abortions or live births were not available from the national authorities. Therefore, rates were extracted from provided graphs by national health/statistical authorities or calculated based on figures from the historical Johnston archive (11), the World Health Organization (12), Eurostat (13), or the World Bank (14). Data were collected up to the year 2017.

Results

History of EMC accessibility

Exactly 26 countries were included in this comparative study (23 EU countries, 3 EFTA countries). Iceland (1998) and France (1999) were the first countries making EMCs available without medical prescription. According to the Icelandic medicines agency, the first EMC available (Tetragynon[®]) was classified as OTC medicine immediately after receiving marketing authorization in June 1998, as well as LNG, which was freely available since January 2003. Among the last European countries changing at least one EMC (UPA or LNG) to OTC status were Germany, Italy, and Croatia (all in 2015).

Hungary decided keeping the prescriptiononly status for all EMCs, Poland switched UPA to OTC status in April 2015, but the new Polish government abolished the decision and re-switched UPA to prescription-only status again in July 2017 (LNG never received OTC status in Poland). The most recent European countries making EMCs accessible without medical prescription were Malta (December 2016) and Andorra (June 2018).

In Gibraltar, a self-governing British Overseas Territory, EMCs were switched to OTC status in August 2017 only, about 8 years after the switch in the neighbouring country Spain, and more than 16 years later than in the United Kingdom itself.

Rates after the switch

In the year before the switch, total abortion rates ranged between 3.2 (Croatia) and 31.5 (Estonia) abortions per 1000 women aged 15–49 years. The mean for the 26 included countries was 11.8. Exactly 19 countries experienced a reduction of abortion rates since the switch. The sharpest decline was observed in Latvia (-63% within 15 years). In 7 countries, abortion rates among the total female population were slightly higher in 2017 (or in the year with most recent available figure) compared with the year of reference (Table 1).

The development of abortion rates among adolescents aged 15–19 years revealed a relatively uniform picture (Table 1). In all countries except Belgium and Greece (for which most recent figures were available for 2011 and 2012 only) abortion rates fell. The biggest reductions since the switch were visible in Latvia (-73%) and Norway (-67%). On average, abortion rates dropped from 12.0 at time of the switch to 6.9 abortions/1000 adolescents aged 15–19 years in 2017.



			Rates in the year of reference ^a			Rates in 2017 ^a			
Country	Switch	Reference	Abortions 15-49	Abortions 15-19	Births 15-19	Abortions 15-49	Abortions 15-19	Births 15-19	
Belgium	Apr 01	2000	5.6	6.9	10.7	7.8*	8.4*	5.8	
Bulgaria	Jan 06	2005	22.4	15.6	40.4	16.0	14.3	39.7	
Croatia	Apr 15	2014	3.2	1.8	10.3	2.7	1.5	9.3	
Czech Republic	Nov 11	2011	9.6	7.1	11.3	8.2	5.6	11.9	
Denmark	Jun 01	2000	12.5	14.2	7.9	12.1***	11.3***	2.8	
Estonia	Sep 03	2002	31.5	28.9	23.0	13.9	10.8	10.1	
Finland	Jan 02	2001	8.9	15.5	10.7	8.2	7.6	4.9	
France ^b	May 99	1998	13.4	13.2	7.1	14.4	10.4	4.7	
Germany	Mar 15	2014	5.6	4.4	6.1	5.8	4.0	6.3	
Greece	Jun 05	2004	6.0	2.1	10.8	6.8**	2.4**	9.0	
Iceland	Jun 98	1997	13.6	20.6	24.3	13.3	12.6	6.0	
Ireland	Feb 11	2010	3.7	3.2	14.4	2.6	1.4	6.9	
Italy	Apr 15	2014	7.0	5.4	5.6	6.2	4.3	4.3	
Latvia	May 03	2002	25.1	17.0	21.5	9.2	4.6	15.0	
Lithuania	Jul 08	2007	11.7	7.3	19.5	6.9	3.2	12.2	
Netherlands	Jan 05	2004	7.4	8.2	4.6	7.2	5.3	2.0	
Norway	Jul 00	1999	13.4	19.0	11.7	10.6	6.3	3.0	
Romania	Nov 06	2006	28.3	23.1	40.1	12.4	10.2	38.5	
Slovak Republic	Apr 04	2003	9.8	6.6	20.8	5.8	4.3	27.3	
Slovenia	Mar 11	2010	9.0	6.7	4.9	8.1	4.0	4.0	
Spain	Sep 09	2008	9.7	12.7	13.2	8.7	8.8	7.2	
Sweden	Apr 01	2000	15.6	21.1	5.0	16.8	13.0	3.1	
Switzerland (Cantone Berne) ^c	Oct 02	2001	5.2	4.9	3.4	5.0	3.2	2.1	
UK (England & Wales)	Jan 01	2000	14.1	23.7	29.3	14.4	14.7	12.7	
UK (Scotland)	Jan 01	2000	9.6	18.4	29.3	9.9	12.9	13.0	
UK (Northern Ireland)	Jan 01	2000	3.7	4.8	25.6	2.2	2.1	12.4	
Mean			11.8	12.0	15.8	8.9	6.9	10.5	

