

A LIFE~COURSE APPROACH TO SEXUAL AND REPRODUCTIVE HEALTH



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Editorial <i>Vasily Zharko</i>	3
Taking a life-course approach to sexual and reproductive health <i>Ann Hoskins and Justin Varney</i>	4
The life-course approach in sexual and reproductive health (SRH) <i>Paul F.A. Van Look</i>	8
A lifecycle approach to sexual and reproductive health (SRH) in the WHO European Region: the case of antenatal care (ANC) <i>Annette Aronsson</i>	12
A good start lasts the rest of your life <i>Phillipe Grandjean and Jessica Perry</i>	14
Noncommunicable (NCDs) diseases and sexual and reproductive health (SRH): linkages and opportunities through a life-course approach <i>Janis Baird and Cyrus Cooper</i>	16
Sexuality education in Germany: An effective intervention to support the sexual and reproductive health (SRH) of people across the lifespan <i>Laura Brockschmidt and Angelika Hessling</i>	20
Building an enabling policy environment for improving child health, development and well-being (CHDW) in Kosovo* <i>Giorgio Tamburlini</i>	22
A life-course approach to women's health: implications for health care and implementation in the United Kingdom (UK) <i>Judith Stephenson</i>	26
Resources <i>Lisa Avery</i>	30

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**Vasily
Zharko**

The WHO European Region comprises 53 Member States with a rich variety of culture and history and a broad range of development, material wealth and resources. Despite these differences, representatives of all of these countries came together in September 2012, at the sixty-second session of the WHO Regional Committee for Europe, to endorse, by consensus, the new European health policy framework, *Health 2020*, and commit to translating it into action.

The aim of the policy framework is to “significantly improve the health and well-being of populations, reduce health inequalities, strengthen public health and ensure people-centred health systems that are universal, equitable, sustainable and of high quality”. *Health 2020* is based on the values enshrined in the Constitution of the WHO, which states that the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition. Other important values include equitability, sustainability, quality, transparency and accountability, the right to take part in decision-making and the protection of human dignity. Furthermore, the policy framework clearly points out that attaining good health requires an integrated approach aimed at the whole of society, with the development of equitable and sustainable ways to improve public health, cooperation and the involvement of all sectors of society and government.

In order to meet the targets for improving health for all, the *Health 2020* policy framework emphasizes strategic action in four priority areas: 1) invest in health through a life-course approach and empower citizens; 2) tackle Europe’s major disease burdens of noncommunicable and communicable diseases; 3) strengthen people-centred health systems and public health capacity, including preparedness and response capacity for dealing with emergencies; and 4) create supportive environments and resilient communities.

Belarus has the great honour and privilege to welcome delegations from all

53 Member States to the WHO European Ministerial Conference on the Life-course Approach in the Context of Health 2020. There have been significant achievements in Belarus and other countries in the European Region and the time has come to exchange experiences and discuss persistent problems. The Conference will afford an excellent opportunity to do so, as well as to discuss the life-course approach, from a healthy start in life to meeting public health needs at all stages throughout the life cycle.

Early investment in health leads to long-term social and financial returns and increases well-being for both the individual and society as a whole. For example a healthy future generation and access to health care for all begins with a healthy pregnancy and early childhood development. This, in turn, results in healthy children, healthy, productive adults, and later, healthy elderly people. Only a healthy society can achieve sustainable economic development.

In this regard, maternal and reproductive health are critical aspects of the life-course approach. New evidence shows that investing in health early in life has benefits for health promotion and disease prevention throughout the life course. Pre-conception and pregnancy are an important time when health behaviours and outcomes can be influenced, including the prevention of future development of noncommunicable diseases. In order to ensure that the opportunity to act early is not missed, governments – in partnership with society – should ensure equitable access to quality antenatal and postnatal care, as well as skilled attendance at birth and the provision of essential newborn care. Early initiation of and exclusive breastfeeding for six months needs to be prioritized and supported. Family planning should be available so that pregnancy planning can be optimized. Acting early is not the only time to intervene. Later interventions and environments during transitional periods when people are vulnerable are also important. Health education and the provision of youth-friendly services,

including counseling and reproductive health services, can influence health behaviours and well-being at crucial transitional times in life, such as during adolescence. Reproductive health services also provide entrance points for interventions to promote health and prevent disease at other critical transitional stages in life, such as adulthood and ageing. During the reproductive years, for example, routine cervical screening provides an opportunity to assess the risks of developing noncommunicable diseases, and measures to minimize those risks, such as giving up smoking. In the ageing population, well woman and man care and other clinical encounters provide an opportunity to discuss sexual health, which is often neglected yet is directly linked to mental well-being and happiness.

While the importance of a life-course approach to health is clear, the challenge we face is putting it into practice. How do we prioritize the right approaches for the right populations at the right time? How does gender and sex impact the life-course approach? How do we ensure that vulnerable populations and underprivileged groups are not forgotten in this approach? What proven models currently exist that promote a whole-of-society approach to health? What are other countries experiences with implementing a life-course approach? How do we best monitor, measure and evaluate different models of the life-course approach to health? These and other questions will shape the dialogue, discussion and debate at The WHO European Ministerial Conference on the Life-course Approach in the Context of Health 2020. I have no doubt that together, as participants in this important meeting, we will be able to begin to find common themes and answers to these and many more questions so that we can all begin to act early, act on time and act together to achieve equitable health for all throughout Europe.

Vasily Zharko,
Minister of Health,
Belarus

TAKING A LIFE-COURSE APPROACH TO SEXUAL AND REPRODUCTIVE HEALTH

Introduction

Sexual and reproductive health (SRH) is important at every age and in every community, both as an independent aspect of health and as an underpinning dimension of identity and personal well-being.

The breadth of the WHO definition of SRH and the subsequent global framework for action challenges practitioners and policy makers to think beyond a purely disease treatment paradigm and take approaches which integrate and embed the knowledge and skills for healthy, safe and empowered sexual and reproductive choices across the life-course.

What is the life-course approach?

A life-course approach considers an individual's entire progress throughout life to explain why certain outcomes result. The outcomes depend on the interaction of multiple protective and risk factors throughout people's lives. A life-course approach examines how biological (including genetics), social and behavioural factors throughout life and across generations act independently, cumulatively and interactively to influence health outcomes. In epidemiology a life-course approach is being used to study social and physical factors during gestation, childhood, adolescence and adulthood that affect chronic disease risk and health in later life (1). This approach provides a more comprehensive vision of health and its determinants. It provides a framework that examines opportunities to intervene to improve health in later life and highlights the importance of services that focus on the needs of the individuals/groups in each stage of life.

Sir Michael Marmot set out the life-course approach as a way to conceptualize the way an individual accumulates positive and negative health impacts through their life. Although some of these may be mitigated or fade with time, many have impacts that continue throughout life and may have a cumulative effect as they interact with new impacts (see Figure 1) (2).

Historically the points of transition between the life stages have always changed and evolved. For example, in 1913 in Eng-

land, many children and women died in childbirth, a child would often be working before the age of 16 years and adults reached old age in their late 40s. Legislative changes for school requirements or retirement age, better understanding of child development emphasizing the very first years of life as crucial in neurological development and the understanding of the role of wider determinants of health, such as employment and housing, have given us a much greater level of granularity across the life-course.

When we describe the life-course approach in England we tend to use four life stages: Childhood, Adolescence, Working Age Adults and Older Adults. Although these can be chronological life stages they also mark key transitions in an individual's life experience and autonomy. Moving from childhood to adolescence often marks increased autonomy, particularly over lifestyle behaviours and seeking health advice. It is also a time traditionally associated with rebellion and challenge as individuals establish their adult identity. The transition from student to employee, or onto welfare benefit, is a significant transition into autonomy and independence and moving from employ-

ment into retirement may mark a shift to decreasing independence and autonomy due to frailty and fragility.

Rationale for adopting the life-course approach

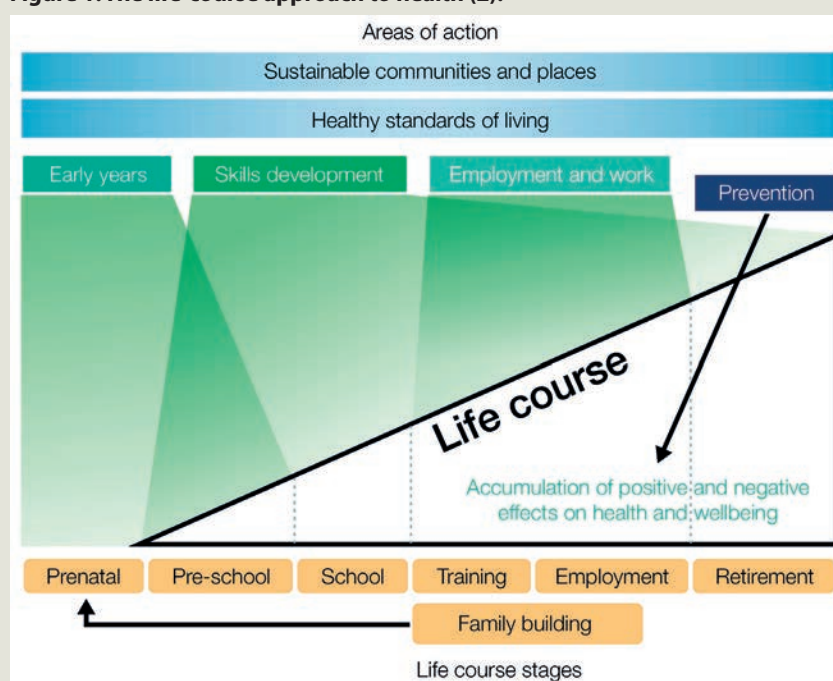
By taking this long term approach, we can start to consider the fundamental causes behind health and well-being conditions and ensure actions nationally and locally will have the most impact on outcomes.

Furthermore, the population in the United Kingdom is anticipated to grow over the next thirty years, with the largest growth in the older age group. Therefore the interventions we invest in now across the life-course will be beneficial later as well if they are effective at reducing the burden of disease as the total population of older people increases.

What evidence is there that this works?

The understanding and evidence base relating to the impact of events across the life-course has grown substantially over the last fifty years (3). For example, we now recognize the impact of maternal nutrition on osteoporosis risks (4), the long term impact of adverse early childhood experi-

Figure 1. The life-course approach to health (2).





**Ann
Hoskins**



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ences on adult life and the impact of adult physical health and behaviours on conditions such as dementia in older age (2).

There is robust international evidence of the importance of the first few years of life for making a positive difference in the lives and life chances of children (5). The Marmot review *Fair Society, Healthy Lives* highlighted the importance of taking a life-course approach to tackle health inequalities and stressed the importance of early years for special focus as a time when the most active development of the brain occurs (2). The WHO's *Review of Social Determinants and the Health Divide in the European Region* (6) argues that this approach is fundamental to identifying the cumulative effects of these determinants on health and health inequalities.

A national household survey of adverse childhood experiences in England showed that adults who had four or more adverse childhood experiences had higher levels of health harming behaviours including binge drinking, smoking, sexually transmitted infections (STIs), teenage pregnancy and violence perpetration in adult life (7).

Although much of the focus on prevention has been on early years and adolescence it is important to recognize that it is never too late to take action to reverse the impact of accumulated negative health impacts. For example, in older adults with dementia and cognitive impairment, exercise training significantly improves not only fitness and physical function but also cognitive function and positive behaviour (8).

The life-course approach for SRH

So what are the implications of taking a life-course approach to improve SRH outcomes?

Starting in childhood

As children grow they develop an identity and a sense of self. Research has demonstrated the lifelong importance of positive parenting in creating the social and emotional foundations on which to build healthy and safe relationships (9).

Sadly, in childhood, we still have to

consider the impact of sexual abuse and the lifetime burden that abuse can create. Prevention interventions like the National Society for the Prevention of Cruelty to Children's (NSPCC) Underwear Rule (10), which provides parents with the tools to talk with children about personal boundaries and awareness of self to prevent abuse, could be preventing a lifetime of personal and social cost.

The school remains a pivotal space for both the educational attainment and social development of children. Age appropriate universal education on personal health, social and economic (PHSE) and sexual and relationship education (SRE) has been shown to add to their knowledge and resilience and also helps them achieve at school (11).

Building in adolescence

Adolescence is a time of great change both physically and emotionally. It is a time when it is vitally important that the young person has high quality education and skills development around negotiating personal relationships and SRH choices, alongside access to age appropriate services and a supportive social and emotional environment in which to grow and develop their personal and sexual identity.

Age appropriate universal education on PHSE and SRE is beneficial. Research findings in the Natsal-3 study (12) demonstrated that experience of school based SRE correlated with better SRH health, including less risk taking behaviour, fewer STI diagnoses, unplanned pregnancies or sexual coercion. In fact, the success of the teenage pregnancy strategy in England has been the result of taking a whole system approach which included professional development of teachers in how to deliver SRE in schools, supporting parents to talk to their children about sex and relationships, engaging community practitioners in touch with young people to encourage them to access early advice and providing youth friendly SRH services informed by feedback from children and young people (13).

