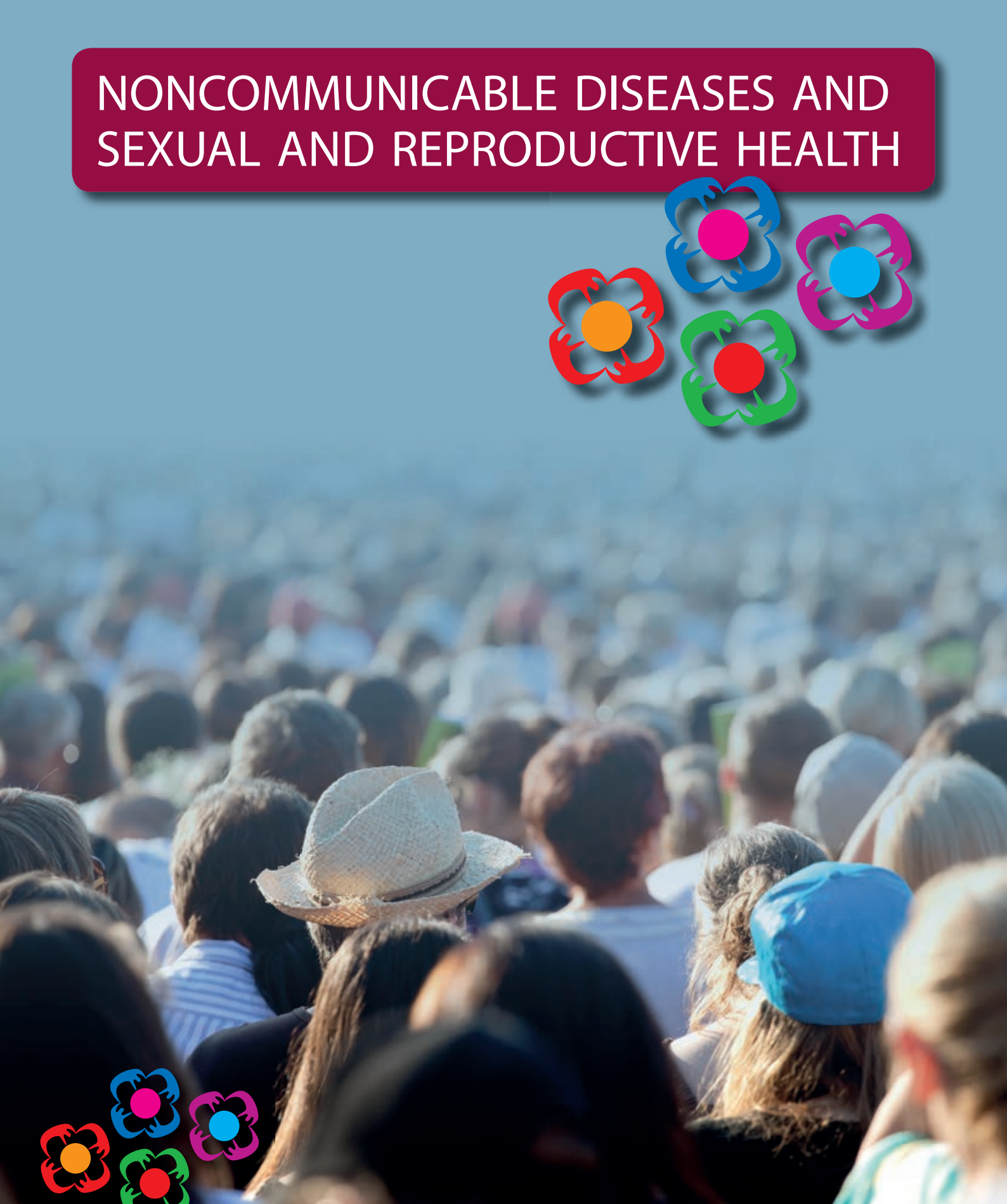
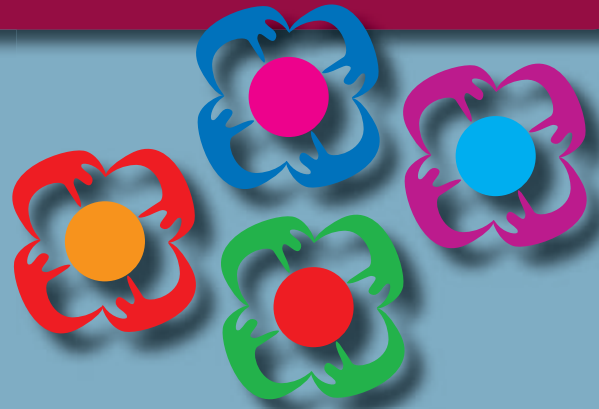


NONCOMMUNICABLE DISEASES AND SEXUAL AND REPRODUCTIVE HEALTH



Entre Nous

THE EUROPEAN MAGAZINE FOR SEXUAL AND REPRODUCTIVE HEALTH

No.75 - 2012



World Health
Organization

REGIONAL OFFICE FOR

Europe



Entre Nous is published by:
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Sexual and Reproductive Health (incl. Maternal and newborn health)
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Entre Nous is funded by the United Nations Population Fund (UNFPA), Regional Office for Eastern Europe and Central Asia, with the assistance of the World Health Organization Regional Office for Europe, Copenhagen, Denmark.
Present distribution figures stand at: 3000 English, 2000 Spanish and 1500 Russian.

Entre Nous is produced in:
Russian by the WHO Regional Office for Europe Riga, RGH Baltic, Rounborg Grafiske Hus;
Spanish by the Instituto de la Mujer, Ministerio de Sanidad, Servicios Sociales e Igualdad, Condesa de Venadito, 34, 28027 Madrid, Spain.

The Spanish issues are distributed directly through UNFPA representatives and WHO regional offices to Spanish speaking countries in South America.

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For information on WHO-supported activities and WHO documents, please contact Dr Gunta Lazdane, Division of Noncommunicable Diseases and Health Promotion, Sexual and Reproductive Health at the address above.
Please order WHO publications directly from the WHO sales agent in each country or from Marketing and Dissemination, WHO, CH-1211, Geneva 27, Switzerland

ISSN: 1014-8485

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On the 19-20th of September, 2011 the United Nations (UN) held its first High Level Meeting on Noncommunicable Diseases (NCDs). The fact that this was only the second time that the UN has held such a meeting on health (the first being in 2001 on HIV/AIDS) speaks to the significance of NCDs and the impact they have on all societies. At present 63% of deaths globally (just over 36 million deaths per year) are due to NCDs, primarily diabetes, cancer, chronic respiratory diseases and cardiovascular diseases. These NCDs spare no one – they affect men, women and children, all ages (one quarter of all NCDs attributable deaths occur below the age of 60), all levels of societies and all countries – and have huge human and economic costs. It is a cost that we are far too familiar with in the WHO European Region. The changing context in Europe, due to an ageing population, economic transitions and urbanization and globalization has lead to an alarming increase in NCDs. Of the 6 WHO regions the European Region is the most affected by NCDs. Presently, NCDs account for 87% of all deaths and 77% of the overall disease burden in the Region. This growth in NCDs places increasing strain on health systems, economic development, the overall health of large segments of the population and increases health inequalities within and across countries in Europe. As result NCDs represent a major challenge to sustainable development, including the attainment of the Millennium Development Goals, for both Europe and the world. With the number of NCDs expected to continue to increase in the coming decades it is evident that focus on this emerging public health challenge is urgently required.

In this regard, it is crucial that the linkages between sexual and reproductive health (SRH) and NCDs are recognized and addressed. To date these issues have often been addressed as two separate entities and there has been a failure to explore and understand the relationship of the two across the life continuum of men and

women, especially in their productive and reproductive years. Yet there are many parallels between NCDs and SRH 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. Both SRH and NCDs:

- are financially debilitating for individuals and families, due to a combination of medical costs, costs of transportation to and from health services, time associated with informal care giving, and lost productivity;
- lead to lost opportunities for children as a result of decreased spending potential on education and food; and
- place a particular burden on women and children, due to lost opportunities and increased caregiver and work burdens, both inside and outside the home.