Table 1. Induced abortion and live birth rates at time of the OTC switch compared with rates in 2017

^aRates are displayed per 1000 women of the respective age group (figures for girls <15 years are normally included) ^bFrance métropolitaine (=France without Guadeloupe, Martinique, Guyane, La Réunion, Mayotte)

"No long-term abortion data available for Switzerland as a whole

Rates in bold letters are higher compared with rates in the year of reference

* 2011 figures

** 2012 figures

***2015 figures



Live birth rates among women aged 15–19 years fell in most countries. Only the Czech Republic and Germany had slightly higher rates in 2017 compared with the year of reference. However, the Slovak Republic had clearly higher birth rates after the switch and was the only country in this study were the sum of teenage abortion and live birth rates was higher in 2017 compared to the year of reference.

Further abortion and live birth rates for some European countries with incomplete statistics are displayed in Table 2.

			Rates in the year of reference ^a			Rates in 2017 ^a			
Country	Switch	Reference	Abortions 15-49	Abortions 15-19	Births 15-19	Abortions 15-49	Abortions 15-19	Births 15-19	
Andorra	Jun 18	2017	na	na	3.4	na	na	3.4	
Austria	Dec 09	2009	no stat	no stat	10.4	no stat	no stat	6.8	
Cyprus	?		no stat	no stat		no stat	no stat	6.6	
Hungary	Still Rx		na	na	na	12.6	16.1	23.2	
Luxembourg	May 05	2004	no stat	no stat	10.9	no stat	no stat	5.2	
Malta	Dec 16	2016	na	na	13.6	na	na	12.5	
Poland ^b	Apr 15	2014	na	na	13.4	na	na	11.1	
Portugal	Oct 00	1999	na	na	21.1	6.7	5.5	8.0	

Table 2. Induced abortion and live birth rates for further European countries

Rx=prescription-only

na=not applicable (abortion illegal or EMCs available with prescription only) no stat=no official data available

no stat=no official data available

?=EMCs have OTC status, but date of switch not determinable

^aRates are displayed per 1000 women of the respective age group (figures for girls <15 years are normally included)

^bEMCs were re-switched to prescription-only status in July 2017

Long-term analysis of rates

Fifteen years before the switch, the average abortion rates were 26.9 per 1000 women aged 15–49 years (data available for n=25 countries) and 15.2 per 1000 girls aged 15–19 years (data available for n=20 countries), ranging from 4.4 (Northern Ireland) to 153.8 (Romania) for all age groups and from 1.6 (Greece) to 55.0 (Romania) for teenagers. Live birth rates (mean=24.4; data available for n=26 countries) were lowest in Switzerland (3.0) and highest in Bulgaria (69.9).

In the mean, abortion rates among women aged 15–49 years were 83% higher 15 years before the switch in comparison with the year of reference, whereas 15 years after the switch, rates were 14% lower compared with the year of reference (Figure 1). The corresponding percentages for abortions among teenagers were +35% (15 years before switch) and -40% (15 years after the switch). Hence, the falling trend for abortions among teenagers was visible already before the EMC switch, but the mean decline was stronger after the switch. In contrast, for all age groups the trend towards lower abortion



rates was almost stopped after the switch (also when considering that the slight decline after the switch is mostly attributable to the decline among adolescents, which are included in the figures for the total age groups). On average, live birth rates declined at almost the same rate after the switch as they did already before the EMC change to OTC status.

Figure 1. Long-term analysis of abortion/live birth rates for n=26 European countries 15 years before and after the year of reference.*



^{*}For the calculation of the mean relative change (rate in the year concerned/rate in year of reference), each country contributes the relative change according to availability of data (e.g. Denmark for all years from -15 to +15, Ireland from -15 years to +7 years, etc.).

In most countries from Eastern Europe, abortion rates declined extremely after the fall of the Berlin Wall in 1989, which might be explained by the fact that regular contraceptives were used less compared with Western Europe. Hence, abortion might have been regarded being a common option for family planning.

For eight countries from Western Europe only (Finland, Denmark, Iceland, Norway, Sweden, Switzerland, United Kingdom (England & Wales), United Kingdom (Scotland)), a full history of 15 years before and after the EMC switch is available. These countries (Figure 2) may therefore provide a picture which is biased less by social turmoil as it might have been if including also data from Eastern Europe (Figure 1). Moreover, almost all dispensing pharmacists from these eight countries may have respected nonprescription rules before the switch, which may possibly not be the case if viewing at all 26 included countries.