Creating safe environments for young

people to develop their sexual identity is key to enabling a healthy sexual and reproductive life in both the short and long term. There is growing understanding of the impact of bullying and discrimination on mental health and well-being and how this interacts with sexual risk taking, particularly for lesbian, gay, bisexual and trans youth (14) and long term physical health (15). Hence tackling homophobia and transphobia in schools is a good example of why addressing the wider determinants is fundamental to promoting positive SRH.

Working with working-age adults

The working age population is a diverse and heterogeneous group who may experience a range of significant life events from marriage, pregnancy and parenting, to buying a house and changing employment or becoming unemployed. All of these life events are associated with significant impacts on mental health and well-being, in some cases positive but in some negative.

There are also physiological changes as individuals grow through adulthood. For women pregnancy, cervical cancer screening and menopause may present opportunities for healthcare professionals to recognize and support better SRH. For men there are potentially fewer opportunistic opportunities, however in England the National Health Service Health Checks programme may provide an opportunity for healthcare professionals to raise the important risk of health issues such as impotence linked to chronic diseases like diabetes and hypertension.

SRH services for working-age adults bridge contraception, pregnancy, termination of pregnancy and diagnosis and treatment of STIs. There are some specialized services focusing on psycho-sexual medicine and the response and support of those affected by sexual violence.

Patterns of STIs, unwanted pregnancies and HIV infection vary across the life course and between particular groups in the population. The data demonstrates that these remain issues for adults across their lives, with significant numbers of

TAKING A LIFE-COURSE APPROACH TO SEXUAL AND REPRODUCTIVE HEALTH

(CONTINUED)

older adults acquiring STIs and repeat terminations remaining an issue for middle age women (12, 16-17).

HIV infections in the United Kingdom continue to disproportionately affect homosexual, bisexual and other men who have sex with men (MSM) and individuals from black and minority ethnic communities (18). This requires us to think not just about the individuals who are currently infected but also consider the wider social and economic factors across the life course that might underpin this disproportionate burden at an individual and population level. The Public Health England report (19) on health inequalities affecting MSM is an example of taking a life-course approach that considers the wider determinants of SRH in a prevention approach to a specific community.

In working age adults the whole system approach to SRH at a general population level has received less emphasis historically and presently. There is perhaps more to be learnt from the whole system approach applied to adolescent pregnancy, particularly in the prevention of HIV, STI and unwanted pregnancies, for adults.

Continuing for older adults

The paradigm of sexual activity in later life is perhaps driven more by desire and libido than by procreation due to the physiological reproductive changes of age. It is a period in which adults may become more socially isolated as they leave the workplace, develop impairments, or become bereaved.

Although there is some evidence that sexual activity declines with age, there is also a clear view that many adults remain sexually active well into old age (20), adjusting and adapting to disability and disease to continue to enjoy fulfilling sex lives (21). Research has suggested that although not all older people want an active sex life, for those that do, sexual dysfunction can have a significant impact on mental health and well-being (22). Sexual dysfunction is not an inevitability of ageing, for either gender, but rather a reflection of the burden of accumulated risk factors and immediate stressors (23).

Perhaps this is an under-utilized lever in adult health promotion?

Sexual activity in older life continues to carry a risk of STIs and yet it is an area that is under-researched and under-discussed in the medical discourse.

Summary

The life-course approach provides a useful framework to ensure that action to improve health outcomes, including SRH, is truly delivered for all of the population and does not become isolated within one age group or portion of the community. It reminds us that creating a healthy sexual and reproductive life requires a whole system approach where interventions can resonate across an individual's life span and highlights the importance of building sound foundations in childhood that can impact both directly and indirectly on outcomes beyond SRH indicators. It gives us an important reminder that sex is not just the preserve of the young and that although reproductive capability may decline with age, the risk of infection, sexual abuse and violence, coercion and harm continue across the life-course. Finally the life-course approach reiterates that SRH is important at every age and in every community, both as an independent aspect of health and identity and as a part of our lives that can bring pleasure and joy at every age throughout all stages of life.

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Review of social determinants and the health divide in the WHO European Region. Final report, UCL Institute of Health Equity, WHO Regional Office for Europe, 2014.

This review of inequities in health across the 53 Member States of the Region was commissioned to support the development of the new European policy framework for health and well-being, Health 2020. It builds on the global evidence and recommends policies across four broad themes (life-course stages, wider society, the broader macro-level context, and governance, delivery and monitoring systems) to reduce health inequities and the health divide across all countries, including those with low incomes. Available in English and Russian at:

<http://www.euro.who.int/en/publications/abstracts/review-of-social-determinants-and-the-health-divide-in-the-who-european-region.-final-report>



Fair Society, Healthy Lives. The Marmot Review. Strategic Review of Health Inequalities in England Post 2010, The Marmot Review Team, 2010.

This excellent review and framework for action advocates for a life-course approach in order to appropriately address the health inequalities faced by England and ensure social justice, health, sustainability are at the heart of policy making to maximise individual and community potential on all levels. Available in English at:

<http://www.instituteofhealthequity.org/projects/fair-society-healthy-lives-the-marmot-review>

THE LIFE-COURSE APPROACH IN SEXUAL AND REPRODUCTIVE HEALTH (SRH)

“Successful improvement of health at key life stages requires a continuum of interventions across the life-course, combined with efforts to strengthen health delivery systems and address the broader social and economic determinants of health.”

Zsuzsanna Jakab,
WHO Regional Director for Europe

A life-course approach to health

The WHO defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.” (<http://who.int/about/definition/en/print.html>) Therefore, the WHO is concerned not only with reducing mortality and morbidity but also, and increasingly so in the last few decades, with addressing the impact of health determinants, such as the environmental, economic and social conditions, on people’s health and well-being at various stages of their life.

The significance of the life-course as a framework in health and healthcare is often downplayed as ‘common sense’ and its promotion ‘needless’. “In reality though, acceptance of this principle has enormous implications on the way an individual’s health is considered, for the training of healthcare professionals and on the manner health systems are developed to cater optimally for the health needs of individuals (1).”

The WHO Regional Office for Europe is fully embracing the life-course approach to health and has made “investing in health through a life-course approach and empowering people” one of four priority areas for policy action in its *Health 2020* policy (2). Key stages in people’s lives have particular relevance for their health. The life-course approach is about recognizing the importance of these stages. In the European Region four areas are receiving particular attention, namely maternal and newborn health, child and adolescent health, SRH and healthy ageing (3).

Challenges in implementing a life-course approach to health

The theoretical framework of the life-course approach to health, including SRH, is increasingly supported by sound evidence and is a rational and common-sense approach (4). However, in the real world, applying the life-course approach to the development and implementation of proven interventions that improve health and well-being and prevent poor outcomes is not so straightforward or simple. Factors that contribute to the challenge of operationalizing the life-course approach include, but are not limited to, the following:

1. Both genetic and environmental factors, including the socio-economic environment, influence, shape and affect models of health and illness throughout varying stages of the life-course. Yet, currently we are limited in our ability to alter these potential inter-generational genetic determinants. Furthermore, due to the need for cross-sectoral collaboration both within and across government and broader society, the wider issue of socio-economic inequalities is often ignored as it is felt to be too complex to address easily.
2. Historically, governments have not always taken a long-term vision or approach when it comes to funding and investing resources. Far too often the emphasis has been on immediate, easily tangible results. This is counter-intuitive to the life-course approach, which in the long term provides greater dividends and results but requires that investments be made and maintained with a long-term vision and framework in mind. Moreover, the results of these investments will, in most instances, not be tangible in the short or even medium term. Adopting this long-term vision will require a shift in political thinking and expectations, a change that is not easily accomplished.
3. In many countries, the healthcare system is fragmented and weakened and

functions suboptimally. This far too often translates into difficulty providing essential care and services to those in need, especially during critical periods of transitions throughout the life course, such as adolescence or the ageing population.

4. The need for a holistic approach, which is implicit in the life-course concept, is not adequately reflected in the way healthcare providers are trained, healthcare systems are organized and healthcare is delivered.
5. Regrettably, international development initiatives (and the priorities of donor and recipient countries) frequently stand in the way of the life-course approach to health by provoking, wittingly or unwittingly, fragmentation of healthcare delivery. For instance, the focus on family planning during many decades has led to the setting-up, in several countries, of free-standing family planning clinics separate from other services for women’s health. In some countries, this emphasis on family planning has even led to the establishment of ministries for population and family planning separate from ministries of health. Similarly, the unfortunate dichotomy between maternal and newborn healthcare that has hampered making progress on neonatal and infant health, has not been helped by separating maternal and reproductive health (Goal 5) and child health (Goal 4) in the Millennium Development Goals (MDGs). In the Sustainable Development Goals (SDGs) that have been adopted by the United Nations General Assembly on 25 September 2015, Goal 3 (*Ensure healthy lives and promote well-being for all at all ages*) brings together targets on maternal, newborn and child mortality and on universal access to SRH services including family planning (5). This arrangement resolves some of the fragmentation that existed in the MDGs. However, the fact that Goal 3 of the SDGs has no less than nine targets and all of the



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Van Look

SDGs together have 169 targets with an initial total of over 300 proposed indicators (!!), puts into question the attention that SRH, including maternal and newborn health, will receive in the post-2015 development agenda.

6. Several areas in SRH concern sensitive matters, such as sexuality and access to safe abortion, and hence a number of governments are reluctant to adopt rights-based progressive policies in these areas.
7. Last but not least, the life-course approach to health is more about prevention than it is about treatment and much of its success therefore depends on people themselves - on the interest they have in, and the care they take for, their own health and well-being. To be able to do this, people must be given appropriate tools; education about health matters starting at a young age, is one, and perhaps the most important, such tool. Regrettably, in the area of SRH, far too many societies are still taking the view that sexuality education for young people is inappropriate.

The continuum of care and the life-course approach

In the critical area of SRH, the emphasis has been predominantly on maternal and newborn health, specifically the physical health of women during pregnancy and delivery and their health and that of their newborn in the first few weeks thereafter. A core principle that has been advocated by the WHO to improve maternal, newborn and child health (MNCH) is the adoption of a “continuum of care” approach by programmes and policy makers (6). This approach has 2 features. To begin with, such an approach means essential MNCH care must be provided “vertically” from the individual household, to the community to the health facilities (see Figure 1). Secondly, it means that care also needs to be provided in a life-course approach throughout the various stages of life (i.e. pre-pregnancy, pregnancy, the neonatal period, infancy and childhood, adolescence, and into the post-reproductive stage) in a

continuous and seamless manner (see Figure 2). Such a comprehensive life-course approach, combined with strengthening of health delivery systems to provide universal health care, would contribute much to improving health outcomes at both the individual and population levels, but to date few if any countries have been able to achieve this ideal.

It is now well recognized that the environment *in utero*, interacting with genetic predisposition, can have long-term effects on the physiology of the foetus and its risk for disease in later life. For instance, maternal health and nutritional status before and during pregnancy and the presence of stress and use of illicit drugs, alcohol and tobacco during pregnancy

Figure1. The continuum of care at the level of the health system (7).

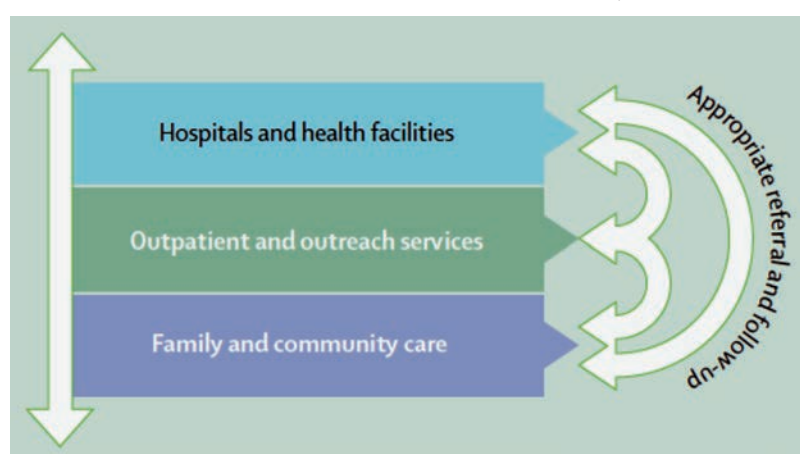
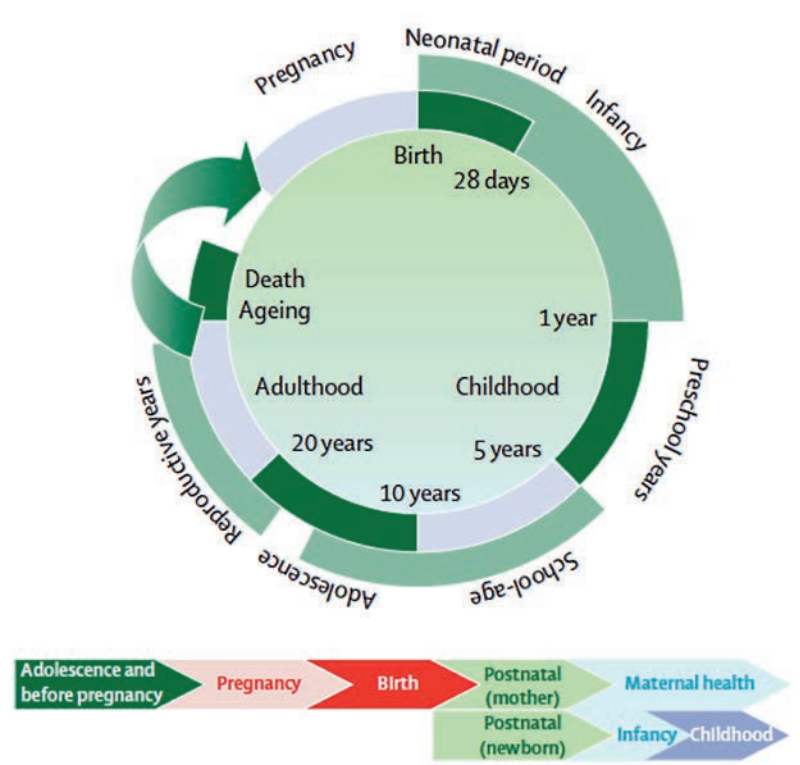


Figure 2. The continuum of care at the level of the individual (7).