Tackling the complex interaction between SRH, NCDs and development will not be easy. The highest level of engagement is required from policy makers and government, civil society and private sectors. Action needs to encompass the following key points:

- Reduce the exposure to risk factors,
- Enable health systems to respond,
- Set targets and measure results,
- Advance multisectoral action,
- Strengthen national capacity, and
- Promote international cooperation.

The WHO Regional Office for Europe has taken a key leadership role in ensuring that sustained commitment and action is given to these 2 public health priorities within the European Region. Through the development and implementation of important strategies and plans, such as *The WHO Regional Strategy on Sexual and Reproductive Health* and the *Action Plan for implementation of the European Strategy for the Prevention and Control of Noncommunicable Diseases 2012–2016*, we are working with Member States to implement effective programmes and

address the underlying risk factors that affect SRH and NCDs. In addition, with the adoption of the Tallinn Charter at the European Ministerial Conference in 2009, there has been renewed emphasis on health systems strengthening, recognizing the importance of universal health coverage and strong primary health care in improving access, availability and quality of health services for prevention and treatment of disease and disability, services which can impact greatly on the burden of disease due to poor SRH and NCDs. Furthermore, the new European policy for health, *Health 2020*, builds on progress made to date in the area of NCDs and SRH and takes advantage of the new momentum for action on NCDs and public health to work towards gaining better health for all in Europe .

It is my hope that this issue of *Entre Nous* will provide the reader with a critical assessment of both the linkages between SRH and NCDs and the realization that, with the right political commitment and action it is possible to improve the health and lives of men, women and children globally, now and for future generations.

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WOMEN'S HEALTH BEYOND REPRODUCTION: MEETING THE CHALLENGES

The following article is reprinted from:
Bulletin of the World Health Organization
2012;90:478-478A.

Women's health and noncommunicable diseases are both generating increasing interest within the international community. Over the past two years major action platforms have been launched in these areas, including the United Nations' Global Strategy for Women's and Children's Health and the Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases. However, the intersection and relationships between the two areas have not been adequately explored and, as a result, the health needs of women beyond reproduction remain largely unaddressed.

Strong historical ties between the concept of women's health and that of reproductive health have led to a concentration of international attention and resources on maternal health and human immunodeficiency virus infection, especially in low- and middle-income countries. Fruitful results have been reaped, yet women's health is not limited to women's reproductive capacity; it extends throughout the life-cycle and encompasses emerging priorities in chronic and noncommunicable disease control. A view in which progress in maternal health is measured merely in terms of survival of childbirth is outmoded.

It is time for priorities in women's health that are set in accordance with the unfolding demographic and epidemiologic transition and with breakthroughs in public health and medicine. Chronic and noncommunicable diseases exemplify the new and often ignored challenges that are emerging in women's health. Deaths from breast and cervical cancer have

outstripped maternal deaths (273 500 in 2011), which have declined substantially over the past three decades (1, 2). Over the same period, breast cancer incidence and mortality have increased at annual rates of 3.1% and 1.8%, respectively (2). Furthermore, trends in breast and cervical cancer illustrate the geographical polarization and protracted nature of the epidemiological transition and the overlapping and complex challenges facing health systems in the field of women's health (3, 4). In 2010, breast cancer killed 269 000 women in low- and middle-income countries and cervical cancer killed 247 000 (5). At the same time, cervical cancer incidence and mortality have become increasingly concentrated in low- and middle-income countries and hence in women who are poor (6). The same is true of diabetes, cardiovascular diseases, mental disorders and other health conditions.

Women's health in low- and middle-income countries is further complicated by the gender-specific nature of some demographic changes. Although women live longer than men, they experience poorer health according to conventional belief. Policies and programmes must therefore address women's health holistically and from a life-course perspective that focuses on providing women with a continuum of care. A growing evidence base, mainly from high-income countries, on the diseases and disabilities affecting women beyond reproduction supports this approach. Funding is needed to identify gaps in addressing women's health problems and to foster innovative ways of developing life course interventions (7).

More broadly, health systems must target and meet disease-specific priorities and systemic challenges synergistically, as envisioned in a diagonal approach to health systems strengthening (8). Such an approach avoids the pitfall of classifying diseases into discrete categories and allows the development of common delivery platforms that consider shared

risk factors across diseases to optimize available resources.

To move this agenda forward, more evidence from low- and middle-income countries is needed. This involves taking stock of existing research, conducting new research, capturing a range of experiences and initiating a broader, community-engaging dialogue on women's health with a focus on health systems and on chronic and non-communicable diseases.

Through a special theme issue on women's health beyond reproduction to be published in 2013, the *Bulletin* is inviting critical assessment of the global challenges involved in women's health beyond reproduction. We welcome papers that look at the health of women in low- and middle-income countries throughout the lifespan and from a perspective that embraces gender inequalities and social determinants. We wish to encourage the following types of papers in particular: critical appraisals of the opportunities for diagnosing and treating the full range of conditions affecting women (e.g. cancer, cardiovascular diseases, diabetes, infertility, incontinence, peri- and postmenopausal disorders, etc.); assessments of health system responses to noncommunicable diseases and chronic illnesses, including mental ailments and age-related disabilities; studies of multi-stakeholder approaches and cost-effective ways to address women's health needs beyond reproduction, as well as future trends and projections. The deadline for submissions is 1 December 2012. Manuscripts should respect the *Bulletin's* Guidelines for Contributors and mention this call for papers in a cover letter. All submissions will go through the *Bulletin's* peer review process. Please submit to: <http://submit.bwho.org>

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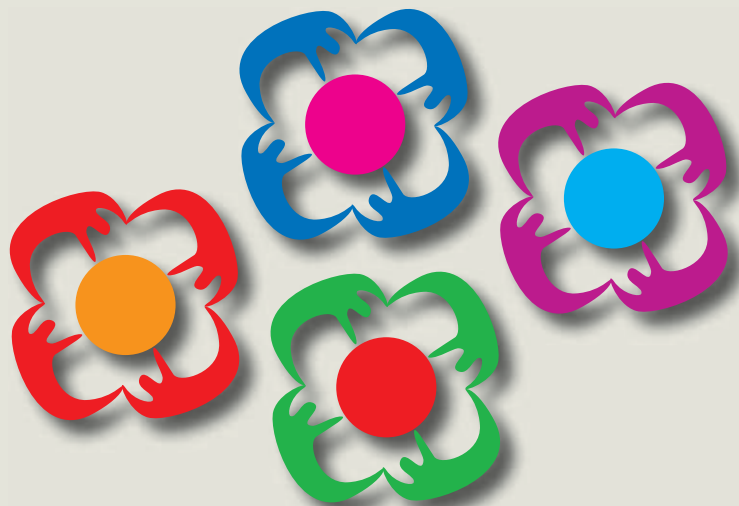
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WHAT ARE NONCOMMUNICABLE DISEASES, HOW DO THEY LINK WITH SEXUAL AND REPRODUCTIVE HEALTH AND HOW DO WE ADDRESS THEM?

Definition of noncommunicable diseases

Noncommunicable diseases (NCDs) are chronic diseases that are generally slow in progression and of long duration (1). The WHO considers four main diseases to predominate in this area: diabetes, cancer, cardiovascular diseases and chronic respiratory diseases (text box 1) (2). However, while these may be the most common diseases contributing to morbidity and mortality associated with NCDs, other diseases such as mental illness and musculoskeletal disorders, also contribute significantly to the global burden of illness due to NCDs. As well, some of these chronic conditions are also linked to infection. For example, infection with human papilloma virus (HPV) can cause cervical, anal, rectal, vaginal, vulvar and oral cancers.