Figure 2. Long-term analysis of abortion/live birth rates 15 years before and after the year of reference for eight countries with a complete ±15 year-history before/after the EMC switch.*



*The eight included countries are Finland, Denmark, Iceland, Norway, Sweden, Switzerland, United Kingdom (England & Wales), United Kingdom (Scotland).

EMC sales figures

For 12 countries, precise consumption numbers or sufficiently reliable estimations were available (Figure 3). Almost all countries showed a quick and strong increase of sales after the switch and reached an almost stable consumption peak after 8–10 years, seven countries evening out at about 80–100 used EMCs per 1000 women aged 15–49 years per year. Norway, showing the biggest increase, is observing a reduction of EMC use since reaching the peak ten years after the switch, now also approaching a level of 100 EMCs per 1000 women aged 15–49 years. Across the included countries, a direct linear correlation of EMC consumption and

abortion rates is, however, not visible, as e.g. France and Finland have now similar per capita EMC consumptions, but different abortion rates. The results (Figure 3) are approximately in line with corresponding results from a study providing estimations of EMC consumption in 2013 for almost all EU countries (15). Nevertheless, several countries with the lowest per capita consumption of EMCs in 2013 are currently among the EU countries with the highest teenage abortion and/or live birth rates (Romania, Bulgaria, Hungary, Slovakia, England & Wales, Czech Republic, Poland).



Figure 3. EMC consumption over time (figures include ATC codes G03AD01, G03AD02 and G03AA07).*



*For Scotland, the consumption may be underestimated between 2001 (year of switch) and 2008 (introduction of free-of-costs program) as figures for EMCs sold without prescription are not available and hence are not included in data provided by the National Health Service in Figure 3.

For further countries with no long-term data on EMC consumption, there have been reports of markedly higher EMC use after the switch, e.g. Switzerland, Portugal, Spain (16-18).

Discussion

Emergency contraception is highly а controversially discussed topic, to which societal institutions various such as medical/pharmaceutical societies, the churches. organizations or feminist contribute their opinion, which may sometimes be based more on personal beliefs or interests rather than on crude facts. The issue of barrier-free access to EMCs deserves. however, а sober analysis, evaluating its potential risks and benefits, as

discussed for LNG in a 2003 publication (19).

The efficacy of EMCs containing LNG or UPA has been proven sufficiently by several studies (20,21). Similarly, the EMA estimated that for women taking UPA within five days after unprotected sex, it would be able to prevent about three-fifths of pregnancies. Based on the positive riskbenefits ratio, the EMA recommended UPA to be changed to non-prescription status throughout Europe (22).

In contrast to some concerns expressed before, facilitated access to EMCs did not increase teen abortion rates in general, e.g., due to a change of sexual behavior, incorrect or excessive use of EMCs instead of ongoing hormonal contraception (23). No country (except Belgium and Greece, where latest


available figures are from 2011/2012 and may have fallen since then) showed longterm trends towards higher abortion rates among teenagers after the switch, and in only seven countries total abortion rates were slightly higher in 2017 than at time of the switch.

Interestingly, in Andorra, having very restrictive abortion laws, live birth rates were almost stable from 2000 to 2008 for younger and older women as well. Since 2009, rates began falling strongly until 2017 for the two youngest age groups (-60% for teenagers; -63% for women aged 20-24 years), while live birth rate for women aged 25-49 years fell by only 20%. Two EMC-related events may explain the drop especially among young girls: firstly, EMCs were available in Andorra at least with a medical prescription since 2008 (switch to OTC in 2018 only), and secondly, EMCs received OTC-status in the bordering state of Spain in 2009, easily accessible in case of need for women residing in Andorra.

A 2016 study found a direct correlation within Germany of higher EMC use with lower abortion rates. German regions with highest use (Bavaria, Baden-Württemberg) showed the lowest abortion rates, those with lowest use had the highest abortion rates (Saxony-Anhalt, Mecklenburg-Vorpommern) (24). On the other hand, the question arises whether in countries with a substantial growth of EMCs sales after the switch abortion/teen birth rates should not have declined stronger and faster after the switch than observed in reality (e.g. France). Possibly, country-specific social factors have also great weight, and perceptible reductions of abortion rates should not be expected quickly, anyway, as it takes roughly 8-10 years on average until EMC consumption almost stable reaches an maximum. Additionally, it may also take several years until most girls have learned using EMCs correctly (quick administration; taking a second dose in case of emesis within 3 hours after the first dose; respecting interactions with other medicines; etc.).