THE LIFE-COURSE APPROACH IN SEXUAL AND REPRODUCTIVE HEALTH (SRH)

(CONTINUED)

can lead to adverse pregnancy outcomes (i.e. intrauterine growth restriction, prematurity, stillbirth) and affect foetal and early brain development. A poor start to life is associated with an increased risk for several disorders, especially noncommunicable diseases, later in life (known as the Developmental Origins of Health and Disease concept). These disorders include cardiovascular disease, obesity, type 2 diabetes and metabolic disturbances, osteoporosis, chronic obstructive lung disease, some forms of cancer and mental illnesses. Timely interventions may reduce this risk for the individual and also limit its transmission to the next generation, hence the importance of quality pre-conception information and services and pregnancy care for all women, particularly those from disadvantaged backgrounds who are more likely to be malnourished or suffering from mental health or substance-abuse problems.

The school years represent another critical phase in the SRH life-course since it is then that age-appropriate, comprehensive sex education will influence later risk-taking behaviours that could result in unplanned pregnancy or the acquisition of a sexually transmitted infection (STI).

During adolescence, further opportunities exist for policies to affect key events, such as the minimum age of marriage to ensure that girls (and boys) are physically and psychologically prepared for pregnancy and parenthood when they marry or enter into other forms of long-term relationships. Youth-friendly programmes have been shown to be important in influencing the onset of sexual debut, the timely initiation of contraception to prevent unplanned pregnancy and the adoption of measures to protect against STIs. Such programmes also have the potential to prevent gender-based violence against women and girls.

In contrast to MNCH, far less attention has been paid, except in richer societies, to other aspects of SRH which can have an inherent life-course constituent, such as infertility which frequently results from an infectious insult to the reproductive tract at a younger age (for instance, a STI

or unsafe abortion), genital and other cancers and the long-term sequelae of giving birth such as genital prolapse and faecal and/or urinary incontinence. Also, the area of male reproduction and that of mental health disorders associated with sexuality and reproduction are often given little or no attention.

Assessing progress towards better sexual and reproductive health

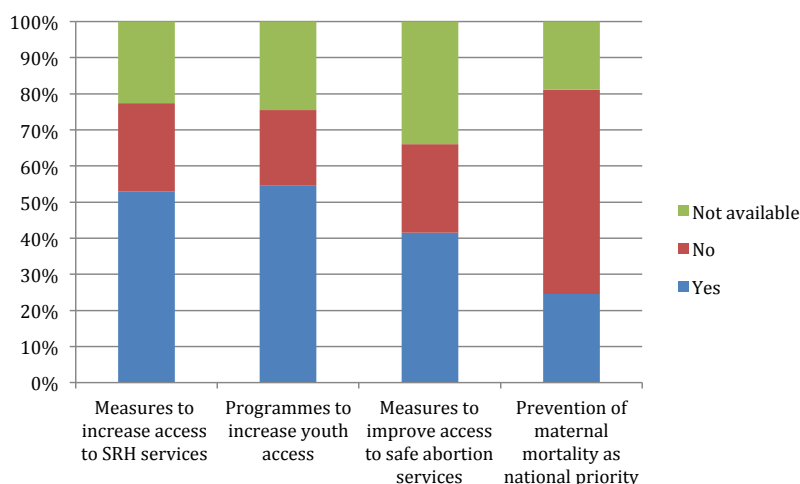
In 2006, the WHO published a list of 17 reproductive health indicators to contribute towards the consistent global monitoring and evaluation of SRH services and outcomes (8). The list was subsequently modified and some new indicators proposed following the adoption of "Achieving universal access to reproductive health [services] by 2015" as a second Target 5b under MDG 5 (9). Monitoring these targets and indicators and implementing the necessary policies and programmes for achieving them would go a long way towards realizing a comprehensive life-course approach. However, many countries appear to have failed so far to put in place critical SRH policies and programmes and, equally disconcerting, either do not monitor or do not report their monitoring results to international agencies, such as the United Nations or the WHO.

Figure 3 shows a few examples of SRH policies and the attention given to them

by the 53 countries of the European Region (10). As shown in the Figure, only 40-50% of countries in the Region have programmes/measures in place to increase access to SRH services, to increase access to SRH services by youth and to improve access to safe abortion services. Twenty to twenty five percent of countries have no affirmative policies in these three areas. With respect to prevention of maternal mortality less than a quarter of countries consider this a national priority but this probably reflects the fact that maternal mortality in the European Region is the lowest among the WHO Regions. Equally as important as the "Yes" and "No" percentages in this figure are the "Not available" percentages (19-34%). This illustrates the need for more complete datasets to enable monitoring of the measures that countries are taking towards implementing critical policies to improve the SRH and well-being of their populations.

The lack of information is equally striking with respect to country reporting of select critical SRH indicators. For instance, the European Health for All database (<http://data.euro.who.int/hfad/>) has contraceptive prevalence data for only 41 of the 53 Member States of the Region; for 12 of these countries the data are limited to a single data point in the 1990s (11 countries) or the year 2000 (one country).

Figure 3: Selected reproductive health policies in the countries of the European Region (N=53)(10).



Key interventions and actions

In light of these findings a range of actions can be identified that countries could take towards strengthening the life-course approach to SRH. Some of these include, among others, the following:

- **Establish cross-sectoral collaboration to tackle poor socio-economic conditions.** As mentioned earlier, women from poorer segments of the population have a greater probability of adverse pregnancy outcomes and their newborns a higher risk of developing certain diseases in later life.
- **Strengthen healthcare systems both vertically and horizontally.** Strong vertical integration between the different tiers of the healthcare system (Figure 1) will ensure that patients have access to the required level of care, for instance when complications arise during pregnancy or delivery or when there is a need for specialist infertility investigation. Efficient horizontal integration between the various healthcare providers and services is essential if patients are to benefit from a holistic approach to their SRH needs at all stages of their lives.
- **Create mechanism(s) that allow sustainable long-term investments.** By their very nature, life-course interventions will rarely yield tangible results in the short term and hence ways need to be found that will ensure that policies and programmes, and the financing they need, do not fall victim to the political whims of changing government priorities.
- **Review, and revise as needed, training curricula of healthcare staff.** For staff providing SRH services it would be important, for instance, that training includes recognition of the manifestations of sexual and intimate partner violence.
- **Provide sex education to all school-age children.** Although sex education is often discussed and evaluated in terms of its role in reducing adolescent pregnancy and STI rates, its primary goal is broader: to give young people the opportunity to receive information, examine their values and learn relationship skills that will enable them to avoid becoming sexually active before they are ready, to prevent unprotected intercourse and to help young people become responsible, sexually healthy adults.
- **Bridge gaps in services at critical life-course transitions.** A prime example of such a gap is the absence of dedicated youth-friendly services. This is often due to the belief that young people should not be sexually active and hence should have no need for SRH information and services. On the contrary, efforts should be made to make available to adolescents, including unmarried ones, the full range of SRH services.
- **Support international and national health promotion efforts that have an impact on SRH outcomes.** As mentioned earlier, the mother's ill-health before and during pregnancy and the use of illicit drugs, alcohol and tobacco during pregnancy creates risks for the foetus both in the short term and in the long term. A comprehensive policy to improve SRH outcomes should also include health-promotion activities aimed at stimulating physical activity and encouraging healthy diets and at preventing being overweight and the use of tobacco and other harmful substances.
- **Strengthen monitoring and evaluation measures.** Such measures are essential to ensure that the impact of policies and interventions is documented and shared to the benefit of other countries. Of particular importance is the need to include, in monitoring and evaluation exercises, people from disadvantaged backgrounds, such as those from minority groups, migrants and displaced persons, who may not access regular healthcare and require special, dedicated services. "Only by counting the uncounted can we reach the unreached (5)."
- **Support the full spectrum of SRH research.** This includes basic, clinical, epidemiological and health systems

research, to provide the evidence base for the development of sound policies and programmes.

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A LIFECYCLE APPROACH TO SEXUAL AND REPRODUCTIVE HEALTH (SRH) IN THE WHO EUROPEAN REGION: THE CASE OF ANTENATAL CARE (ANC)

ANC

Pregnancy is a normal physiological process and most women wish for and have a normal pregnancy, childbirth and postpartum period. However, a pregnancy can be complicated by pre-existing maternal disorders, socioeconomic status, age, complications from the previous delivery and current pregnancy (1). ANC provides an ideal opportunity to introduce interventions to the pregnant woman that can influence the current and future health of both her and her offspring.

ANC includes education, counseling health screening and treatment. ANC also includes evidence-based interventions that are based on effectiveness, local epidemiology or specific diseases (1). ANC is the right of every pregnant woman and today ANC is provided free or at a low cost in Europe. A woman may visit an antenatal clinic for a pregnancy test to confirm an early pregnancy (1). However, not all pregnancies are desired. If a woman wants an abortion in countries where abortions are legal, the woman should be referred for safe abortion and counseling followed by contraceptive advice and prescription (1).

Unwanted pregnancies that end up in unintended births may result in adverse maternal and child health outcomes. These women, who report late for their first ANC visit, may have a higher risk of mental problems leading to premature birth and adverse health consequences for the child (2). A study from Prague found that unwanted children have a higher risk of being abused in childhood, adolescence and up to the age of 35 leading to an increasing risk of psychiatric diseases (3).

In Europe 1.5 million women have had safe and effective medical abortion with few complications. Unsafe abortions on the other hand, still contributes significantly to women's morbidity and mortality and is the leading causes of maternal mortality in many countries of central and eastern Europe as well as central Asia (4). The main complications from unsafe abortions are haemorrhage and infections. The long-term consequences include chronic infections and secondary

infertility (5). Thus part of effective ANC is also ensuring that women with unwanted pregnancies are referred in a timely and appropriate manner for safe terminations in countries where this is legal.

An important part of ANC health care and health education is evidence-based information. This includes information on normal weight-gain during pregnancy, consequences of overweight/obesity, harms of tobacco/alcohol/drug usage and important information about nutrition and the benefits of breastfeeding (1). All of these areas are recognized to contribute to current and future adverse health consequences for both the mother and infant/child.

Today, tobacco is the leading cause of death globally where as obesity is considered as one of the leading causes of death in the developed world. Smoking and obesity are key risk factors for other chronic and noncommunicable diseases (6). Tobacco also affects all stages of human reproduction. Studies reveal an increased risk of infertility and ectopic pregnancy. Maternal smoking is also a threat to the unborn child and infant. It is associated with a higher risk of miscarriage, a dose-dependent intrauterine foetal growth restriction, an increased risk of premature birth, low birth weight and congenital malformations (7). Maternal smoking also increases the risk of sudden infant death syndrome by 47% (8). Obesity (Body Mass Index ≥ 30) is increasing and in the United Kingdom one out of five women is obese at the time of antenatal booking (9). Maternal obesity affects pregnancy, childbirth and the postpartum period of both the woman and her child. Maternal obesity is also associated with increased risks of miscarriage, preeclampsia and gestational diabetes. The risk of stillbirth is almost doubled and the child may have a higher risk of congenital malformations such as neural tube defects and congenital heart diseases (9). Obesity can lead to preterm birth (10), foetal macrosomia, shoulder dystocia and birth trauma. Obesity may adversely contribute to the initiation, establishment and maintenance of

breastfeeding. Long-term effects include increased risk of childhood obesity and childhood type 2 diabetes and metabolic syndrome in offspring (9).

Breastfeeding is widely recognized as the best food for infants and the WHO recommends exclusive breastfeeding for at least six months from the time of birth (11). Exclusive breastfeeding also helps the mother to loose weight gained during pregnancy. Breastfeeding can improve mother-infant bonding and short and long-term health benefits for both the mother and the child. Breastfeeding prevents the incidence and severity of respiratory and gastrointestinal diseases infections and lower the rates of otitis media and allergies in infants (11). For the mother, breastfeeding also protects against breast cancer. For every 12 months of cumulative breastfeeding the woman has an estimated 4.3% risk reduction of breast cancer (12). There is also an association that breastfeeding might reduce the risk endometrial cancer and there is evidence showing that it may protect against ovarian cancer. The European Code Against Cancer has developed the recommendation:

"Breastfeeding reduces the mother's cancer risk. If you can, breastfeed your baby" (12).