Risk factors for NCDs arise from a combination of modifiable (those characteristics that we are able to change, such as behaviours and actions) and non-

modifiable factors (those characteristics that we are unable to change, such as sex, age, genetics). Poor diet, physical inactivity, tobacco use and harmful alcohol use are the four major modifiable risk factors for NCDs commonly addressed by the WHO (3). These four risk factors are closely associated with globalization, rapid urbanization and economic transition and the lifestyle changes that accompany them.

Burden of disease due to NCDs and its relationship to sexual and reproductive health

Globally over 63% of deaths worldwide are attributable to NCDs: more people die from NCDs than all other causes combined (Figure 1) (3). These deaths affect all countries, both sexes and all ages. Of the 36 million deaths due to NCDs in 2008, 18 million were female (4). Currently 25% of deaths due to NCDs occur among people under 60 years of age and four out of five deaths due to NCDs occurred in developing rather than developed countries (3). Within the WHO European Region NCDs are also the leading cause of death and disability, with 86% of the deaths and 77% of the disease burden due to NCDs (5). Vulnerable and marginalized populations are at particular risk, becoming ill and dying earlier and being further pushed into poverty due to catastrophic medical costs. While already at epidemic proportions, the burden of disease due to NCDs is expected to increase in the future as a result of an ageing population demographic and globalization of unhealthy lifestyles associated with rapid urbanization and economic shifts.

From a sexual and reproductive health (SRH) perspective this means that a growing number of women in their reproductive years will be exposed to risk factors for NCDs and develop NCDs. For example, presently, worldwide, heart disease is the leading cause of death in women (Figure 2), even during reproductive years, killing 9.1 million women annually (4). This increasing rate of exposure to risk factors and NCDs in women

of reproductive age means that SRH needs will also change and that outcomes will also be affected, primarily adversely. For example:

- Women who smoke (a leading risk factor for cardiovascular disease) and use the contraceptive pill are more likely to suffer a stroke, heart attack or blood clot than women who do not smoke and use the pill (6). Furthermore, in developed countries, smoking has been identified as the most important modifiable cause of poor pregnancy outcome, causing preterm labour, low birth weight and placental abruption (7). Smoking can also cause premature menopause. Women who smoke are more likely to enter menopause 2 years earlier than women who do not smoke (Figure 3) (8). It has also been identified as a risk factor for cervical, vulvar and vaginal cancers (9). Thus as the rate of smoking in women continues to increase globally, it can be expected that an increase in adverse pregnancy outcomes, limited contraceptive options, premature menopause, and genital cancer will also occur.
- Overweight and obesity, a consequence of physical inactivity and poor diet, is also increasing. Obesity is a known risk factor for anovulation, a common cause of infertility, as well as a risk factor for breast and uterine cancer and a risk factor for type 2 and gestational diabetes (4). Currently over 300 million people worldwide have diabetes, half of which are women (4). Pre-existing diabetes is considered a high risk state in pregnancy, for both the women and the foetus, that requires specialized care and carries significant risk of adverse outcomes such as congenital anomalies and stillbirth. In addition, globally 1 in 25 pregnancies' develops gestational diabetes which is associated with perinatal complications and increased risk of type 2 diabetes for both the women and her offspring later in life (4). As a result diabetes

Text Box 1.

THE FOUR MAJOR NCDs (1-3)

Cardiovascular:

This refers to a group of diseases of the blood vessels, heart and/or outcomes of diseased blood vessels leading to decreased blood supply to tissue. Examples include ischemic heart disease, stroke, congestive heart disease and hypertensive disease. It causes 50% of all NCD deaths.

Diabetes:

This is a metabolic disorder where due to either lack of insulin production or sensitivity, the body is unable to properly control glucose (sugar) levels in the blood. It causes a high burden of disability (kidney disease, blindness, amputations, cardiovascular disease) and is a risk factor for other causes of death.

Cancer:

Cancer is caused by rapid growth and division of abnormal cells in the body, which can then spread or invade other parts of the body. It is the second largest cause of death worldwide.

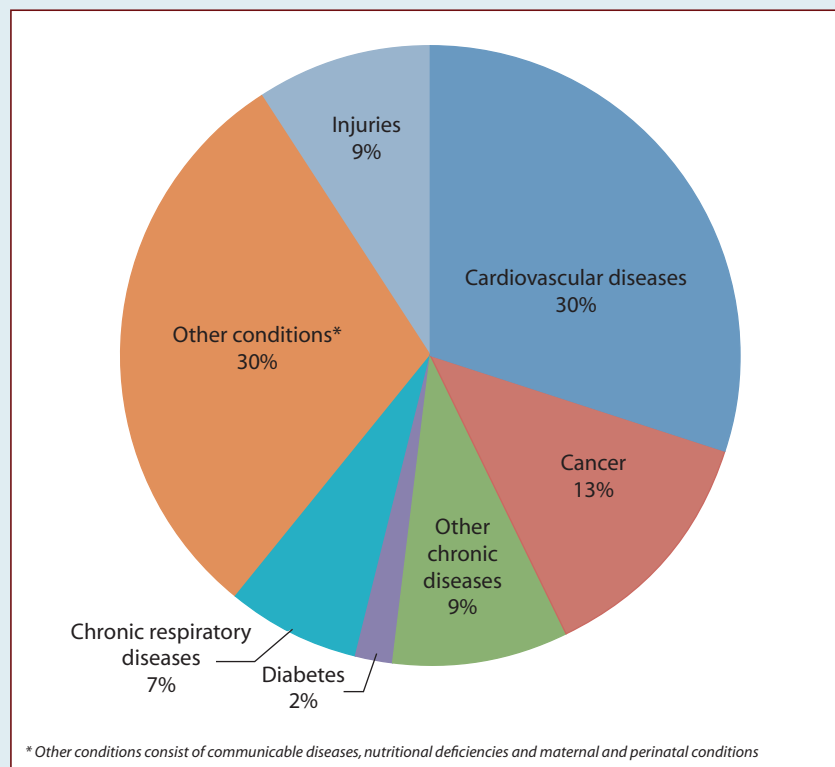
Chronic Respiratory Diseases:

This refers to diseases of the airways and other lung structures. They account for 7% of global deaths and common disease include asthma, pulmonary hypertension, chronic obstructive pulmonary disease, respiratory allergies and occupation lung diseases.



Lisa Avery

Figure 1: Global burden of deaths due to NCDs (1).



is a well recognized maternal health issue.

From a positive perspective, the increasing rate of NCDs in reproductive aged individuals also means that existing SRH services (such as antenatal care, routine well women check ups, gynaecological visits, sexually transmitted infection/HIV clinics, infertility clinics, youth friendly health services, family planning services, etc.) may offer an opportunity to promote primary and secondary prevention for NCDs.

While these are just a few examples of the linkages between NCDs and SRH, it is important to recognize that the underlying factors that place individuals, especially women, at risk of adverse health outcomes in both domains are cross cutting and similar. The burden of NCDs and poor SRH is highest among the most vulnerable, that is those who lack decision making power, who live in poverty, who lack access to education and information and who lack access to affordable

health services. Women are particularly disadvantaged in terms of prevention and survival. For example, women make up

60% of the world's poor and poverty is known to limit healthy lifestyle choices, access to care and negatively affect mortality, for both NCDs and SRH (10). Furthermore, given that globally 2/3rds of the illiterate adult population are female, prevention efforts targeting improved access to care, diet, physical activity and smoking cessation and alcohol use may not always be accessible by women, depending on the format used (10). Addressing these underlying themes of poverty, education, gender and access is crucial to combating both NCDs and ill SRH.