With EMCs' concern to action of mechanism, the WHO asserted clearly that LNG and UPA have no abortifacient effects (25). However, this debate has not been fully settled yet, and some authors state that EMCs' actions of mechanism (especially with regard to UPA) might potentially be interpreted as being abortifacient (26-28). Nevertheless, even if EMCs should have abortifacient effects, the question rises, how many of the women not taking an EMC (because of restricted access) after unprotected sex would finally anyway seek abortion service if getting pregnant unintentionally. Hence, it could be discussed if a hypothetical early-stage abortion would not be preferable to having a real abortion at a later stage of pregnancy, which of course is a serious and stressing decision.

Unwanted pregnancy represents an economic burden for society as well, as shown for Norway (for teenagers, direct and indirect costs estimated at €1573 per unwanted pregnancy) and the UK (direct health care costs estimated at £1663 per unwanted pregnancy) (29,30). Thus, it may be worth it also from an economic point of view assessing whether EMCs should be covered by social security (at least for teenagers), although an increase of EMC consumption after a switch, of course a welcome business for the producing pharmaceutical companies, may be a challenge for those social security systems fully covering EMCs (31). However, some studies/figures showed that barrier-free access to EMCs seems sometimes to be more important rather than full coverage (32,33).



It is, finally, an ironic twist of fate, that the very country (Hungary), where modern LNG-containing EMCs had been developed and approved first in 1979 is now one of the very few European countries keeping the prescription-only status for LNG and UPA (34,35). Remarkably, in contrast to most of the other countries, abortion rates among Hungarian teenagers fell only slightly since 2001 (16.1 in 2017 vs. 19.7 in 2001), and teen live births rates are almost on the same high level (23.2 in 2017 vs. 22.0 in 2001) as one and a half decades ago. Today, both teen abortion and live birth rates in Hungary are among the highest in Europe.

Limitations

For this study, recent/historical abortion statistics for most EU and EFTA countries were collected from national statistical offices or health authorities, which are supposed to provide the best possible national data on abortion and birth statistics. To our knowledge, this is the first study European comparing on level the development of abortion rates with respect to the year EMCs were made available without medical prescription. However, no data were available for the EFTA country Liechtenstein and for two micro-states closely related to the EU (San Marino, Monaco).

The quality and methods of data collection may vary across the European countries as well as legal definitions of 'abortion' or differences between officially reported numbers of legally induced abortions and estimated numbers of induced abortions actually performed (e.g. Greece) (36).

Several aspects may have interfered with the use of EMCs and development of abortion rates over time. However, according to agestratified consumption data from Denmark and Sweden (precise data from other countries are scarce), use of conventional hormonal contraceptives (which may also have changed over time) was not directly linked to the development of abortion/birth rates during the respective observation periods.

No reliable information is available about how the legal status of pharmaceuticals is respected by pharmacies in the included countries. In some countries, prescriptiononly status may exist pro forma only (37), thus self-medicated EMCs may have influenced abortion/live birth rates already before the formal switch to over-the-counter status.

Finally, the exact levels of awareness about and correct use of EMCs were not available, and it is likely that time to reach high levels of awareness about OTC availability of EMCs and their correct use differ between countries.

Conclusions

This study cannot provide evidence of a causal link between an EMC switch and subsequent changes in abortion/live birth However, pooled rates. data, timelv correlation of drops in abortion/live birth rates with EMC switch and the increase of EMC use after the switch suggest that overthe-counter availability of EMCs contributes reducing unwanted pregnancy especially among teenagers. Further studies are necessary to explain why in many countries the reduction of abortion rates was limited mainly to younger age groups (according to Danish data, per capita use of EMCs is highest among teenagers, thus possibly older women use generally EMCs less in other countries, too). Also, the question should be addressed why in some countries the decline of abortion rate was visible several years after the EMC switch only, despite of an



immediate and substantial rise in EMC consumption after the change. Weighing the pros and cons, it seems that in sum, the benefits of OTC access to EMCs may prevail. Additional measures such as free-of-cost dispensing of EMCs to minors or intensive campaigns information may support achieving lower abortion rates, if the switch to non-prescription status proves being not sufficient. Reasonable self-medication. however, requires safe and affordable drugs,

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access to high-quality advice about EMCs (e.g. in pharmacies) and/or well informed people.

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ORIGINAL RESEARCH

Overweight and obesity among women living in peri-urban areas in West Africa

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Abstract

Aim: This study assessed selected correlates of overweight and obesity among women in a sub-urban population of Abidjan, Côte d'Ivoire.

Methods: A cross-sectional study was conducted during April-May, 2014 in Abobo-Anonkoi 3, a peri-urban city of Abidjan in Côte d'Ivoire. Women of 18 years and older healthy in appearance were randomly recruited from households. Overweight and obesity were measured by BMI respectively greater or equal to 25 and 30 kg/m². Abdominal obesity was defined by waist to hip ratio greater or equal to 0.80. The level of physical activity was evaluated by the IPAQ questionnaire and the blood pressure according to the criteria of the JNC7 report. A regression analysis of the associated factors with overweight and obesity (age, marital status, level of study, level of physical activity, blood pressure, and socioeconomic status) was carried out.