Unfortunately, breastfeeding is not appreciated in many European countries and only 13% of infants are fortunate enough to be exclusively breastfed for six months. The highest rates (>50%) of breastfeeding are found in Kyrgyzstan and Georgia and the lowest rate in the United Kingdom, Finland and Greece (1%) (11). There is a negative correlation between breastfeeding and economic status among European countries and this needs to be changed.

Preterm birth (PTB), the live birth of infants born before 37 completed weeks gestation, is the leading cause of neonatal mortality and morbidity and has long-term adverse consequences for health such as increased risk of cerebral palsy, impaired learning and visual disorders and an increased risk of chronic disease in adulthood. Complications of PTB are responsible for 35% of the world's 3.1



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million deaths per year, and the second most common cause of under-5 deaths after pneumonia (13). Babies born with low birth weight (LBW < 2500 g) are the second leading cause of perinatal mortality and morbidity worldwide. Long-term consequences of LBW include higher risk of long-term cardiovascular ill-health and noncommunicable diseases. LBW is also associated with impaired neuronal development during childhood and the risk for this is higher for those born preterm (12). ANC provides an opportunity to address and treat potential contributing factors to increased risk of PTB and LBW such as optimizing weight gain in pregnancy, promoting a healthy diet and nutrition, identifying and managing chronic disease, promoting cessation of unhealthy behaviours such as smoking and drug and alcohol use, screening and treatment of infectious diseases and use of family planning to delay and space pregnancy. Screening and treatment of infectious diseases is especially important as it not only allows for appropriate care and reduction of adverse immediate and long term health consequences for the mother, but also for her unborn child, as is the case with syphilis, hepatitis B and HIV. For example, screening for HIV, coupled with appropriate antiretroviral treatment and caesarean section if required, has successfully decreased rates of vertical transmission of the virus from mother to infant.

Preconception care

Today, there is growing evidence on the importance of preconception care, both for the woman and her unborn child. Preconception care allows for the identification and optimization of known pre-existing maternal health conditions and chronic diseases, such as diabetes, hypertension, autoimmune and cardiac diseases. It also provides an opportunity to address lifestyle behaviours such as smoking, use of harmful drugs, alcohol and obesity that could and can be changed before conception. These conditions and behaviours can impact directly on pregnancy outcomes and can have great impact on the intrauterine development

of the child, leading to long term health consequences (14). Studies reveal that women who get information from health-care providers before pregnancy are more likely to change their behaviour. Simple examples are eating a healthier diet and taking folic acid supplementation (14). Unfortunately, for many women their first ANC may occur after 12 weeks gestation representing a missed opportunity to effect change, promote health and disease prevention.

Conclusion

A life-course perspective to ANC recognizes the importance of preconception care and ANC in ensuring that women and their unborn children have access to quality care, information and education that can influence and impact on current health and future disease prevention from infancy until adulthood. It is thus important that all women are able to access ANC in order to maximize current and future health for all.

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A GOOD START LASTS THE REST OF YOUR LIFE

Introduction

A doctor will usually ask a patient about lifestyle, job and exercise to understand the factors that may affect the patient's health. Although often helpful, new research suggests that such questions may be outdated by decades. Indeed, our current lifestyle does affect our health and well-being, but risk factors during early development can exert a much more profound effect on disease risks and organ functions.

Text Box 1. Examples of stressors that can impact on early development.

Stressors that may adversely affect early development:

- Nutritional imbalance
- Environmental chemicals
- Tobacco smoke, alcohol, drug abuse
- Pharmaceuticals
- Psychological stress

For many years human development was thought to follow a hard-wired genetic programme that was not much affected by outside influences. It is now understood that development is plastic, which allows the developing foetus and the small child to respond to the surrounding environment (1). This plasticity is essential for normal development, but may also result in dysfunctions or set the scene for enhanced risk of disease later in life. The best documentation exists for maternal alcohol use, tobacco smoke, nutritional imbalances and certain pharmaceuticals and other industrial chemicals (see Text box 1). For example, prenatal exposure to methylmercury from contaminated seafood can result in delayed cognitive development with effects that can persist into adulthood (2).

Implications

The new insight suggests that preventative measures that improve maternal health in the short term will have important long-term effects in the child by significantly reducing disease incidence (Figure 1) (3). Thus, early interventions have a much

higher rate of return than interventions put into place at a later time.

One additional aspect of recent research is important. A major mechanism for the developmental programming involves chemical modification of the DNA, for example, via methylation. Such epigenetic changes can be induced by a variety of environmental stressors and it is now clear that they can be transmitted transgenerationally, thereby affecting future generations (4).

Human studies have shown that environmental toxicants, poor nutrition and compromised maternal metabolic status in early intrauterine life increase the risk of metabolic disorders and cardiovascular disease in adulthood. Interventions during pregnancy, if properly timed, can therefore have a large impact on the developing child and significantly affect the risks of noncommunicable diseases (NCDs) throughout their lifetime. Figure 1 shows that a timely intervention in early life can generate substantial reductions in a person's risk for chronic disease and is markedly more effective than adult intervention.

Early intervention is key

With this new evidence in mind, we need to adjust our current prevention focus in order to effectively impact disease risk much earlier and create a significantly positive effect on the next generation's lifelong health. There needs to be a much greater emphasis on implementing preventative measures early in life, when they can do the most good, rather than waiting to remedy the symptoms once a disease has manifested in adulthood.

A key focus of these prevention programmes must be education and public awareness, as illustrated, for example, by the successful reduction of the foetal alcohol syndrome incidence. In a wider sense, maternal perception of risk from environmental hazards is one of the most important factors to safeguard an unborn child (5). Thus, existing maternal-child health platforms that could be used to educate women include those in place at a physician's office and obstetric wards where

education is already given during routine prenatal and postnatal visits. Further, new biomarkers of stressor exposures (such as the hair-mercury concentration) are available for application to identify pregnancies at particular risk, where additional prevention efforts may be warranted.

Still, access to healthy food items and exposures to industrial chemicals constitute stress factors that may be difficult for individual families to control. Thus, strengthened public efforts are needed, where emphasis should be on protecting the most vulnerable life-stages, i.e., pregnant women and small children. Many countries have enacted regulations that protect pregnant women against occupational hazards. These efforts need to be extended to cover other environmental risks as well, starting as soon as pregnancy has been recorded, if not before.

A redirected preventative focus will require a significant reorganization at many different levels, including reorientation of health professional education. Public policy needs to recognize that NCD development is not solely a matter of individual responsibility, as some risk factors require societal or governmental intervention (1). Putting new and effective health measures in place will be a challenge. However, the rewards are substantial.

NCDs constitute a major cause of death worldwide and contribute to almost two-thirds of all global deaths (6). As with many other diseases, the poorest and most vulnerable populations in each country are affected the most. NCDs such as diabetes and cardiovascular disease are widespread and often assumed to have a purely genetic or lifestyle-related cause. The recent advances in the field of epigenetics and developmental origins of disease have opened a new understanding into the effects of environmental stimuli during pregnancy and foetal development. This new paradigm therefore offers hope that current rates of disease will not continue to increase and that revised prevention strategies will help restrain future health costs.

In addition, research findings by economists have concluded that the monetary

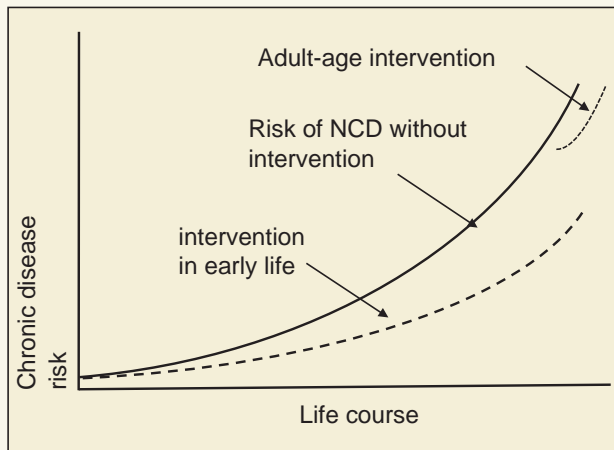


**Jessica
Perry**



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Figure 1. A life-course approach for disease prevention and effect on disease prevalence (3).



rewards are much greater with earlier intervention (Figure 2) (7). These findings are supported by calculations that focus on the protection of brain development against endocrine disruption chemicals, such as certain pesticides, during prenatal development (8). Researchers calculated that the accumulated costs to society from IQ losses due to toxic substances may reach a very large amount in terms of billions of euros per year.

Conclusion

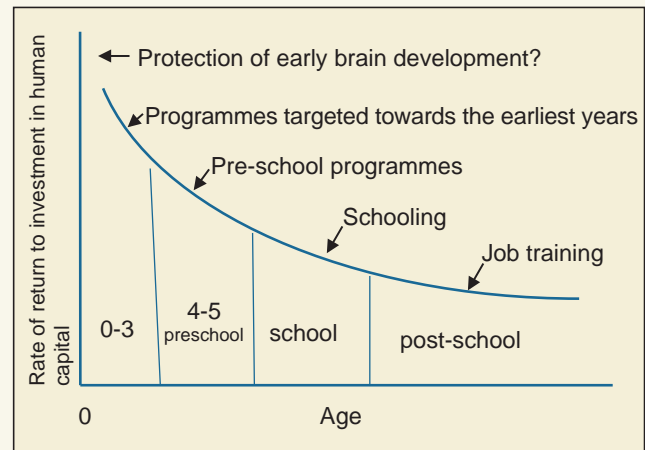
Health policy and medical practice have long operated under the assumption that NCDs are caused by a combination of genetic and lifestyle factors and should be remedied in adulthood as symptoms appear. However, recent research has shown that the risks for many diseases can be significantly reduced by early interventions. To be most effective, some efforts may need to start during prenatal development. As global health costs are steadily rising due to the ever-increasing pandemic of NCDs, intervention against

early-life risk factors will constitute a significant complement to current preventative programmes. While significant policy changes may be necessary to meet this need and improve overall health, calculations of the benefits involved suggest that such early-life strategies will result in substantial returns.

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Figure 2. Rate of return of economic and social benefit with interventions at different stages of the life-course (7).



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Key messages

- Maternal exposure to environmental toxins can have a significant effect on the developing child, even if the mother is relatively unaffected.
- The risk of NCDs can be significantly reduced by prevention efforts during development and early childhood.
- Prenatal exposure to environmental stressors can also cause dysfunctions, such as cognitive deficits and physical developmental problems that persist into adulthood.
- Changes in health practice and policy are needed to address risk factors during early development and improve health overall.

NONCOMMUNICABLE (NCDs) DISEASES AND SEXUAL AND REPRODUCTIVE HEALTH (SRH): LINKAGES AND OPPORTUNITIES THROUGH A LIFE-COURSE APPROACH

Introduction

NCDs affect all countries and people of all ages. The WHO has identified NCDs as ‘the world’s biggest killers’ (1). NCDs include obesity, diabetes and cardiovascular disease, musculoskeletal, mental and neurological disorders. The United Nations General Assembly on Prevention and Control of NCDs and the UK Department of Health have stressed the importance of taking a life-course approach to addressing NCDs, from pre-conception through pregnancy, infancy, childhood and adolescence, through to adulthood and preparing for older age (2, 3). A life-course approach acknowledges the opportunity to prevent and control NCDs at multiple stages of life, thus offering the best chance of primary disease prevention.

Global burden of disease and developmental contributions to later disease risk

In the middle part of the twentieth century there was a strong focus on adult lifestyle as a predictor of health and disease (4). Lifestyle factors, such as smoking and unhealthy diet, combined with genetic susceptibility to disease were seen as the strongest influences on adult health. Research over the last two decades has demonstrated the importance of the environment during early life for the establishment of disease risk in later life and in subsequent generations. This has led to a revival of interest in early life, that had diminished because of the increasing emphasis of adult lifestyle predictors of disease, and to the emergence of life-course as a distinct field of epidemiological and public health research.

During early development, adaptive responses to a range of stimuli are important contributors to risk of disease, as posited by the ‘developmental origins’ or ‘DOHaD’ concept (5). Subsequent environmental exposures during infancy, childhood and adult life may modify or condition this later risk of disease. In middle and later life, social, psychological, physical and occupational factors in the

environment can cause or accentuate risk of ill health and disease.

There is a strong biological basis for a developmental origins model of disease pathogenesis (5). Experiments in animal models have repeatedly demonstrated that alterations to the diet of pregnant animals can produce lasting changes to offspring physiology and metabolism. This is an example of developmental or phenotypic plasticity that enables one genotype to give rise to different physiological or morphological states depending on the prevailing environmental conditions during development. The emergence of epigenetics is giving insights into the molecular mechanisms that underlie such developmental changes.

Factors contributing to health and disease during key phases of the life-course

Genetic factors

NCDs are multifactorial in origin, resulting from the effects of both environmental and genetic factors. There has been considerable interest in the identification of genes that are responsible for NCDs given the potential of such discoveries to influence disease prevention and treatment. Recently there has been increasing interest in epigenetic mechanisms as determinants of NCDs. There is increasing evidence that maternally mediated environmental modulation of gene expression in offspring and gene-environment interactions are important determinants of later disease risk (5, 6).