Reversing the trend

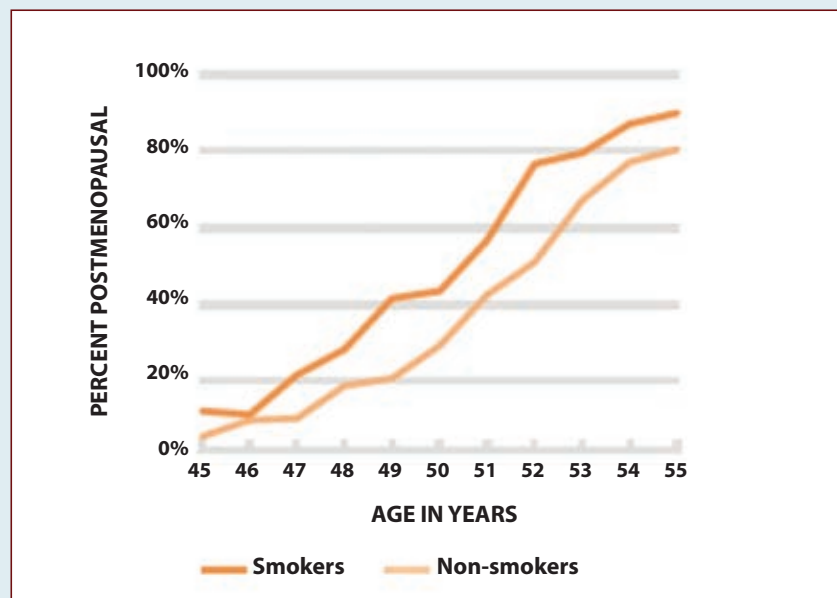
If efforts in development are to succeed it is clear that urgent action must be taken to address NCDs and the burden of human and economic costs associated with them. Research has shown that effective interventions are available and that NCDs are largely preventable. Building on the *Global Strategy for Prevention and Control of Noncommunicable Diseases*, the WHO's *Global Status Report on Non-communicable Diseases 2010* provides a framework to introduce population and individual interventions based on "best buys" – cost effective, evidence based and

Figure 2: Leading cause of death in women globally (4).

TEN LEADING GLOBAL CAUSES OF DEATH IN FEMALES, 2008			
Rank	Cause	Number of deaths	%
1	Cardiovascular diseases	9,127,416	33.2
2	Infectious and parasitic diseases	3,811,044	13.9
3	Cancer	3,566,128	13.0
4	Respiratory diseases	2,018,967	7.3
5	Respiratory infections	1,812,342	6.6
6	Unintentional injuries	1,408,698	5.1
7	Perinatal conditions	1,379,337	5.0
8	Digestive diseases	865,847	3.1
9	Diabetes mellitus	723,273	2.6
10	Neuropsychiatric conditions	640,406	2.3
		27,501,236	

WHAT ARE NONCOMMUNICABLE DISEASES, HOW DO THEY LINK WITH SEXUAL AND REPRODUCTIVE HEALTH AND HOW DO WE ADDRESS THEM? (CONTINUED)

Figure 3: Impact of smoking on onset of menopause (8).



feasible interventions that can be implemented in any resource setting. In doing so the framework targets decreasing the four main risk factors through primary prevention approaches and health promotion and enhancing care for people already living with NCDs. This approach is outlined below.

Population wide interventions

Low cost population wide interventions that target the major risk factors for NCDs are cost effective and attainable in countries of all income levels. Recognizing that many interventions may be beneficial, the following have been recognized as best buys due to their ability to rapidly prevent disease, disability and death. These include: banning smoking in public places; warning about the dangers of tobacco use; bans on tobacco and alcohol advertising and sponsorship; high taxes on tobacco and alcohol; reducing salt intake and content of food; replacing trans-fat with polyunsaturated fat in food; promoting awareness about diet and physical activity; vaccination against Hepatitis B; and vaccination against human papillomavirus (HPV) to prevent cervical cancer. Additional cost effective interventions include: nicotine dependence treatment;

promotion of adequate breastfeeding and complementary feeding; enforcing drunk-driving laws; restricting marketing of unhealthy foods (high sugar, fat and salt content), particularly to children; food subsidies and taxes to promote healthy diets; protection against environmental and /or occupational risk factors for cancer; and screening for breast, prostate, colon and cervical cancer.

Individual interventions

These interventions specifically target individuals who are either at high risk of developing an NCD or who already are afflicted with them. In order to do so in a cost effective, organized manner, it is best that these interventions be integrated into primary health care. Doing so strengthens health systems and ensures early detection and treatment of NCDs. Sustainable, cost effective individual interventions identified as best buys include: administration of aspirin to people who have had a heart attack; a regimen of blood pressure medication, aspirin and statins (anti-cholesterol medication) in people who are at high risk of a cardiovascular event; screening for cervical cancer at age 40 and removal of any identified cancerous lesion; early case finding for breast

cancer (50-70 years of age) via mammographic screening and treatment of all stages; early detection of colorectal and oral cancer; counseling, blood pressure and glycemic control, and foot care for diabetics; and treatment with inhaled corticosteroids and beta-2 agonists for people with persistent asthma.

Priorities for action

Beyond the population and individual level I “best buy” interventions, the framework identifies key actions that must be prioritized if these interventions are to be successful in reducing the burden of disease attributable to NCDs. These include the need for:

- a comprehensive approach;
- multisectoral action;
- surveillance and monitoring;
- functional and strengthened health systems; and
- sustainable development and civil society and private sector participation.

Recognizing the important linkages between NCDs and SRH additional focus should also be placed on:

- addressing the double burden of diseases through enhancing synergies and integration between existing NCDs and SRH programmes;
- promoting gender sensitive health systems that respond to the needs and priorities of both sexes in addressing NCDs and SRH; and
- adopting a lifecycle approach towards health promotion, prevention and treatment that builds greater awareness of the linkages between SRH and NCDs for all.

Finally, in order to adequately address the vulnerabilities that place people at risk of NCDs and poor SRH additional effort should focus on: developing enabling conditions to combat poverty; ensuring equal access to education and information for both men and women; and ensuring affordable health services.

The Action Plan for Implementation of the European Strategy for the Prevention and Control of Non-communicable Disease 2012-2016

In 2010, the WHO Regional Committee for Europe called for the development of a new European policy for health, *Health 2020*, which responds to the changing context of health in Europe, particularly the rapid and alarming growth of NCDs both within and across countries of the Region. *Health 2020* was approved at the 2012 Regional Committee Meeting (resolution EUR/RC60/R5) and builds on the previous commitment made by the Regional Committee in 2006, of a comprehensive, action-oriented strategy for the prevention and control of NCDs in the European Region, the *European Strategy for the Prevention and Control of Noncommunicable Diseases* (resolution EUR/RC56/52). While a separate policy, *Health 2020* also links with and builds on the core principles of another key WHO Regional Office for Europe policy, the *Action Plan for Implementation of the European Strategy for the Prevention and Control of Noncommunicable Disease 2012-2016*, adopted at the 2011 Regional Committee Meeting (resolution EUR/RC61/R3). Recognizing the need to strengthen efforts for NCD prevention and control in the European Region, the WHO Regional Office for Europe developed the Action Plan to help build public health capacity, identify specific areas of action and support Member States in the development of national health policies and plans. The following overarching principles guide the Action Plan from implementation to evaluation:

- A focus on equity;
- Strengthening health systems;
- Health in all policies;
- A life course approach;
- Empowerment;
- Balance between population based and individual approaches;
- Integrated programmes; and
- ‘Whole of society approach’.

While adapting an all encompassing vision for NCD prevention and control, the Action Plan provides Member States with evidence based, prioritized tools and interventions that can produce maximum impact and are achievable in the European Region, mindful of existing resources and time frames. Its ultimate vision is for “A health promoting Europe free of preventable noncommunicable disease, premature death and avoidable disability” (5).

Conclusion

The increasing burden of NCDs has direct consequences for and links to SRH, altering not only the SRH needs of men and women but also hindering any progress that has been made to date in the field of SRH. Yet, despite the increasing burden of NCDs, there is hope that we can reverse the trend. The majority of these diseases are preventable and the knowledge and understanding exists to enable society to prioritize and take appropriate action in addressing this serious epidemic. It is action that cannot wait, for better health for all and continued sustainable development depends on it.