Results: We visited 486 households in which 398 women were approached and 327 agreed to participate in the survey. The average age was 35.25 ± 12.4 years. The prevalence of overweight was 27.2% and that of obesity was 19.6%; 72.2% of women had abdominal obesity. The prevalence of abdominal obesity was 90.6% among obese people. Age (p=0.006), marital status (p=0.002) and blood pressure (p=0.004) were significantly associated with obesity. With regard to abdominal obesity, there was a significant association of educational level in addition to the above factors.

Conclusion: Overweight and obesity are a reality in this population of Côte d'Ivoire and about one in five people are affected by the scourge of obesity.

Keywords: abdominal obesity, Africa, central obesity, overweight, women.



Introduction

In 2016, more than 1.9 billion adults, 18 years and older, were overweight and these over 650 million were obese (1)Projections show that by 2030, about 2.16 billion adults will be overweight and 1.12 billion adults will be obese (2). The global prevalence estimate showed that the proportion of obese adults rose from 28.8% in 1980 to 36.9% in 2013 among men and from 29.8% to 38% among women (3). These increases have been observed in both developed and developing countries (3).

In Africa, in 2008, 26.9% of the adult population was overweight or obese (4). Overweight and obesity are risk factors for chronic diseases such as cardiovascular disease, diabetes and some cancers (5).

women's Certain events in lives (childbirth, menopause) could promote the development of obesity (6). Thus, several studies on obesity conducted both in developed countries and in Africa, particularly in urban areas. have established that the prevalence of obesity was often higher among women (7-10). Obesity affects women more often than men (11).

In Côte d'Ivoire, the World Health Organization STEPS survey (measures of risk factors for chronic diseases) revealed a prevalence of overweight and obesity of 32.2% among the adult population in 2005 in the Lagoon region, in the south of the country, which includes the city of Abidjan (8). The same study confirmed a higher prevalence of overweight and obesity among women of 37.6% compared to 24.6% among men. The 2011 - 2012 Demographic and Health Survey in Côte d'Ivoire reported an overweight prevalence of 19% and obesity of 6.6% among women of reproductive age (10).

In these studies conducted in Côte d'Ivoire, the factors associated with overweight and obesity in women have been underresearched in the peri-urban environment. This environment is at the junction of urban and rural areas, it is distinct from these two areas in relation to eating habits (12). It is also an important place for epidemiological, demographic, social and nutritional transition (2).However, demographic, social, epidemiological and nutritional transitions are inseparable (11,13). The corollary of this transition in the field of nutrition is the substitution of problems of overweight and obesity for problems of nutritional deficiencies (13). one marker of the ongoing Thus. nutritional transition is the increase in obesity (11). Diet is the leading cause of overweight and obesity (11). What factors other than diet are associated with overweight and obesity in women in this particular space that is the peri-urban environment?

To answer this question, we conducted a study to determine the prevalence and factors associated with overweight and obesity in women.

Methods

Framework of the study

This survey was conducted in the Autonomous District of Abidjan. It was carried out in households in the Anonkoi 3 district located in the municipality of Abobo, which is the second most populated municipality in the Autonomous District of Abidjan after Yopougon, with a density of 167 inhabitants per square kilometre (14). The Autonomous District of Abidjan is located in the Lagoons region in the south of Côte d'Ivoire (15).

Type and period of study

This was a cross-sectional study conducted from 24 April to 23 May 2014. The sample size was calculated using the formula:

n = p (1-p) Z2/i2 with n: sample size; p: prevalence of overweight and obesity 32.2%; Z=1.96 for a 5% risk of error and i: accuracy (5%).



The sample size calculated was 336. Considering a response rate of 80%, the minimum sample size was 420.

Sampling strategy

The neighbourhood of Anonkoi 3 is a village in the commune of Abidjan. In this neighbourhood households are not numbered. In the general census of the population in 1998, the neighbourhood had 474 households (16). However during a comprehensive study in this area, Sackou Kouakou et al. identified 668 households (14). Therefore, we conducted a random sample, we calculated a sampling interval of two (668/336 = 1.98). We considered household No. 1 the first household found when we had access to the area, and we visited one in two households.

Population

The study included all women 18 years of age and older who were not in bed and were present at the time of the survey. Women who were pregnant or breastfeeding were not included.

In each household visited, the woman aged 18 and over present was selected. In the presence of more than one woman 18 years of age or older, only one was randomly selected.

Data collection

Data collection was based on a pre-tested questionnaire with the free and informed consent of the person selected (written or oral consent). Overweight and obesity were defined from the Quételet Body Mass Index (17).Overweight is defined as having a BMI greater than or equal to 25 and lower than 30 kg/m²; obesity is defined as having a BMI greater than or equal to 30. Height was measured by a tape measure and weight by a Camry® brand scale model scal160 that can support up to 160 kg. Abdominal obesity was measured by a tape measure and defined as a waist circumference (WC) to hip circumference (TH) ratio greater than 0.80 (18).