Environmental factors

The environment in utero is now widely recognized to be a key determinant of foetal growth and development. Studies in humans and animal experiments have shown that the environment that the foetus is exposed to is determined by maternal nutrition during pregnancy interacting with the mother’s pre-pregnancy nutritional status, metabolism and physiology (5). This in utero environment can have long-term effects on the physiology of the foetus and its risk of disease in adult life.

The influence of the maternal environment on later health and disease will be modified by the environment in which a child grows up. Children are affected both by material disadvantage and by the social circumstances. Poor housing or homelessness, low income or parental unemployment and changing family structures will influence children’s physical and emotional health.

Parenting is known to mediate about 50% of the impact of contextual factors, such as poverty, that influence a child’s early development (7). Parenting is also one of the main influences on a child’s social and emotional development. Positive, proactive parenting is associated with high child self-esteem and the development of good social skills. It is also protective against later harmful behaviours in adolescence, such as substance misuse.

During adolescence, the influence of schools and peers become more dominant than at earlier stages of the childhood and can become more dominant than the influences of the family (8). The neighbourhood environment begins to exert a strong influence as adolescents become more independent. This can have adverse effects if the food and physical environment is dominated by unhealthy influences such as fast food outlets.

For adults, a poor working environment can have adverse effects on health (9). Jobs that are insecure or low-paid and that fail to protect employees from stress and danger can cause illness. Principal among work-related ill health are mental health problems and musculoskeletal disorders.

The physical environment can influence health. Outdoor air pollution is associated with respiratory infections and with increased risk of stroke and ischaemic heart disease. The burden of disease from pollution is considerably higher in low- and middle-income countries than in high-income countries.

Behavioural factors

The health behaviours that people adopt will influence their risk of disease. Childhood and adolescence are important



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stages when health behaviours become established. Most NCDs are strongly associated with four particular health behaviours: smoking and tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol.

Psychosocial factors

There are marked associations between positive psychological states and health outcomes, including reduced cardiovascular disease risk and increased resistance to infection. These associations between positive affect or mood and later health are independent of negative affect suggesting that positive affect may have direct biological effects that benefit health (10). Levels of individual confidence and control have been linked to objective measures of lifelong health and longevity.

Transitional phases of life which present challenges to services

Preconception and pregnancy

There is increasing evidence that a woman's health and nutritional status before pregnancy is an important predictor of outcomes in her child. Studies in Southampton have shown that women of childbearing age from disadvantaged backgrounds have diets of poor quality. The quality of maternal nutrition before and during pregnancy and the presence of specific micronutrient deficiencies predict skeletal development in their offspring (6). Intervention studies in India have shown that provision of a food-based supplement during preconception and throughout pregnancy was associated with increased birthweight in the offspring (11).

The health and well-being of fathers is an important determinant of the health and development of their children. Disease can be passed from father to children by virtue of shared genes but also because of shared environment and lifestyle. The health and well-being of fathers will be influenced by their social circumstances, and factors such as stress at work or unemployment, and will influence the way in which they parent and interact

with their children. Fathers can also influence the nutrition of their partners and children: studies of women of childbearing age from disadvantaged backgrounds showed that a lack of support for healthy eating from women's partners was a barrier to a healthy family diet.

During pregnancy, maternal health has a significant influence on foetal development. Influences including stress, nutritional status, drug, alcohol and tobacco use can adversely affect early brain development. The complex interplay of both genetic and environmental factors is fundamental in determining exposure to risk, susceptibility to risk and future outcomes for pregnant women (5). In particular, some pregnant women will be much more susceptible to the effects of certain risk factors than others.

Research in the United Kingdom (UK) has shown that women of childbearing age with lower levels of educational attainment have diets of poorer quality and that their individual psychological characteristics, specifically control over their lives in general and their diets in particular, predict their compliance with dietary recommendations (12). These findings highlight the need for initiatives that empower women to improve their health behaviours. One such approach, the Southampton Initiative for Health, implemented a behaviour change intervention ('Healthy Conversation Skills') in UK Sure Start Children's Centres with the aim of improving the diet quality, well-being and physical activity levels of women of childbearing age from disadvantaged backgrounds. The intervention had a protective effect on women's sense of control and self-efficacy, intermediate factors on the causal pathway between exposure to the intervention and change in diet and physical activity (13).

Most pregnant women want to do their best for their baby and so pregnancy presents an opportunity to tackle unhealthy lifestyle choices, such as smoking, and promote healthy ones, such as breastfeeding (14). A woman's social circumstances can be a barrier to healthy choices, leading to poorer pregnancy outcomes of

pregnancy and less optimal child development. Intervening in the preconceptional period presents even greater challenges. Evidence shows that many women do not plan or prepare for pregnancy (15).

Teenage pregnancy is a particular challenge. In many cases, pregnancy is unplanned and unwanted. This applies to 90% of pregnancies occurring in girls and women aged 15 to 19 years (9). This means that preparation for pregnancy is not possible. Initiatives that aim to improve the health and nutrition of teenage girls and boys have great potential to improve the health and well-being of babies. In the UK, educational initiatives, such as the Lifelab intervention, are targeting teenage boys and girls with the aim of improving their health literacy and understanding of the long-term influences of their health behaviours on their subsequent health and that of their children (16). Such interventions work through an empowerment approach by improving the self-efficacy of teenagers in order that they can improve their own health behaviours with respect to diet and lifestyle.

Interventions during pregnancy have tended to focus on improving the nutritional status and lifestyle of mothers in order to optimize the development of the foetus as well as improving the health of mothers themselves. There are two principal approaches to improving nutritional status: nutritional supplementation (multiple micronutrient supplementation, and single vitamin supplements to correct deficiencies) or behaviour change interventions that aim to improve the health behaviours of pregnant women.

Multiple micronutrient approaches have been trialed in developing countries. In Mumbai, India, for example, a food based supplement started preconceptionally and given throughout pregnancy halved the prevalence of maternal gestational diabetes (11). Correction of specific vitamin deficiencies during pregnancy has improved outcomes for pregnant women both in the UK and India. In the MAVIDOS study vitamin D supplementation during pregnancy corrected mater-

NONCOMMUNICABLE (NCDs) DISEASES AND SEXUAL AND REPRODUCTIVE HEALTH (SRH): LINKAGES AND OPPORTUNITIES THROUGH A LIFE-COURSE APPROACH *(CONTINUED)*

nal vitamin D deficiency and optimized infant levels of vitamin D (17).

Infancy and childhood

Childhood is a formative time for biological development and for shaping health behaviours. Risk factors for NCDs, such as raised blood pressure, can develop during childhood and then track into adulthood. Behavioural risk factors for later disease such as smoking, poor diet and insufficient physical activity are also established early in life and track through the life-course. A child's physical, socio-emotional and cognitive development during the early years strongly influences their educational attainment, economic participation and health across the life-course. Low birthweight, a marker of poor growth in utero, is associated with poorer long-term health and educational outcomes. Socioeconomic disadvantage is an important risk factor for mortality. In a study of infant deaths in England and Wales (excluding multiple births), higher levels of deprivation were associated with increased risk of death independent of other factors known to influence infant mortality (9).

Nutritional status is an important determinant of health during early childhood. The early years are a key time for establishing healthy eating and activity patterns that will promote health and protect against later chronic disease (7).

Breastfeeding protects children from a range of later problems including ear and lung infection, obesity and diabetes and sudden infant death syndrome. Interventions that increase the initiation and duration of breastfeeding have been identified. Cochrane systematic reviews have shown that one-to-one health education and support for new mothers effectively increase breastfeeding initiation rates and that appropriate support can prolong breastfeeding duration (18). The WHO/UNICEF Baby Friendly Hospital Initiative, which encourages hospitals to introduce breastfeeding policies and educate staff to promote and support breastfeeding, has been shown to prolong exclusive breastfeeding.

Iron and vitamin deficiencies are common in early childhood. There is also evidence that many children consume inappropriate energy-dense foods during the preschool years, that have been introduced in infancy and which increase the risk of obesity (7). Parental feeding practices and control over eating affect children's early eating patterns and risk of childhood obesity. Parental levels of physical activity and sedentary behaviour have also been shown to predict levels of activity in their children. Fewer than half of children aged 11 to 15 years engage in at least one hour per day of moderate to vigorous physical activity and the rate decreases with age (19). In the UK, over 20% of children entering school at age 4 to 5 years are overweight or obese. This puts them at increased risk of ongoing overweight and obesity and of developing physical health problems such as diabetes, coronary heart disease and early osteoarthritis in later life (19). Physical activity, which is an important contributor to optimal weight, is also associated with physical and mental health gains in the short and long term. The early years are an important time to intervene to prevent obesity and to establish healthy patterns of eating and physical activity that are known to track into adulthood. There is evidence that multi-component behavioural interventions, such as the HENRY intervention in the UK, can prevent the development of obesity in infants and toddlers. Maintenance of appropriate dairy intake and weight bearing physical activity in childhood are also important for bone development and have been linked to optimum attainment of peak bone mass and reduced risk of osteoporosis and fracture later in life (6).

Parenting is one of the main influences on a child's social, emotional development and health (7). Interventions that support parents to provide positive proactive parenting have the potential to optimize children's socio-emotional development. In the UK, the Healthy Child Programme offers every family a programme that includes guidance to support parenting and healthy choices

as well as screening tests, immunizations and developmental reviews (20). The delivery of the programme is based on a proportionate universal approach that involves adapting interventions according to the risk factors of the community, with the aim of achieving equitable outcomes for all children.

Targeting interventions to vulnerable groups can also improve the health and well-being of infants and children. In the UK, the Family Nurse Partnership offers intensive targeted support for the most vulnerable first-time mothers. It provides intensive and structured home visiting delivered by specially trained nurses, from early pregnancy until the child is aged two (7).

Adolescent health

Adolescent health and development is key to the prevention of adult NCDs. Adolescence is the most significant period in the life-course for the initiation of a wide range of health behaviours that are associated with the burden of disease in adult life (8). Rapid development of the brain and biological changes to other organ systems during puberty and adolescence interact with social development to set up a range of new behaviours that can have adverse effects on health. Smoking in the UK increases from a population prevalence of 1% at age 11 years to around 20% at 15 years. Similarly, approximately 80% of lifetime alcohol or cannabis use is initiated before people reach the age of 20 years, with the proportions initiating other illicit drugs in adolescence closer to 50%. Once initiated, these behaviours track strongly into adult life, highlighting the importance of intervention in adolescence to prevent health burden. Factors such as deprivation, poor parental connection, peer pressure, low self-esteem and poor mental health increase the likelihood that adolescents will explore behaviours that pose a risk to their health.

Scope for action

The application of a life-course approach should incorporate holistic values that integrate the training of healthcare provid-

ers, the organization of systems structure and delivery of health care. For example, such an approach has the potential to augment the planning and integration of services for the mother and unborn child and cement strong existing linkages between health and social services.

This approach also marks a strengthening of sexual and reproductive health (SRH) and its broader linkages to areas within NCDs that to date have received less attention, such as, for example, mental health. The life-course approach to health focuses on prevention (5). In order to help people prioritize their own health and well-being there needs to be an increased emphasis on giving them the appropriate tools and education about health matters starting at a young age. In the area of SRH, this will require increased prioritization of sexuality education for young people.

Conclusion

NCDs do not fit the medical model in which an individual is healthy until they contract the disease. The trajectory is set much earlier, being influenced by factors such as the mother's diet and body composition before and during pregnancy, and foetal, infant and childhood nutrition and development. Adopting a life-course perspective allows identification of phenotype and markers of risk early, with the possibility of nutritional and other lifestyle interventions. Timely, relatively modest interventions in early life can have a large effect on disease risk later. Early life preventive measures require a long term investment, but are more likely to be effective than population screening programmes that identify the early stages of disease or treatments initiated after the disease is manifest.

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SEXUALITY EDUCATION IN GERMANY: AN EFFECTIVE INTERVENTION TO SUPPORT THE SEXUAL AND REPRODUCTIVE HEALTH (SRH) OF PEOPLE ACROSS THE LIFESPAN

In Germany, sexuality education is considered to be a public task. The Federal Centre for Health Education (BZgA), as a government organization, and the authorities of the 16 federal states are by law assigned to implement and conduct sexuality education, in close cooperation with German family counseling institutions and other organizations working in the field. In this process, BZgA has a recognized role in developing concepts for sexuality education and in quality assurance. This multisectoral approach ensures high quality sexuality education for different age and target groups.

In a jointly published framework (1), BZgA and all federal states agreed that sexuality is to be regarded as a natural part of human development through every phase of life and that sexuality education, as a consequence, is relevant for the whole population, including all ages.