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LINKS BETWEEN NONCOMMUNICABLE DISEASES AND SEXUAL AND REPRODUCTIVE HEALTH

Since the 1994 International Conference on Population and Development in Cairo, improvement of sexual and reproductive health (SRH) has been one of the priorities of public health in many countries. Focused efforts towards achieving the Millennium Development Goals (MDGs), including the improvement of maternal health and universal access to reproductive health, further built upon these SRH priorities. Yet when analyzing progress made in achieving the MDGs, noncommunicable diseases (NCDs) quickly emerged as an important factor influencing development progress.

NCDs kill more than 36 million people each year and more than nine million of all deaths attributed to NCDs occur before the age of 60 (1). The WHO “2008-2013 Action plan of the global strategy for the prevention and control of noncommunicable diseases” provides Member States and international partners with steps on how to prevent and control the four major NCDs - cardiovascular diseases, diabetes, cancers and chronic respiratory diseases and the four shared risk factors - tobacco use, physical inactivity, unhealthy diets and the harmful use of alcohol (2).

Of the six WHO regions, the European Region is the most affected by NCDs, and their growth is startling. Common risk factors are hugely increased by lifestyle and demographic changes and by social determinants of health. This is one of the reasons why WHO Member States have requested the WHO Regional Office for Europe to develop norms and standards, guidance and public health tools to help countries implement effective programmes and address risk factors. As part of its commitment to addressing NCDs, the WHO European Regional Committee in 2011 adopted the “Action Plan for implementation of the European Strategy for the Prevention and Control of Noncommunicable Diseases 2012–2016” (3).

What are the linkages between these two important public health priorities, SRH and NCDs? It is a question that proves challenging to answer, for many

reasons. To begin with, what starting point do we use to begin looking at linkages? Should it be intrauterine development, birth or later periods in life? Furthermore, very often reliable, comparable, national, age and sex disaggregated data on the incidence of NCDs and their risk factors are missing. Research exploring the linkages between NCDs and SRH is also sparse, and to date policies addressing both these areas at country level also fail to emphasize or recognize the linkages between NCDs and SRH which have both been identified as public health priorities within the WHO European Region. For example, healthy nutrition and physical activity is an important to prevent obesity, diabetes and cardiovascular diseases as well as, to improve one’s SRH, yet rarely is it presented in such a way.

This article aims to explore some of the linkages between these two areas. By no means comprehensive the goal is to provide a snapshot of a few relevant areas where these linkages occur.

NCDs and adolescents

One of the best comparable and reliable sources of data regarding the health of adolescents (11, 13, 15 year olds) is the Health Behavior in School-Age Children Survey (4). According to this survey 10 to 15% of adolescents in European countries report being overweight and obese according to their body mass index (BMI). Identification of risk and protective factors for negative body image, obesity, unhealthy weight-reduction behaviours and disordered eating can support the development of relevant interventions for a broad spectrum of weight related problems. Negative body image can be associated with low self esteem, which in turn can lead to increased drug and alcohol use, which can lead to risky sexual behaviour (regretted sexual activity and/or sexual activity without a condom). In addition overweight and obesity in adolescence predisposes individuals to increased risk of adverse SRH consequences later in life, such as infertility and uterine cancer.

NCDs and contraception

Visits for contraceptive counseling for youth who are either sexually active or considering their sexual debut represents one of the first opportunities for a medical professional to identify and address the relationship between NCDs and SRH. This consultation may be the first time that a thorough medical history is taken, including measurement of blood pressure and provides the opportunity to diagnose the first symptoms of NCDs if present. In addition, the WHO Medical Eligibility Criteria for Contraceptive Use (5) includes most of the NCDs and provides evidence on conditions which represent an unacceptable health risk if the contraceptive method is used, how the diagnosed chronic disease may influence the effectiveness of the contraceptive method and lists conditions that expose a woman to increased risk as a result of unintended pregnancy, such as diabetes, complicated valvular heart disease, high blood pressure, etc.

Using an integrated approach to improve the quality of primary health care services, including school health and youth friendly health services, is among the priorities of health systems strengthening activities in many countries. It is essential to ensure that services are offering integrated services and not missing the opportunities to act early. In the case of SRH and NCDs it is important to discuss not only ways to prevent unintended pregnancy and sexually transmitted infections, but also crucial to discuss healthy lifestyles issues such as diet, physical activity, smoking, drugs and alcohol use.

NCDs and pregnancy

Preconceptional care can be seen as preventive medicine for maternal and child health. It represents an important opportunity for the identification of and optimization of pre-existing NCDs in reproductive aged women prior to becoming pregnant. NCDs such as diabetes, cardiovascular disease and chronic respiratory diseases, as well as the four shared risk factors - tobacco use, physical inactivity, unhealthy diets and



the harmful use of alcohol, all increase the risk of adverse maternal and fetal outcomes. When the causes of maternal mortality and morbidity are evaluated in many cases chronic diseases are the cause of fatal outcomes. Cardiovascular diseases remain one of the main causes of indirect maternal deaths in developed and developing countries (6). Thus, systematic assessment of pregnancy risk in women is essential in optimizing maternal and fetal outcomes. As NCDs continue to affect a growing number of the reproductive aged population, there is a pressing need not only to understand the risks that pregnancy poses for women as a result of these NCDs but also the future risks that may exist for their children. Growing evidence demonstrates increased risk of obesity, diabetes and cardiovascular disease among offspring of women affected by NCDs in pregnancy.

NCDs and infertility

Menstrual cycle disturbances and infertility is often caused by metabolic disorders including metabolic syndrome – a combination of medical disorders that, when occurring together, increase the risk of developing cardiovascular disease and diabetes. There are several definitions of the metabolic syndrome, but usually the diagnosis is based on central obesity and the BMI (greater than 30 kg/m²) and the presence of dyslipidemia, hypertension and insulin resistance.

In reproductive aged women (15-49 years old) polycystic ovarian syndrome (PCOS) is a common hormonal disorder. The classic symptoms are irregular periods, hair growth in a male body pattern and weight gain. PCOS is often part of a metabolic syndrome that involves risks for diabetes, cardiovascular disease, as well as uterine pre-cancer and infertility. Gynaecologists are often the first medical professional involved in their care as the symptoms of irregular periods and infertility are the main reason for seeking help. Addressing her risks for diabetes, dyslipidemia and cardiovascular disease through screening and counseling during this visit is equally as important as addressing her

reproductive health concerns. Many times increased physical activity and dietary changes, leading to weight loss, can be all that is required to return menstrual cycles to normal, enabling ovulation and fertility.

Cancer and SRH

NCDs are also linked to reproductive cancers. It is well known fact that obesity increases the risk of endometrial (uterine) cancer, but more and more studies have also linked obesity and the development of new cases of breast cancer, especially in postmenopausal women. Behavioural risk factors such as smoking also increase the risk of cervical and vulvar cancer among human papillomavirus (HPV) positive women and may increase the risk of penile and testicular cancer in men.

Conclusion

As is the case with so many issues in public health, a magic bullet approach is not possible when tackling the issues of SRH and NCDs. Rather we need to focus our efforts at better defining, understanding and addressing the complex relationships that exists between these two areas. Continuing to see them as separate vertical issues will hinder us from improving health outcomes in either area. While the above mentioned issues provide a simplified overview of some of the linkages between SRH and NCDs, recognizing and addressing the relationship between the two is a priority that requires action at all levels: individual, societal and governmental.