The level of physical activity was assessed by the IPAQ questionnaire which defined 3 categories of persons: category 1 (inactive or insufficiently active) category 2 (sufficiently active) category 3 (very active). Blood pressure (BP) was measured with an OMRON electronic blood pressure monitor with an arm cuff after five minutes rest. Women with systolic blood pressure greater or equal to 140 mmHg and/or diastolic blood pressure greater or equal to 90 mmHg with or without treatment were considered to have high blood pressure. Systolic blood pressure below 90 mmHg and/or diastolic blood pressure below 60 mmHg were considered low blood pressure. The level of education was categorized into four (no education, primary level, secondary level and higher level) (19). The socioeconomic level was assessed by the poverty score or wealth index calculated on the basis of asset The ownership. wealth index was calculated using data on the ownership of assets selected by a household (e.g. televisions, bicycles, cars, materials used for housing construction, types of access to water and sanitation). The relative wealth scale was then classified into five categories (poorest, poor, middle, rich and richest) according to the quintile of the sample (19).

Other factors associated with overweight and obesity that were collected were age andmarital status.

Ethical considerations

Survey participants were informed of the reasons for the study. They all have accepted out personal to fill а identification form and submit to taking the settings. Their free and informed consent was obtained before the investigation began. They were free to withdraw from the investigation at any time without prejudice. The data were collected anonymously.



Data analysis

The data were entered on the Epi data software (version 3.1) and analyzed with the SPSS software (version 22.0).

The quantitative variable BMI was transformed into a categorical variable with 4 modalities: Lean, BMI less than 18.5; Normal, BMI between 18.5 and 24.9; Overweight, BMI between 25 and 29.9 and Obese, BMI greater than or equal to 30.

The ratio TT/TH has been transformed into a binary variable (less than 0.80: no; greater or equal to 0.80: yes).

The search of factors associated with BMI was done in two stages. First, we performed a univariate analysis using the Pearson KHI two test at the 0.05 significance level.In this analysis, BMI was considered as a qualitative variable with four modalities (skinny, normal weight, overweight and obesity).

Then, the variables having a value less than 0.05 p were included in a logistic regression model. For regression model, BMI (the dependent variable) has been categorized into two modalities (obesity / non-obesity). The non-obesity modality resulted from the combination of skinny, normal and overweight modalities. The adjusted odds ratio and the confidence intervals at 95% were calculated.

Results

Four hundred and eighty-six (486) households were visited. In 88 households there was no woman and in 398 households there was at least one woman aged 18 and over whom we approached. Among them, 46 did not meet the inclusion criteria (29 were pregnant and 17 were bedridden). Finally, 327 agreed to participate in the survey. The response rate was 93%. The average age was 35.25 years and the standard deviation was 12.40 years. The participation rate was 67.3%. The overall prevalence of overweight and obesity was 46.8%. The prevalence of overweight was 27.2% (89 women) and 64 women were obese (19.6%).

Table 1 presents the socio-demographic characteristics and association between women's BMI and the analyzed different factors. About 2 in 5 women had no education and just over 20% had only primary education. Almost 3 out of 5 women were married. The prevalence of high blood pressure was 26%. Very active women represented less than 2% of our study population. In this environment, the poor and the poorest represented nearly 60% of the population. The association between body mass index and age was significant. Indeed, overweight and obesity were observed mainly between 30 and 45 vears of age (54.68% obese, p=0.006). A significant association was also found between body mass index and marital status. Married women were more overweight and obese (p=0.002). In addition, overweight and obese women had higher blood pressure (p=0.004).

The factors involved in obesity are presented in Table 2. According to our study, the factor involved in the onset of obesity is age. The 30-45 age group is three times more likely to be obese than other age groups.