On the one hand, sexuality education in Germany aims at increasing knowledge of issues related to SRH, including, but not limited to, physical aspects like body changes in puberty, the reproductive cycle and the effectiveness of different contraceptive methods. On the other hand, sexuality education aims to enable the general population (and specific target groups) to develop a positive self-responsible and partner-responsible attitude towards sexuality. Sexuality education is meant to support the development of a self-determined identity, of a personal value system and of a personal life perspective. It therefore connects the goals of reducing rates of sexually transmitted infections (STIs) and unwanted pregnancies with the broader concept of well-being throughout the life-course. This approach has proven to be effective at several levels. For example, teenage pregnancies in Germany have dropped by half within the last 10 years from 15000 in 2004 to 7500 in 2013 (2).

Several key actors, at various levels, are responsible for ensuring that everybody in Germany has full access to information and counseling regarding sexuality, including topics such as sexual health,

relationships, family planning and many more. These actors include:

- **Governmental level:** BZgA is designated by law to provide sexuality education for different target and age groups and to disseminate its materials for free to the general population and certain stakeholder groups such as teachers and counseling centres. Ensuring a multisectoral approach, BZgA works in the portfolio of the Federal Ministry of Health and is technically supervised by the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth. Together with the WHO Regional Office for Europe, BZgA, as a WHO collaborating centre for SRH, developed the *Standards for Sexuality Education in Europe* (3).
- **Federal state level:** The implementation of sexuality education in schools all over the country is mandated by legislation and comes under the authority of each federal state. When to begin sexuality education, how to include the content in the curricula and which topics to emphasize may differ, depending on the Ministry of Education and Cultural Affairs (*Kultusministerium*) of the respective state. However, in general, sexuality education is understood in a comprehensive sense, including physical, emotional, social and interpersonal aspects. “Soft” topics such as gender equality, sexual diversity and sexual and reproductive rights have become more prominent in many German classrooms over the last decade.
- **Community level:** A large number of governmental and nongovernmental organizations (NGOs), with more than 1600 counseling centres, work actively in the field of sexuality education and SRH counseling. The Federal Association of Family Planning and Counseling (pro familia) is a well-established NGO working in this area, focusing on issues such as contraception, pregnancy, infertility, sexual relationships, abortion,

sexual violence and women’s and men’s health. Pro familia has around 180 counseling centres in Germany addressing different target groups. The German AIDS help (*Deutsche AIDS-Hilfe*) is yet another example of a well-established NGO that provides sexuality education.

These key actors are all interconnected with each other, offering opportunities for open discourse and the exchange of opinions and viewpoints. This process, in which BZgA plays a leading role, has resulted in jointly developed concepts for sexuality education in Germany (1, 4). Different actors work together in the field. Counseling institutions, for example, can dispatch experienced sexuality educators to support teachers in the classrooms.

Despite the diversity of actors working on different levels (and their autonomy in their special field of work), there is a common understanding of the principles of sexuality education in Germany. Sexuality education should encourage children and adolescents to develop a positive attitude towards sexuality as well as a value system, based on principles of equality, empowerment and self-respect. Sexuality education can also support young people by helping them develop life skills, such as problem solving and communication skills. Development of these attitudes, values and skills help establish, along with other factors, the foundation for a healthy life as an adult.

From an ecological perspective, many different factors such as individual attitudes and experiences, prevailing norms and values in the family and society and political, as well as, structural aspects are important influences that shape an individual’s health status. Sexuality education is one of these influencing factors as it supports individuals in making informed decisions about their sex life. Data on sexual behaviour and attitudes of young people and their experiences with sexuality education from the survey “Youth Sexuality”, which has been conducted eight times by BZgA since 1980, support this. The current survey included 5750

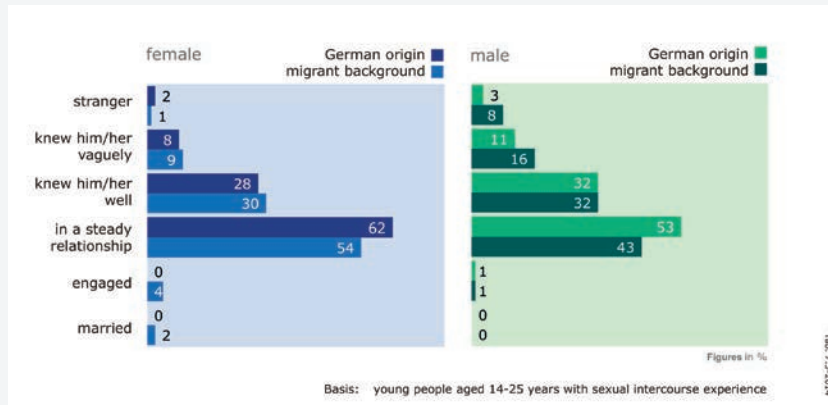


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Figure 1. Level of familiarity with the first sexual partner (5).



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adolescents and young women and men aged 14 – 25 (5). Analysis of the data demonstrates that good quality sexuality education is not associated with earlier sexual debut, but rather with higher levels of knowledge regarding physical aspects of sexuality, responsible contraceptive behaviour and the ability to communicate openly and productively with both partners and parents about sexuality. Recent survey results indicate that today, most young people in Germany feel that they are well informed about sexual issues (6).

Age and development appropriate communication about sexual issues within the family is promoted and widely accepted in German society. Adolescents are most often satisfied with both the method and content of parental sexuality education. However, adolescents holding German citizenship feel more comfortable when talking with their parents about sexuality than do their peers with a migration background. To be able to communicate openly is important for adolescents when learning about the physical aspects of sexuality. Yet, the impact of communication goes far beyond this learning process. Communication skills can also enable and empower young people to speak more freely about their own desires and barriers in relation to sexuality and support them in the process of shaping their own attitudes and values.

In order to prevent unwanted pregnancies and STIs, the use of contraception (and in regard to the prevention of STIs

the use of condoms in particular) is crucial. Young Germans aged 14 – 17 years use contraception today more often during first sexual intercourse than 35 years ago (5). In 1980 about every third male did not use any kind of contraception during his first sexual intercourse while this has dropped to only about one in 16 in 2014. The number of young females at the same age not using contraception during their first sexual intercourse has decreased by half since 1980. Overall, in 2014, only one in ten young people in Germany reported not having used contraception during their first sexual encounter (5).

Today, the majority of young people in Germany have their first sexual experience with someone from within their social circle as shown in Figure 1 (5). Also, most young people in Germany feel that they had their first sexual relationship at an appropriate time. Only very few (one in 20) feel that they engaged in a sexual relationship too early (5).

These examples from Germany demonstrate that high quality sexuality education is an effective life-course intervention, which impacts the sexual and overall health of individuals. The impact can be especially positive when actors from different levels of society and government work together and when information provided on sexuality and contraception is customized to meet the needs and educational levels of target groups and can be accessed easily.

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BUILDING AN ENABLING POLICY ENVIRONMENT FOR IMPROVING CHILD HEALTH, DEVELOPMENT AND WELL-BEING (CHDW) IN KOSOVO*



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“Investment in early childhood is the most powerful investment a society can make, with returns over the life-course many times the size of the original investment (1).”

The case for investing in the early years

Over the last two decades, a robust and rapidly evolving body of research has pointed to the importance of the early years of a child’s life in impacting on healthy brain development, cognitive social and emotional functioning, together with a range of outcomes, from health to social adjustment, throughout the life-course (1-3).

Data from the Multiple Indicator Cluster Survey (MICS) 2013-2014 (4), combined with findings from recent studies and reports (5-9), show that Kosovo children face many challenges from conception through their early childhood years. Despite substantial and consistent progress, particularly in infant and child mortality, child health indicators in Ko-

sovo are still among the poorest in the Region, pointing to gaps in both access and quality of care. Access to early education programmes is very low and development-focused family practices are poor, leading to low child development indexes (see Table 1). There is a widespread social acceptance of violent discipline methods and domestic violence. Among Roma, Ashkali and Egyptian communities there are still low immunization rates (30% of children 24-35 months old are fully immunized compared to 79% in the general population), high prevalence of stunting (14.6%) and gaps in birth registration (10). There are striking disparities based on socioeconomic and parental educational level for most health, nutrition and early childhood development and education indicators. All this translates, for many of Kosovo’s children, into worse perspectives for health, cognitive, social and developmental outcomes with lifelong impact on chronic health conditions as well as on mental, behaviour and conduct disorders (see Table 2).

Scope for action

In the light of scientific evidence and global and regional commitments, policy directions are indicated to effectively address the challenges, providing an opportunity for Kosovo institutions, development partners and civil society organizations to strengthen and focus their action to improve CHDW. A package of 14 policy directions is proposed to address policy development and implementation gaps in health as well as in other sectors. The package implies a broadening of scope, from improving mortality rates and nutrition status to preventing disability and promoting healthy child development and social protection. This comprehensive and synergic package is based on the continuum of care across prenatal and postnatal health, integrates actions in the dimensions of health, development and social protection and calls for a coherent and joint effort to build a stronger enabling policy environment to improve child health development and well-being for all Kosovo’s children.

The following sections provide indications on priority actions in the health sector as well as in other relevant sectors.

Health sector policies

Policy direction 1: Planning and supervision capacity of central Ministry of Health (MoH) structures. Strengthen the capacity of MoH structures and specifically of the Division for Mother, Child

Table 1. Key CHDW indicators (4, 5).

	Kosovo	Albania	Serbia	The former Yugoslav Republic of Macedonia	European Union
Infant Mortality Rate Per 1000 Live Births	12	9	6	7	4
Under 5 Mortality rate per 1000 live births	15	17	7	7	5
Percent coverage of early childhood education ages 3-5 years	14%	17%	56%	24%	80%
Percent coverage of birth registration	88%	98%	99%	99%	99%

* Kosovo (in accordance with Security Council resolution 1244 (1999))



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and Reproductive Health to improve its ability to promote and coordinate cross-department policies, ensure stewardship and supervision to programmes, define standards and performance indicators and give support to local managers.

Policy direction 2: Local managerial capacity. Managerial capacity of all managers responsible for the administration of primary health care at the local level needs to be improved. Selection of managers should be accurate and based on curricula. Reproductive, maternal and child health should become the entry point for introducing managerial tools such as planning and monitoring frameworks.

Policy direction 3: Quality assurance & improvement. The quality management tools that have been introduced should be fully institutionalized and the clinical guidelines, protocols and standards that were developed based on the Baby Friendly Hospital Initiative should be expanded to include all key aspects of maternal and child health care. Relevant capacity at the central and local level to implement quality approaches and protocols and monitor compliance with standards should be strengthened. This approach should also be used for licensing and accreditation for the private health sector. Robson's classification to monitor indications for and appropriateness of caesarean sections should be implemented.

Policy direction 4: Health System funding. Funding for the health system should be gradually increased within the public sector spending. Rational use of existing resources should be pursued through an accurate spending review in the health sector, giving priority to programmes and investments that yield the greatest benefits for the population. Cost/benefits profiles of prestige investments in tertiary care areas should be carefully evaluated and priority given to funding for areas that address the highest burden of disease, including primary health care. Insurance schemes need to include all essential pre,

peri and postnatal interventions for all mothers and children.

Policy direction 5: Human resources. A human resource plan should be developed, taking into account the future need for health professionals and the need to increase the nurse to population ratio. Opportunities for continuing professional development should be provided to municipal and health facility managers and to nurses, paying attention to the essential skills and knowledge to ensure timely delivery of equitable and quality primary health care, maternal and child health services in all targeted municipalities. Based on the Law on Chambers, a professional board should be established and encouraged to take the lead in promoting the role of nurses in health promotion and outreach interventions, including home visiting.

Policy direction 6: Health infrastructure and commodities. Ensure the provision of essential medicines and diagnostics for pre, peri and postnatal interventions to the most vulnerable groups, irrespective of insurance status.

Policy direction 7: Health Information System (HIS). The process for establishing a fully operational HIS should be sped up and investments made in capacity building. Capacity in data analysis and data based planning needs to be improved at both the central and local level, incorporated in medical and nursing curricula and be considered a priority need in the training and continued professional development of health managers. Morbidity data, particularly on perinatal adverse outcomes (congenital malformations, severe prematurity) should be collected prospectively by perinatal centres and included in HIS.

Policy direction 8: Service delivery. Revise indications for tasks to be performed at each level of care and for referral. Improve tools and methods such as paper and computer-based records for appro-

priate referral and support with health insurance mechanisms.

Policy direction 9: Home visiting. Based on results of initiated home visiting programmes and taking stock of international experience, the programme should be scaled up and implemented by the MoH in collaboration with municipalities and coordination with donors. This would include its inclusion in the scope of family medicine (11). The compliance of a minimum of 8 working hours devoted to community work including home visiting, health promotion activities in community and schools and patient support groups for primary health care professionals should be monitored.

Policy direction 10: Communication for social mobilization and behaviour change. Health professionals need to have their communication capacities strengthened to engage in proactive, open dialogue that provides services and information, explores the current knowledge, concerns and perceptions of the population and addresses them. The communication campaigns should complement this change by supporting families in adopting development focused practices. Technical support should be given by the relevant agencies and donors to the Health Promotion Unit or focal point within the MoH/National Institute of Public Health. A communication strategy, including media and materials for health professionals and users to improve health literacy and child-focused rearing practices, through the media, the social media and champions should be developed. Child and pregnancy health booklets should be revised with new evidence based information particularly on child development. The reasons for some negative or unhealthy practices and for not using community services by some excluded groups and social norms behind practices should be addressed by specific research to provide information for evidence-based programming.