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OBESITY AND PREGNANCY

Introduction

Currently, over 1.5 billion of the world's population is obese; significant increases have and are occurring in both developed and developing countries (1-3). By 2015, the WHO projects that 3 billion adults will be overweight and more than 700 million will be obese (3). Particularly concerning is the fact that the obesity rate is rising more in women than men, including women of reproductive age (1, 2). More than 50% of pregnant women in the United Kingdom are overweight or obese (defined as a Body Mass Index (BMI) of ≥ 30 kg/m² or more at the first antenatal visit) (2, 4). Contributing to the issue of overweight and obesity is the trend in pregnancy of gaining excessive weight. Approximately 40% of pregnant women gain more weight than the recommended 11-15 kg (5). This excess weight gain is a risk factor for becoming obese in the first year after delivery or later (6). The growing trend in obesity among reproductive aged women is alarming as obesity is closely associated with pregnancy complications, for both the mother and the foetus.

Metabolism in obese pregnant women

Two factors influence foetal growth and development – genetics and the maternal environment. Fat and carbohydrate metabolism change during pregnancy. Environmental signals to the foetus from obese women that influence foetal development include adjustments in the placental transfer of nutrients (glucose, fatty acids, amino acids), hormones (insulin, leptin, adiponectin), oxygen and inflammatory factors. The metabolism of obese women at conception may affect foetal development and the postnatal health of the child, as well as result in adverse pregnancy outcomes (7, 8). The type of obesity is important (Figure 1). Lower-body adipose tissue ('pear-shaped' women) depots are insulin-sensitive and can efficiently store fat. Non-obese women store fat accumulated during pregnancy predominantly in lower-body depots, and this is associated with a benign maternal

adaptation of metabolism and physiology to pregnancy. Central obesity ('apple-shaped' women) is associated with fatty acid excess and fat accumulation in the liver, pancreas and placenta. Oxidized lipid products may be the link between maternal obesity and placently related adverse pregnancy outcomes such as miscarriage and pre-eclampsia (8, 9).

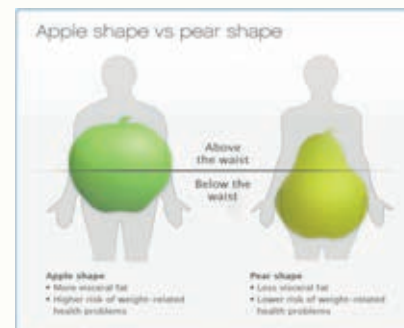
Obesity and pregnancy complications

Obesity can cause different pregnancy, delivery and postpartum complications for pregnant women. Most studies have reported an association between increased BMI and subfertility, which is commonly related to ovulatory dysfunction. Obesity may also have a negative impact on the success of infertility treatment (10). Large population – based retrospective studies have shown lower pregnancy rates and lower birth rates in obese women who undergo in vitro fertilization (10).

Once pregnant obese women also have an increased risk of miscarriage, foetal congenital anomalies, thromboembolism (blood clots), gestational diabetes, pre-eclampsia, stillbirth and excessively large babies (11-13). Studies have shown that obese women are 3.2 times more likely to develop gestational hypertension, 3.3 times more likely to develop pre-eclampsia and 4 times more likely to develop gestational diabetes when compared with pregnant women of normal weight (12). In fact, the risk of developing gestational diabetes is strongly influenced by excessive maternal pregravid weight. Regardless of whether gestational diabetes is present, fasting glucose levels are higher in obese pregnant women than in non-obese pregnant women; high levels of glucose in maternal blood can cause high sugar and insulin levels in the foetus, as well as excessive weight gain (macrosomia) (13).

Preterm delivery is also increased among morbidly obese women. Risk of preterm premature rupture of membranes and of induced preterm delivery (as a result of the development of pregnancy complications) are 1.5 times higher

Figure 1. Apple and pear shaped obesity.



in obese women than in normal weight women (3).

During delivery and the postpartum period obese women also have a significantly increased rate of prolonged and/or obstructed labour, caesarean delivery, intra-operative and anaesthetic complications, postpartum haemorrhage and postpartum infectious morbidity, such as wound infections (11-14). Postpartum thromboembolic complications (blood clots in the legs or lungs) are also increased (11-14). The risk of caesarean delivery increases with higher BMI and is greatest in the morbidly obese group: these women are 13 times more likely to undergo caesarean section when compared with normal weight women (14). Instrumental delivery (vacuum extraction, forceps delivery) is also more common in obese women (12). Increased risk of maternal morbidity and mortality associated with obesity has been well described. More than one quarter of the women who die in pregnancy in the UK are obese (15).

From a foetal and newborn perspective, stillbirth and neonatal death are also elevated (15). Obese women have a 5-fold increased risk of stillbirth and infant mortality increases with increasing maternal obesity (4). Even when accounting for mode of delivery, neonatal mortality is increased in infants of obese and extremely obese mothers after spontaneous births and after preterm births (16). Furthermore, there has also been an association reported between maternal



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obesity, delayed initiation of, short duration, and/ or lack of breastfeeding. This is of public health concern because of the apparent association with increased artificial feeding and greater risk of obesity in children (17). Childhood obesity is positively correlated with maternal BMI. Children of obese women are at risk of becoming obese even when they are born with normal birth weight (2). Obesity in childhood strongly predicts adult adiposity. Thus, overweight and obese states in pre-pregnancy and overweight and/ or obesity in pregnancy are preliminary events in a multi-factorial process that extends from mother to child and affects both their short and long term health.

Discussion and conclusion

Reducing the adverse consequences of maternal obesity is a public health priority. Ideally, treatment of overweight and obese women of childbearing age should begin prior to conception. Recommendations for the counseling and management of obese parturients include: women should be encouraged to lose weight before conception and enter pregnancy with a BMI < 30 kg/m²; obese pregnant women should receive counseling about weight gain, nutrition, and food choices; they should be advised that they are at increased risk of medical complications and that regular exercise during pregnancy may help to reduce some of these risks; and they should be advised that their foetus is also at increased risk of adverse health outcomes. Additionally, as obese women commonly have pre-existing medical conditions, it is important to recognize and address these underlying medical issues in order to optimize care (18).

Addressing the consequences of obesity at both the individual and population level needs to be a priority of all health providers and public health specialists so that appropriate awareness and advocacy can lead to opportunities to improve both prenatal and lifelong health. Failure to do so will carry significant negative health consequences for generations to come.

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IRON AND HEALTH

Introduction

Globally, nutritional disorders (including under and overnutrition) are a significant health problem, with the burden of illness disproportionately affecting women, children and vulnerable groups (for example, the poor and the least educated). Of the nutritional disorders, iron deficiency anemia is the most common, with over 30% of the world's population (2 billion people) suffering from the disorder (1). Within the WHO European Region 21.7% of (11.1 million) pre-school aged children, 25.1% (2.6 million) of pregnant women and 19% (40.8 million) of reproductive aged women are affected (1). Its consequences are not insignificant: poor pregnancy outcome, impaired intellectual and physical development, increased risk of morbidity and mortality and decreased productivity at school and at work (2-4). These health consequences undermine the human capital of countries and the resulting social and economic costs pose a serious threat to development.

Iron and iron deficiency anaemia

Iron is an important micronutrient. It is a constituent of haemoglobin (an iron protein compound in the blood that transports oxygen), and a component of enzymes crucial for metabolism, hormones and neurotransmitters. Iron in foods exists in two forms: haem (in meat and meat products) and non-haem (in foods of vegetable origin). It is widely recognized that the intake of animal foods is the most important dietary determinant of the iron status of a population. The primary reason is the high bioavailability of heme iron. In many countries iron is also available through fortified foods and/or through programmes that promote supplementation of the diet with iron.