Variable	Number (01)	Cl-i	Normal	Onomusiaht	Ohaaa	
variable	Number $(\%)$	Sкіппу n=19	normai n=156	Overweight	obese	р
	(100 %)	(5.50%)	(47.71%)	(2.21%)	(1957%)	r
Age (vears)		(5.50 %)	(47.7170)		(1).57 /0)	
15-30	128 (39 14)	8(44 45)	76 (48 72)	29 (32 58)	15(23.44)	
31-45	120(39.14) 120(39.45)	4(22.23)	52 (33 33)	$\frac{29}{38}(42.70)$	35(54.68)	0.006
51- 4 5 845	70(2141)	6(33.33)	28(17.95)	22(24.72)	14(21.88)	
Marital status	70 (21.41)	0(33.33)	20(17.)3)	22 (24.72)	14 (21.00)	
Married	184 (56 27)	8(44.45)	73 (46 70)	61 (68 54)	12 (65 63)	
Single and	104(30.27) 1/3(/373)	10(55,55)	83 (53 21)	28(31.46)	42(05.05)	0.002
widows	143 (43.75)	10(33.33)	05 (55.21)	28 (31.40)	22 (34.37)	
Level of study						
none	127 (38.84)	12 (66.67)	51 (32.69)	39 (43.82)	25 (39.06)	
primary	68 (20.8)	2 (11.11)	30 (19.23)	22 (24.72)	14 (21.88)	0.106
secondary	106 (32.41)	3 (16.67)	59 (37.82)	25 (28.09)	19 (29.68)	
higher	26 (7.95)	1 (5.55)	16 (10.26)	3 (3.37)	6 (9.38)	
Level of physical						
activity						
Inactive	170 (51.99)	10 (55.56)	77 (49.36)	46 (51.68)	37 (57.81)	0.761
Active	151 (46,18)	7 (38.88)	77 (49.36)	41 (46.07)	26 (40.63)	
Very active	6 (1.83)	1 (5.56)	2 (1.28)	2 (2.25)	1 (1.56)	
Blood Pressure	· · ·	. ,	. ,			
High	85 (26.0)	4 (22.23)	33 (21.15)	23 (25.84)	25 (39.06)	0.004
Normal	188 (57.49)	6 (33.33)	96 (61.54)	55 (61.80)	31 (48.44)	
Low	54 (16.51)	8 (44.44)	27 (17.31)	11 (12.36)	8 (12.50)	
Socioeconomic						
situation						
Very poor	61 (18.65)	6 (33.33)	28 (17.95)	15 (16.85)	12 (18.75)	
Poor	127 (38.84)	8 (44.44)	62 (39.74)	31 (34.83)	26 (40.62)	0.51
Middle income	88 (26.91)	3 (16.67)	42 (26.92)	28 (31.46)	15 (23.44)	
Rich	33 (10.10)	1 (5.56)	19 (12.18)	8 (9.00)	5 (7.81)	
Very rich	18 (5.5)	0 (0.0)	5 (3.21)	7 (7.86)	6 (9.38)	

Table 1. Socio-demographic characteristics and association between women's BMI and the analyzed different factors in Anonkoi 3

Table 2. Relationship between the analyzed factors and the risk of being obese inAnonkoi 3

Independent variables	Ν	Obesity (%)	No obesity (%)	Adjusted OR	95%CI
Age group					
15 - 30	128	15 (23.44)	113 (42.97)	1.00	reference
30 - 45	129	35 (54.68)	94 (35.74)	2.80	1.44-5.44
45 - 60	70	14 (21.88)	56 (21.29)	1.88	0.84-4.16
Marital Status					
Married	184	42 (65.63)	142(54.00)	1.62	0.91-2.87
Single and widow	143	22 (34.37)	121(46.00)	1.00	reference
Blood Pressure					
High BP	85	25 (39.06)	60(22.81)	2.39	0.98-5.79
Normal BP	188	31 (48.44)	157(59.70)	1.13	0.48-2.64
Low BP	54	8 (12.50)	46 (17.49)	1.00	reference

OR: Odds Ratio; CI: Confidence Interval; 1: Reference category.



The prevalence of abdominal obesity was 90.6% among obese people. The different associations between abdominal obesity and factors are presented in Table 3. The association between abdominal obesity and age was significant. Indeed, abdominal obesity was observed in the 30-45 and 45-60 age groups (p=0.001). The 30-45 age group is three times more likely to have abdominal obesity than the 15-30 age group. Similarly, the 45-60 age group is four and a half times more likely to have abdominal obesity than the 15-30 age group. This abdominal obesity was also higher among women with no education

and those with only primary education (p=0.004).Thus. women with no education and those with primary education are three times more likely to have abdominal obesity than those with higher education. Abdominal obesity was also higher in married women (p=0.002) and those with high blood pressure $(p<10^{-1})^{-1}$ ³). Married women are twice as likely to have abdominal obesity as those without a partner. Women with high blood pressure are five times more likely to have abdominal obesity than women without high blood pressure.