BUILDING AN ENABLING POLICY ENVIRONMENT FOR IMPROVING CHILD HEALTH, DEVELOPMENT AND WELL-BEING (CHDW) IN KOSOVO

(CONTINUED)

Table 2. Key facts, implications and challenges for CHDW in Kosovo.

Key facts	Implications for society	Key strategic challenges
Health and nutrition High perinatal and postnatal mortality rates Widespread quality of care issues Unknown burden of maternal and neonatal morbidity and long term disability Low immunization rates and high prevalence of stunting, particularly among Roma, Ashkali and Egyptian communities	Long term health, social and economic consequences of disabilities Persistent vaccine preventable diseases and lack of full protection in case of re-emerging epidemics Negative impact on child cognitive development Unnecessary costs for health system and households	1. Ensure free access to all essential preventive and treatment interventions along the continuum of care from conception to the first years 2. Improve quality of antenatal, perinatal and postnatal care 3. Improve vaccination coverage and nutrition particularly in Roma, Ashkali and Egyptian, through outreach programmes
ECD Very low access to ECE programmes Poor development - focused family practices	Poor child cognitive and socio-relational child development Reduced school readiness and performance, increased behaviour disorders	4. Scale up parenting support programmes to improve child rearing practices, with special focus on early child development 5. Increase provision of preschool education
Child protection High proportion of non registered births Persistence of social norm issues such as attitude to violent discipline methods and domestic violence	Decreased social cohesion, increased societal and domestic violence, social and gender based discrimination inter-generational effects	6. Ensure birth registration to all children 7. Establish programmes to promote child protection from the prenatal period, including focus on prevention of violent discipline methods
Inequities Large gaps between rich and poor, educated and less educated for most health, nutrition and early childhood development and education indicators	Social exclusion, increased costs for social services and in general for remediation services	8. Tackle inequities in health and development outcomes through both health system (out reach and demand focused programmes) and other sector policies

Other sector policies and inter-sector collaboration

Health is the product of multiple factors, well beyond the performance of the health system. Among the key challenges identified by the MICS, several, particularly those regarding child development and social protection, can be addressed effectively only with the active intervention of other sectors of the government and of society and by establishing and strengthening mechanisms for inter-sector

collaboration at the central and local level. Based on the MICS results, relevant additional priority issues to be addressed by sectors other than health include:

Policy direction 11: Nutrition. Continue efforts by the MoH, with other line ministries and partners, to implement and monitor legislation and policies, sustain breastfeeding promotion, including the compliance with the International Code and fortify flour with iron and folic acid.

Include appropriate infant and young child feeding in well child visits and home visits, with special attention paid to children belonging to Roma, Ashkali and Egyptian communities and to children from poor households.

Policy direction 12: Early childhood education and care. A clear plan and timeline is required for achieving the goal of 100% pre-school enrolment and gradually increasing the provision of

early education for children aged 0-3 to 33% and aged 3-5 to 66% as outlined by the European Union. Providing adequate care and services for younger children will require an inter-sector collaboration between the MoH and the Ministry of Labour and Social Welfare (MLSW) since health services are considered the best entry point for promoting appropriate, development-focused family practices. Promoting public-private partnerships with NGOs will be crucial to achieve these objectives. A priority will be to develop a sustainable system of comprehensive teacher training with particular attention to preschool teachers and educators.

Policy direction 13: Social protection policies and parenting programmes.

Current efforts should be strengthened to ensure birth registration, possibly linking it to benefits if accompanied by full immunization and adhesion to parenting programmes starting during pregnancy. Home visiting is a key response to many concerns regarding child well-being and social protection since it allows early prevention and identification of risk factors. Guidelines for incorporation of social protection issues in home visiting have been developed by UNICEF CEE/CIS (11) and a recent WHO Regional Office for Europe document provided, based on experience from five member states, clues on how to incorporate early child development and social protection into health systems (12).

Policy direction 14: Child friendly governance. Explore the possibility to launch a Child Friendly Governance competition, managed in cooperation between Government, International partners and Civil society organizations, to build awareness about the importance of investing in CHDW and to foster participation of civil society.

Conclusion

Based on human rights, health, economic and social development reasons, investing in children should be among the top

policy priorities in Kosovo. The links between child survival and early child development are recognized globally as mutually reinforcing goals. By providing an enabling policy environment, the government of Kosovo will ensure that the reproductive, maternal and child health issues of the country can be tackled effectively and in a sustainable manner.

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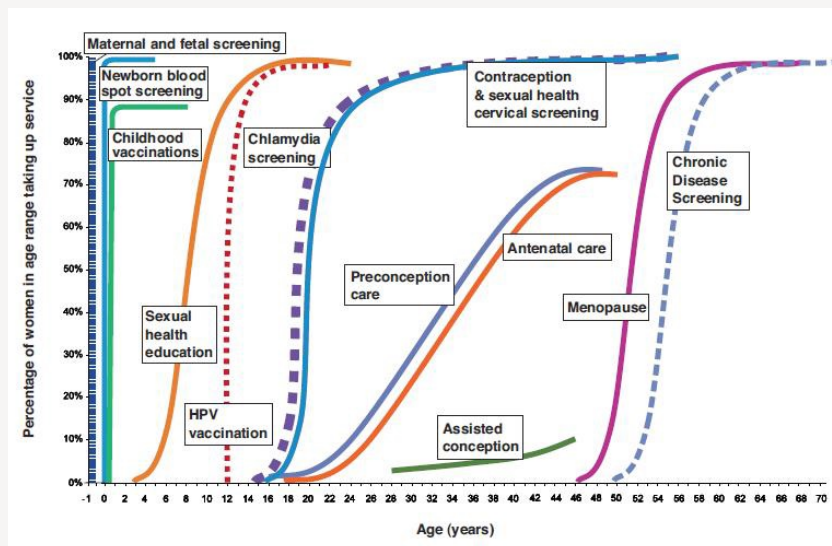
A LIFE-COURSE APPROACH TO WOMEN'S HEALTH: IMPLICATIONS FOR HEALTH CARE AND IMPLEMENTATION IN THE UNITED KINGDOM (UK)

This article provides an overview of a life-course approach to women's health, with some specific examples of implementation in the UK. The Royal College of Obstetricians and Gynaecologists (RCOG) recently adopted the life-course model as the cornerstone of their twin reports on the future of women's health care and specialist training (1, 2), prompting an enthusiastic assessment of a life-course approach more widely across Europe (3).

First, what does a life-course approach mean? The research that underpins a life-course approach investigates the long-term effects of biological, behavioural and psychosocial exposures during gestation, childhood, adolescence and young adulthood on health and chronic disease in later life and across generations (4). In simpler, more practical terms, a life-course approach focuses on the potential for early intervention to reduce disease risk or severity in later life. At the most general level, therefore, it includes stopping smoking to reduce the risk of cardiovascular disease and cancer. In this sense, much of health promotion exemplifies the life-course approach. However, the life-course approach outlined here goes beyond general health promotion to those aspects of sexual and reproductive health (SRH) that have particular implications for women's future health and, through pregnancy, the health of the next generation (see Figure 1) (5).

Screening and immunization are classic examples of public health interventions that fit the life-course model. More specifically, screening for cervical dysplasia and genital chlamydia infection both illustrate a life-course approach to women's health aimed at preventing cervical cancer and pelvic inflammatory disease (leading to ectopic pregnancy and infertility) respectively. But experience in the UK of implementing these two screening programmes and the evidence for their impact on women's health are very different.

Figure 1. Population view of women's healthcare across the life-course (5).



In the mid-1960s, National Health Service (NHS) clinics were offering women regular cervical smear tests, but since the approach was opportunistic, women at greatest risk of cervical cancer were not being screened and follow-up procedures for women who screened positive were inadequate. It was only after introduction of a centrally-managed call-recall system in 1998 that screening coverage increased to around 80% and cancer rates began to fall. Over the last 20 years, screening in England has reduced the incidence of cervical cancer by a third and deaths by more than a half (6).

A national chlamydia screening programme (NCSP) in England was launched in 2003 to offer opportunistic screening to sexually active women and men under 25 years of age. However, due to many factors, evidence that screening has directly reduced the prevalence of chlamydia or the incidence of clinical complications (pelvic inflammatory disease, ectopic pregnancy or infertility) is lacking. Consequently key questions about the programme's effectiveness remain unanswered and its value for money unknown (7). These contrasting examples illustrate the huge challenge and high stakes involved in establishing successful screening programmes i.e.

those that do more good than harm and at reasonable cost. More recently, the UK and most other European countries have implemented HPV vaccination programmes for adolescent girls before they become sexually active; if successfully implemented, these programmes should reduce cervical cancer rates by around 70%.

The examples above of protecting sexual health across the life-course to prevent cancer, ectopic pregnancy and infertility are relevant to all sexually active women regardless of whether or not they go through pregnancy. 'Life-course interventions' in maternal healthcare can target the future health of the mother, or the child, or both. Some such interventions derive from the stressor effect of pregnancy on maternal metabolic or cardiovascular function providing an 'early warning' of health problems in later life (see Figure 2) (8). For example, women who develop diabetes in pregnancy (gestational diabetes) have a much higher risk of developing type 2 diabetes in the years following their pregnancy even if their blood sugar returns to normal just after delivery; two out of every five women with gestational diabetes will have type 2 diabetes within 5 years. Furthermore, babies born to mothers with gestational



diabetes have significantly higher birth weight, which is associated with increased risk of childhood obesity and diabetes. While the precise contribution of genes *versus* environment to this increased risk is unclear, gestational diabetes has been called a disease of two generations. Fortunately, it is clear that maternal screening and treatment of gestational diabetes leads to better pregnancy and birth outcomes. Because of the high risk of developing type 2 diabetes in the years following pregnancy, evidence based guidance in the UK recommends annual review of all women with gestational diabetes (9). However, since the transfer of information from maternity care to primary care is highly inconsistent in the UK, general practitioners (family doctors) are often unaware that their patients have been diagnosed with gestational diabetes: a recent study in England showed that less than 20% of women were followed up within 6 months of delivery and less than 1% were followed up annually for 5 years (10).

A similar situation pertains for women found to have raised blood pressure in pregnancy or pre-eclampsia: these women are at much higher risk of hypertension and heart disease in later life, but annual review, as recommended by the National Institute for Health and Care Excellence (NICE), is seldom delivered in practice. Implementing a life-course approach to reducing cardiovascular disease by effec-

tive review of women with diabetes or high blood pressure in pregnancy, including annual risk assessment and healthy lifestyle counseling, should become more feasible as electronic systems for linking health care records improve.

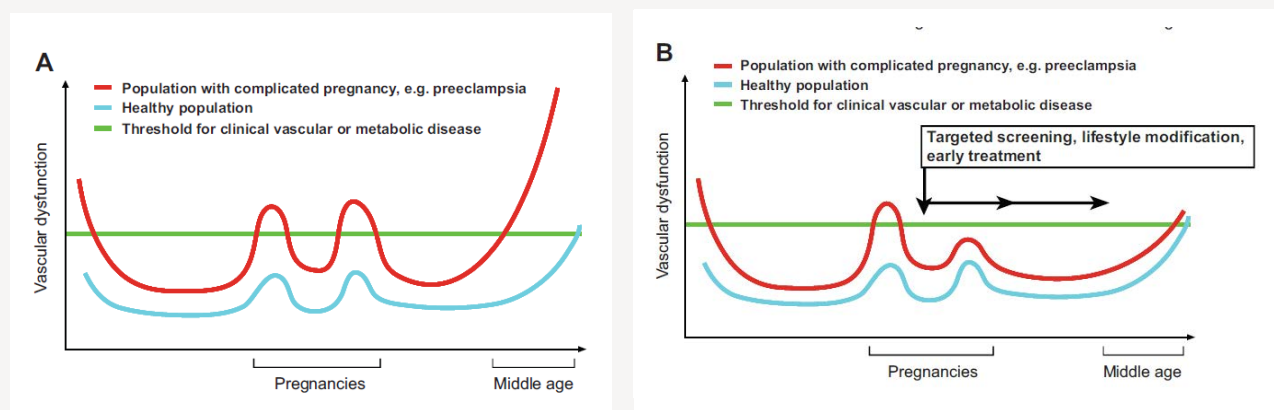
Interventions around the time of conception that target the baby's health have long been recommended, with folic acid supplementation to prevent neural tube defects being one of the best known examples; the evidence from randomized trials that folic acid reduces neural tube defects by around 70% is clear cut (11). Although there is substantial observational data linking pre-conception exposures (e.g. smoking and alcohol) to birth outcomes (e.g. low birthweight and congenital defects) evidence for the effectiveness of preconception interventions in reducing adverse outcomes is relatively sparse (12).