Anaemia occurs when there is a decrease in the number of red blood cells in the body. Iron deficiency anaemia occurs when there is not enough iron in the body to make hemoglobin. It is a common public health problem found all over the world. While it is true that it is more prevalent in low resource settings,

it is also prevalent in industrialized high resource settings as well. The cause of iron-deficiency anaemia is multifactorial, however in several studies the major factors for iron-deficiency anaemia were low dietary iron intake, low dietary absorption, hemoglobinopathies and chronic ongoing blood loss (the former being the more common causes in low resource settings and the latter in high resources settings) (1, 5-9). It is well documented that the simultaneous ingestion of tea, coffee or dairy products reduces the absorption of iron, while ascorbic acid increases it (10-12). Research results also indicate that the inhibitory effects of dietary polyphenols (i.e. from tea) on iron absorption can be offset by ascorbic acid, however it seems that the simple addition of vitamin C rich foods might not be enough to erase the bioavailability reduction effect of tea (10-12). Additionally, in low resources settings, infection with parasitic worms and malaria remains a leading cause of iron deficiency anaemia (1).

Among reproductive aged women in low resource settings, it is widely accepted that low dietary iron intake, inappropriate food practices and inadequate perceptions contribute to anaemia (2, 5, 6,13). As a result, pregnant women and children of young age are at higher risk of iron deficiency anaemia. It causes a number of adverse maternal, perinatal and infant health outcomes, such as: preterm birth, low birthweight, impaired infant growth and psycho motor development, depressed immune function and altered cognitive development (2-4). Further more, anemia is thought to be an unrecognized factor in 20% of all maternal deaths (3) and to potentially increase risk of the development of noncommunicable diseases later in life (2).

The first 1000 days and links to noncommunicable diseases

Good nutrition in pregnancy and (but not limited to) the first 2 years of life is increasingly regarded as a critical time-frame for children's present and future health. Scientific evidence suggests that the roots of noncommunicable diseases,

including risk for obesity and cardiovascular disease later in life, have links with nutrition and may arise from nutritional disorders and behaviours that are present during this time (2, 14, 15). This period of life seems to be of particular importance as the dietary habits and feeding patterns are introduced and established, as well as, parental feeding practices. For example, healthy eating begins with breastfeeding, as well as, appropriate and timely introduction of nutritious complementary foods. Breastfeeding is unanimously recognized as ideal infant feeding and although mechanisms are still to be explained, it is associated with a reduction in obesity risk in childhood, as well as, a lower likelihood of undernutrition and infections (2, 14, 15,). Similarly, the effect of complementary feeding on development and nutrition related diseases, although equally complex, has been a focus of many recent discussions and links have been identified between complementary feeding practices and their potential role in the obesity epidemic, as well as, in child survival and development. Given that the prevalence of iron deficiency anaemia is significant in pregnant women and children, addressing it during this time frame becomes critical, especially given the potential links to future risk for noncommunicable diseases later in life.

How to address iron deficiency anaemia

While eliminating iron deficiency anaemia has been a priority on the global development agenda for many years, doing so remains a challenge. Given the multifactorial nature of the disease an integrated approach is required. It is crucial that the underlying contributing factors are identified so that they can be effectively prevented and/or treated. Where iron deficiency is the most frequent cause iron fortification and/or supplementation programmes can be useful for preventing anaemia, however, efforts in the field of nutritional education suited for families' dietary practices, including capacity building for health professionals, combined with higher availability of



iron-rich foods are also needed (1, 16). Therefore, the most critical recommendation from the public health perspective is to underline the huge importance of an appropriate and adequate diet integrating a rich conjunction of iron rich foods and dietary modifications. Recommended dietary modifications include heme iron consumption, intake of vitamin C and protein with meals, and discontinued tea and coffee consumption with meals for risk groups. In environments where iron deficiency is not the only cause of anaemia, prevention and treatment should be combined with other measures as well, such as treatment for infections and other micronutrient supplementation.

As anaemia affects almost two-thirds of pregnant women in developing countries and contributes to maternal morbidity and mortality, as well as adverse perinatal outcomes, women of childbearing age and children should be a priority group for intervention. They should be provided nutritional education regarding food sources of iron, especially prior to becoming pregnant, and taught how food choices can either enhance or interfere with iron absorption.

Conclusion

Iron deficiency anaemia is both an indicator of poor nutrition and poor health. Its detrimental health consequences, specifically for pregnant women and young children, and its effect on work productivity in adults, represent a significant public health challenge that requires action and commitment from international agencies, governments and individuals. Not only should strategies be built into existing programmes and policies, but also reflect the local context and aetiologies of iron deficiency anaemia in specific populations and settings.

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REPRODUCTIVE HEALTH AND TOBACCO: COMBATING THE INCREASE IN FEMALE TOBACCO USE

Increase in female tobacco use

One of the most striking things about smoking prevalence in the WHO European Region in the last two decades has been the increase in smoking by women and girls (1). There are many factors that help explain this phenomenon. One prevailing theme is that social and cultural constraints are weakening in the majority of countries and it has become more acceptable for females to use tobacco. Additionally, women's spending power is increasing and cigarettes are becoming more affordable, especially in countries where taxes on tobacco have not been raised.

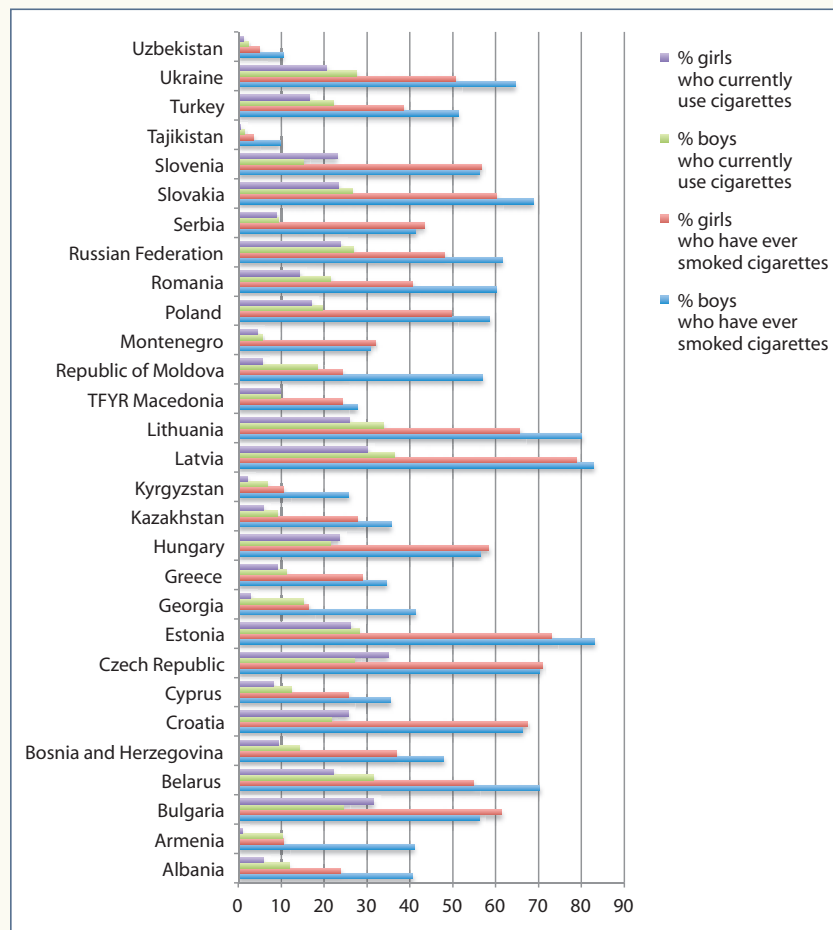
However, the magnitude of the impact of marketing by the industry is indisputable. Historically, tobacco use was initially adopted by men (first in industrialized countries), and with the recent decline in males, multinational tobacco companies have seen the relatively high percentage of non-smoking women as an attractive target (1).

Through skilful and successful marketing, particularly through the false portrayal of smoking as a symbol of female empowerment, the tobacco industry has created a fast growing market for women and girl smokers. The theme of empowerment inspired a variety of marketing campaign slogans, including Phillip Morris' well known 1968 cigarette advertisement, "You've come a long way baby" (2). The impact was and continues to be significant.

Studies investigating the correlation between Gender Empowerment Measure (GEM) and Gender Smoking Ratio (GSR) reveal that in countries with higher female empowerment, female and male smoking rates are closer to being equal (2).