Table 3. Association between abdominal obesity among women (n=327) and the
analyzed different factors in Anonkoi 3

	Abdominal	obesity	OR	95%CI	Р	
	no	yes				
	n=91	n=236				
	n (%)	n (%)				
Age group						
15 – 30	55(60.44)	73(30.93)	1.00	reference		
30 - 45	26(28.57)	103(43.65)	2.98	1.71-5.19	< 0.001	
45 - 60	10(10.99)	60(25.42)	4.52	2.12-9.62		
Level of study						
None	27(29.67)	100(42.37)	2.72	1.11-6.59		
Primary	13(14.29)	55(23.31)	3.10	1.15-8.31	0.004	
Secondary	40(43.95)	66(27.96)	1.21	0.50-2.89		
Higher	11(12.09)	15(6.36)	1.00	reference		
Marital status						
Married	39(42.86)	145(61.44)	2.12	1.30-3.47	0.002	
Single and widows	52(57.14)	91(38.56)	1.00	reference	0.002	
Blood Pressure (BP)						
High BP	10(10.99)	75(31.78)	5.15	2.19-12.11		
Normal BP	59(64.84)	129(54.66)	1.50	0.80-2.80	< 0.001	
Low BP	22(24.17)	32(13.56)	1.00	reference		
	C 1					

OR: Odds Ratio; CI: confidence interval; 1: Reference category.

Discussion

In our study, almost half of the women were overweight, about 20% of whom were obese. This prevalence shows that one in five women is at risk of developing a cardiovascular pathology, as some authors confirm. These reported that women are becoming increasingly at risk for non-communicable diseases or associated comorbidities including hypertension, diabetes, cancer and stroke (20).

This obesity was related to various factors including age (between 30 and 45 years), marriage and high blood pressure. The active 30-45 age group is the obese age



group. These young adults are thus at higher risk of developing cardiovascular disease and dying prematurely, posing a serious threat to the economies of countries in sub-Saharan Africa (21,22).

The prevalence of overweight and obesity increases steadily with age in developing countries (9,23). Some studies in Nigeria, Cameroon and Togo found an association between age and obesity later (after 40 years) than found in our study (9,23,24).

The association between marital status and obesity can be explained by the fact that people after marriage have less physical activity, change their diet and may be less concerned about their weight (25). This is the observation in African society where culture considers that being overweight is a sign of material ease (19).

The prevalence of overweight and obesity is high in peri-urban areas, in the middle of the epidemiological transition. This high prevalence could be explained by the culture and lifestyles of our population. Indeed, in developing countries there is a shift from a low-fat diet and a physically active life to a diet richer in saturated animal fat and a sedentary lifestyle (2). Overweight and obesity are no longer only high predominant in socioeconomic backgrounds, but this burden in developing countries is shifting to low socioeconomic groups and particularly to women (26).

Our work confirms the relationship between obesity and high blood pressure (27). High blood pressure is more frequent in obese subjects and hypertensive subjects develop overweight more easily. This epidemiological observation explains the link between high blood pressure and obesity. In addition, obesity potentiates the presence and severity of other cardiovascular risk factors (28). An excess weight of 10 kg is associated with an increase of 3 mmHg in systolic blood pressure and 2.3 mmHg in diastolic blood pressure.

In Anonkoi 3, the prevalence of abdominal obesity was also high (near 3/4 of our total population and almost all obese women). Waist circumference is a simple indicator of excess abdominal fat in adults. Excess abdominal fat is associated, independently with the development BMI. of metabolic and vascular complications of obesity (24,27). Indeed, abdominal obesity, a toxic form of obesity, is a complex dysmetabolic state at the origin of a profound disorder of blood pressure, vascular endothelium and energy homeostasis. Thus, at equivalent BMI, subjects with abdominal obesity develop complications. more cardiovascular Beyond weight, the type of obesity has an even greater influence on the prognosis of patients (28).

Our study found that women with no education and those with only primary education are more overweight or obese. The lower the level of education, the higher the prevalence of obesity. In recent years, obesity rates have increased in all education groups, but more rapidly among less educated women (29). According to the Centre de recherche pour l'étude et l'observation des conditions de vie (Crédoc), those who have a healthy diet (more fruits and vegetables, higher nutrient intakes, better food indices) are those who have higher degrees. They are more interested in the links between nutrition and health (30). However, some studies have reported that women with a high level of education were more overweight or obese (25).

Study limitations

However, we noted some limitations in our study. The number of study participants was lower than the anticipated sample size. This is partly due to the fact that in more than 10% of households, there were no women. Moreover, we considered as married women, all women legally married or living in a couple. As far as parity is



concerned, it has not been sought. We considered snacking as diet data.

In addition, it is a cross-sectional study over a relatively short period and for which there could be bias in the design. These biases could be related to the nonrepresentativeness of the sample, the mode of selection of households and women in households. We did not take into account the number of women eligible for the survey in each household visited, we limited ourselves to choosing a single woman. Also, information on sociodemographic characteristics, level of physical activity and snacking were assessed using self-reporting which is a source of information bias.

Conclusion

The prevalence of overweight and obesity is high among women in peri-urban areas. This obesity particularly affects young, married women with no education or

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primary education. Our study shows the need for urgent intervention targeted at women with information, education and communication (IEC). It is important to against this obesity fight through awareness sessions for women on the consequences of obesity, education sessions and management of this scourge during home visits.

Conflicts of interest: None declared.

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