Implementing interventions *before* conception may be limited by the extent of pregnancy planning and awareness of preconception health issues, but robust evidence shows that over two thirds of pregnancies leading to childbirth are planned to some extent and a recent observational study found that women who reported advice from health professionals before pregnancy were significantly more likely to adopt healthier behaviours before pregnancy, including taking folic acid and eating a healthier diet (13). This is encouraging because new research has

shown that a mother's diet before conception can permanently affect how her child's genes function (14). In this study, researchers took advantage of a 'natural experiment' in the Gambia where people's normal diet differs markedly between rainy and dry seasons. By measuring blood levels of nutrients in pregnant women who conceived in rainy *versus* dry seasons and later analyzing blood samples from their infants, researchers found that a mother's diet before conception led to significant changes (epigenetic modifications) to her child's DNA. Although the health significance of the DNA changes is not yet clear, this study is an important step towards defining an optimal diet for mothers-to-be, ultimately with known health benefits for their children.

In conclusion, these few examples illustrate the impact, both potential and achieved, of interventions designed to improve women's health across the life-course. Interventions may differ according to the target population including, for example, all girls aged 11-12 years (for HPV vaccination), all women preparing for pregnancy (for folic acid supplementation) or high risk subgroups of pregnant women (for screening and management of gestational diabetes). Such interventions may be intended to benefit women's future health, their child's, or both. Action for successful implementation may be required primarily at individual level (such as stopping

Figure 2. Potential for life-course interventions in pregnancy to improve long term health. Adapted from Sattar N and Greer IA (8).



A LIFE-COURSE APPROACH TO WOMEN'S HEALTH: IMPLICATIONS FOR HEALTH CARE AND IMPLEMENTATION IN THE UNITED KINGDOM (UK) (CONTINUED)

smoking before becoming pregnant), at health service level (for example annual follow-up of women with gestational diabetes in primary care) or at the level of public health policy for implementation of national screening or vaccination programmes.

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<https://www.rcog.org.uk/en/guidelines-research-services/guidelines/sip27/>



Health 2020. A European policy framework and strategy for the 21st century, WHO Regional Office for Europe, 2013.

This new policy framework, approved by the WHO Regional Committee for Europe in 2012, provides European politicians and policy-makers with key strategic advice to support action for health and well-being. It promotes a holistic life-course approach that is built around equity, gender, human rights and improved governance for health. Available in English, German, French and Russian at: <http://www.euro.who.int/en/health-topics/health-policy/health-2020-the-european-policy-for-health-and-well-being/publications/2013/health-2020.-a-european-policy-framework-and-strategy-for-the-21st-century-2013>



Transforming health services delivery towards people-centred health systems, WHO Regional Office for Europe, 2014.

This briefing note provides conceptual clarity around the 4 priority areas of Health 2020: a life-course approach, burden of disease, health systems and resilient communities. Available in English at: <http://www.euro.who.int/en/health-topics/Health-systems/primary-health-care/publications/2014/transforming-health-services-delivery-towards-people-centred-health-systems>



Investing in children: the European child and adolescent health strategy 2015–2020, 2014.

Every child should have every opportunity to live a healthy and meaningful life. To ensure this happens, the Member States in the WHO European Region adopted this new strategy. The strategy recommends adopting a life-course approach that recognizes that adult health and illness are rooted in health and experiences in previous stages of the life-course. Available in English, French, German and Russian at: <http://www.euro.who.int/en/health-topics/Life-stages/child-and-adolescent-health/publications/2014/investing-in-children-the-european-child-and-adolescent-health-strategy-20152020>



Young people's health as a whole-of-society response – series, WHO Regional Office for Europe, 2011.

This series of publications summarizes current knowledge and policies, actions/interventions on what works in promoting the well-being of adolescents, a critical life stage in the life-course approach. It includes social and emotional well-being, chronic conditions and disabilities, adolescent pregnancy, HIV/STIs, overweight and obesity, violence, injuries and substance abuse. Available in English at: <http://www.euro.who.int/en/health-topics/health-determinants/gender/publications/2012/young-peoples-health-as-a-whole-of-society-response-series>



Improving the lives of children and young people: case studies from Europe. Volume 1. Early years, WHO Regional Office for Europe, 2013.

As part of the European review of social determinants of health and the health divide, experts were commissioned to write case studies addressing childhood and inequality. This diverse collection of case studies is presented in three volumes reflecting a “life-course” approach: Volume 1 addresses the early years, with examples from Greece, the Netherlands, Portugal, Sweden and the United Kingdom. Available in English at: <http://www.euro.who.int/en/health-topics/Life-stages/child-and-adolescent-health/publications/2013/improving-the-lives-of-children-and-young-people-case-studies-from-europe.-volume-1.-early-years>.



Improving the lives of children and young people: case studies from Europe. Volume 2. Childhood, WHO Regional Office for Europe, 2013.

Volume 2 in the above mentioned series addresses childhood years, with examples from Armenia, France, Germany, Hungary, Ireland, Norway and Poland and two European projects. Available in English at: <http://www.euro.who.int/en/health-topics/Life-stages/child-and-adolescent-health/publications/2013/improving-the-lives-of-children-and-young-people-case-studies-from-europe.-volume-2.-childhood>



Improving the lives of children and young people: case studies from Europe. Volume 3. School, WHO Regional Office for Europe, 2013.

Volume 3 in this collection of studies addresses school, with examples from Croatia, Cyprus, Denmark, Finland, France, Germany, Italy, Lithuania, the Netherlands, Spain and Sweden. Available in English at: <http://www.euro.who.int/en/health-topics/Life-stages/child-and-adolescent-health/publications/2013/improving-the-lives-of-children-and-young-people-case-studies-from-europe.-volume-3.-school>



Early child development in the European Region: needs, trends and policy development. An overview based on five country assessments, WHO Regional Office for Europe, 2014.

Investment in the earliest periods of life since conception, using the life-course approach, are the most effective way to further reduce burden of disease, improve social inequity and achieve full developmental potential and well-being for children and adults. This review summarizes the current gaps, existing policies and opportunities for action in order to optimize early childhood development and achieve well-being for all. Available in English and Russian at: <http://www.euro.who.int/en/health-topics/Life-stages/child-and-adolescent-health/publications/2014/early-child-development-in-the-european-region-needs-trends-and-policy-development>



Standards for sexuality education in Europe. A framework for policy makers, educational and health authorities and specialists, WHO Regional Office for Europe and BZgA, 2010.

This document provides a useful framework for implementation of sexuality education, a key effective intervention for improving SRH in the life-course approach to well-being. Available in English at: <http://www.euro.who.int/en/health-topics/Life-stages/sexual-and-reproductive-health/publications>



Thematic Brief: Families and Sexual and Reproductive Health Over the Life Course - UNFPA EECARO, UNECE, 2013.

People have different and changing SRH needs throughout their lives; therefore policies need to address the whole life-course – from birth to old age. Applying a life-course approach to SRH is key for addressing these gaps. This brief informs discussion on how to move ahead with implementing a life-course approach to SRH. Available in English and Russian at: <http://eeca.unfpa.org/publications/thematic-brief-families-and-sexual-and-reproductive-health-over-life-course#sthash.lhxAAWvj.dpuf>



EUR/RC62/10 Rev.1 Strategy and action plan for healthy ageing in Europe, 2012–2020, WHO Regional Office for Europe, 2012.

This strategy outlines how a life-course approach is required to ensure that ageing populations throughout Europe are able to lead active, healthy lives with access to affordable, high quality health and social services. Available in English, French, German and Russian at: <http://www.euro.who.int/en/health-topics/Life-stages/healthy-ageing/publications/2012/eurrc6210-rev.1-strategy-and-action-plan-for-healthy-ageing-in-europe-20122020>



Knowledge translation framework for ageing and health, WHO 2012.

The objective of the document is to assist policy- and decision-makers in integrating evidence-based approaches to ageing in national health policy development processes, specific policies or programmes addressing older population needs and other health programmes concerned with such issues as HIV, reproductive health, chronic diseases. Available in English at: http://www.who.int/ageing/publications/knowledge_translation/en/



Developing sexual health programmes. A framework for action, WHO, 2010.

This framework for programming provides evidence and strategies to help policy makers and programmers deliver services and promote healthy sexuality throughout an individual's lifespan in order to achieve the potential for fulfilled, positive sexual health. Available in English at: http://www.who.int/reproductivehealth/publications/sexual_health/rhr_hrp_10_22/en/



WHO recommendations on interventions to improve preterm birth outcomes, WHO, 2015.

This useful guideline is relevant to all involved in the care of preterm babies in order to optimize their immediate and long term outcomes across the life-course. Available in English at: http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/preterm-birth-guidelines/en/



Global Standards for quality health care services for adolescents, WHO, 2015.

This document assists policy-makers and health service planners in improving the quality of health-care services for adolescents so they can obtain the health services that they need to promote, protect and improve their health and well-being across the life-course. Available in English at: http://www.who.int/maternal_child_adolescent/documents/global-standards-adolescent-care/en/



Towards a new Global Strategy for Women's, Children's and Adolescents' Health, BMJ, WHO, 2015.

In this special supplement the evidence and thinking that form the basis of the new global strategy for women, children's and adolescents' health is outlined, including the required priorities and interventions that are needed throughout the life-course to improve the health and well-being of women, children and adolescents around the world. Available in English at: <http://www.bmj.com/content/women's-children's-and-adolescents'-health-0>



Strategies toward ending preventable maternal mortality (EPMM), WHO, 2015.

This excellent report promotes the application of a human rights framework to ensure that high quality RMNCH is available, accessible and acceptable to all, emphasizing the importance of the continuum of care and life-course in its approach. Available in English at: http://www.everywomaneverychild.org/images/EPMM_final_report_2015.pdf



Reproductive, maternal, newborn and child health and human rights. A toolbox for examining laws, regulations and policies, WHO, 2014.

Laws and policies play a key role in upholding human rights and promoting sexual and reproductive health throughout the life-course. This toolkit allows countries to use a human rights framework to identify potential barriers and make proposals to overcome or reduce them in order to achieve positive SRH at all life stages.

Available in English at: http://www.who.int/reproductivehealth/publications/gender_rights/rmnch-human-rights/en/



Global Strategy for Women's, Children's and Adolescent's Health 2016-2030

Launched in New York on 26 September 2015, is a roadmap for ending all preventable deaths of women, children, and adolescents by 2030 and improving their overall health and well-being. The renewed Strategy supports the achievement of women's, children's and adolescents' health-related post-2015 "Sustainable Development Goals" (SDGs), moving beyond reductions in mortality to a vision of healthy life for all through the life-course. Available in English at: <http://www.who.int/life-course/partners/global-strategy/en/>



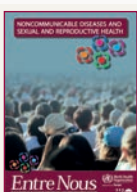
Adolescence: building solid foundations for lifelong flourishing, Entre Nous No. 80, 2014.

This issue of Entre Nous focuses on the health and well-being of adolescents and young people in Europe, sharing experiences from the Region on the far reaching long term health and socio-economic benefits of investing in adolescents. Available in English and Russian at: <http://www.euro.who.int/en/health-topics/Life-stages/sexual-and-reproductive-health/publications/entre-nous/entre-nous/adolescence-building-solid-foundations-for-life-long-flourishing.-entre-nous-no.80,-2014>



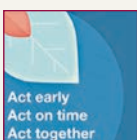
Ageing and sexual health, Entre Nous No. 77, 2013.

One of our most popular issues, the articles in this edition address a broad spectrum of aspects of ageing and sexual health that recognize that sexuality and sexual health are an intrinsic part of health and well-being in older age. Available in English and Russian at: <http://www.euro.who.int/en/health-topics/Life-stages/sexual-and-reproductive-health/publications/entre-nous/entre-nous/ageing-and-sexual-health.-entre-nous-no.-77,-2013>



Noncommunicable diseases and sexual and reproductive health, Entre Nous No 75, 2012.

This 75th issue of Entre Nous explores the many parallels between NCDs and sexual and reproductive health across the life-course in terms of vulnerabilities and risks for and as a result of ill health, such as, poverty, inequity, social determinants of health and socio-cultural factors. Available in English and Russian at: <http://www.euro.who.int/en/health-topics/Life-stages/sexual-and-reproductive-health/publications/entre-nous/entre-nous/noncommunicable-diseases-and-sexual-and-reproductive-health.-entre-nous-no-75,-2012>



Upcoming events

WHO European Ministerial Conference on the Life-course Approach in the Context of Health 2020, 21–22 October 2015, Minsk, Belarus. The WHO European Ministerial Conference will bring together new evidence, from genetics to economics, on what governments can do to keep people healthy throughout the life-course. The conference will equip policy-makers for promoting a healthy start to life and for targeting the needs of people at critical ages. More information is available at: <http://www.euro.who.int/en/media-centre/events/events/2015/10/WHO-European-Ministerial-Conference-on-the-Life-course-Approach-in-the-Context-of-Health-2020>

Useful Websites

Health 2020: the European Policy for Health and Well-being: <http://www.euro.who.int/en/health-topics/health-policy/health-2020-the-european-policy-for-health-and-well-being>

WHO life-course fact sheets: <http://www.who.int/life-course/news/factsheets/en/>

WHO promoting health through the life-course: <http://www.who.int/life-course/en/>

Every women, Every Child: <http://www.everywomaneverychild.org>

The UCL Institute of Health Equity: <http://www.instituteofhealthequity.org>



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