The WHO European Region has the highest prevalence of female tobacco smoking (22%) in the world, with the majority of other regions trailing behind at 3-5% (3). In Europe (as with the Americas), the female to male adult smoking ratio is approximately 1:2. Furthermore, in the WHO European Region, women with higher education are more likely to smoke than those with lower education. The gap between males and females is especially

Figure 1. Current and ever use of cigarettes among adolescents aged 13-15, Global Youth Tobacco Survey (6).



narrowing among youth and adolescents (3). Already, there are several countries that have more women or girls smoking than men or boys, and unless further action is taken, this trend will continue and have devastating effects – and this should not be an option (Figure 1).

Effects of tobacco on pregnancy

Tobacco harms nearly every organ of the body and is responsible for a great toll in diseases and death, with its health effects generally observed several decades after onset of use (1). However, there are also more immediate health effects among female smokers, such as adverse reproductive outcomes that follow a life course.

Smoking can make it more difficult for a woman to get pregnant. During pregnancy, women who smoke are more likely

than other women to have a miscarriage or a stillbirth (1). Smoking can cause problems with the placenta, such as separation of the placenta from the womb too early (abruption), causing bleeding and danger to both the mother and baby (1). Smoking during pregnancy can cause a baby to be born too early or to have low birth weight. This increases the chances of sickness, and in a few babies, death (1). Babies born to women who smoke are more likely to have certain birth defects, like a cleft palate, and are also more susceptible to childhood obesity (1). Furthermore, smoking, by either or both parents, harms the children by exposing them to second-hand smoke, putting them at higher risk of sudden infant death syndrome, acute respiratory infection, ear problems and more severe asthma (1).



Role of health professionals

The role of health professionals is key. They are a highly respected and trusted source of information and advice. They serve as role models and are in contact with a high percentage of the population and can be instrumental in helping change health behaviour. In fact, after being intensively advised by a physician (4) the increased chance of quitting smoking successfully is 84% (4). Even receiving quick advice by a physician helps, resulting in an increased chance of quitting successfully of 66% (4).

Traditionally, smoking cessation programmes for women have tended to focus only on smoking during pregnancy (1). While such programmes are important, there is a need to develop broader programmes designed to support women in stopping smoking throughout their lives. There is good evidence from a recently updated Cochrane Library review that standard smoking cessation approaches, while successful in helping pregnant women to stop smoking, have only a limited impact with only a 6% increase in the overall number of women stopping smoking in a life-time. A life-course approach should be taken. Tobacco control messages in maternal health programmes should not just focus on the health of the foetus but also on the health benefits for the mother, which could support long-term quitting. Health care providers should always ask about a partner's tobacco use and encourage partners to support cessation during pregnancy and beyond (1).

Additionally, service managers should be given the capacity to implement system-level interventions to facilitate the effective provision of tobacco cessation services in primary health care settings. In many countries, health systems are not set up to integrate tobacco prevention and treatment into routine patient care. In some countries, large portions of health professionals are users of tobacco themselves. For example, key findings from the Global Health Professions Students Survey include:

- Over 20% of student health professionals currently smoked cigarettes in over half of the countries,
- Most recognized that they were role models in society and that they should receive training on counseling and treating patients to quit using tobacco, and
- Very few had received formal training in smoking cessation techniques.

Conclusion

The tobacco industry has taken a tailored approach to targeting women in their campaign efforts, and the tobacco control community must do the same. The WHO Framework Convention on Tobacco Control is a powerful legal instrument to help stakeholders approach tobacco control with a gender equality framework. Article 14 of the WHO Framework Convention on Tobacco Control and its Guidelines addresses the importance of cessation. Evidence supports this, stressing the need for health professionals to play an important role in asking about tobacco use and encouraging partners to support cessation during pregnancy and beyond.

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ALCOHOL AND SEXUAL AND REPRODUCTIVE HEALTH

Introduction

For the past decade, alcohol consumption (recorded and unrecorded) among adults in the World Health Organization (WHO) European Region has remained at a consistently high level of approximately 12.5 litres per capita per year, which is more than double the world average (1). As one of the main risk factors for burden of disease in Europe and globally, alcohol consumption is causing extensive harm to both the drinker and to individuals other than the drinker (2). Alcohol is a necessary cause of more than 30 diseases and has been associated with many communicable and noncommunicable diseases, including various cancers, cardiovascular diseases, and liver diseases (3). Recent evidence shows that what is relevant for harm is not only the level of consumption but also the pattern of drinking; that is, in addition to how much alcohol is consumed, it also matters if alcohol is consumed in heavy drinking episodes, which are especially detrimental for health (3).

Alcohol has an impact on some issues relevant to sexual and reproductive health (SRH). In addition to being a risk factor for sexually transmitted infections (STIs), alcohol is a cause of adverse perinatal conditions, including low birth weight and fetal alcohol syndrome (1).

Issues related to alcohol and SRH, and in particular alcohol use during pregnancy, have been the focus of international alcohol policy measures. Furthermore, measures that target reductions in population alcohol consumption may also be expected to have consequences for SRH. The new WHO publication “*Alcohol in the European Union. Consumption, harm and policy approaches (2012)*” highlights some such evidence-based interventions, which are recognized by WHO as among the “best buys” in alcohol policy. These include price measures, such as tax increases and minimum pricing, and reductions in alcohol availability and exposure to alcohol marketing (see text box 1).

Alcohol, STIs and Unintended Sexual Consequences

Several meta-analyses have found an association between alcohol consumption and human immunodeficiency virus (HIV) infection and other STIs (4, 5). Studies investigating the relationship between alcohol consumption and risky sexual behaviour and alcohol consumption and STIs, however, have suffered from some design limitations that have made it difficult to infer causality from the findings. These limitations include an inability to exclude confounders, an inability to establish a temporal relationship, and assessment of global associations rather than event-specific associations. A recent meta-analysis attempted to address these limitations and clarify the relationship between alcohol and risky sexual behaviour by evaluating randomized controlled trials that investigated the relationship between alcohol consumption and the intention to engage in unprotected sex (6). The review found that increases in blood alcohol concentration were associated with increases in intentions to engage in sex without a condom.

Some studies have also investigated the relationship between alcohol and unintended sexual consequences among adolescents. Results from the most recent European School Survey Project on Alcohol and Other Drugs (ESPAD) showed that, within the past year, approximately 7% of students reported that they had engaged in sexual intercourse they regret-

ted the next day because of alcohol use and 9% had engaged in sexual intercourse without a condom because of alcohol use (7).

The findings from the meta-analysis and the ESPAD provides further support for the need to consider alcohol consumption when addressing sexual health.

Foetal Alcohol Spectrum Disorders (FASD)

Since the Middle Ages, alcohol has been known to cause birth defects and developmental disorders. The impact of alcohol consumption during pregnancy will vary depending upon the timing of exposure on embryonic development. It is during the first eight weeks of embryogenesis that the primary teratogenic effects occur, while exposure later in pregnancy may affect growth and behavioural and cognitive disorders.

The diagnosis of Foetal Alcohol Syndrome (FAS) is based on a set of criteria comprised of abnormalities in three main categories: growth retardation, characteristic facial features, and central nervous system anomalies (including intellectual impairment). The intellectual impairment associated with FAS is permanent, and FAS is now regarded as the leading preventable cause of non-genetic intellectual handicap.

It is not possible to identify any safe level of alcohol consumption during pregnancy, but the birth defects are more

Text Box 1.



This new report, produced by the WHO Regional Office for Europe and the European Commission, analyzes alcohol consumption patterns and alcohol related health harms, and reviews the most recent evidence in the area of alcohol policy.



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severe with increasing alcohol consumption during pregnancy.

The incidence or prevalence of FAS or Foetal Alcohol Syndrome Disorder (FASD) varies across populations. It is reported to be highest for African American groups in the United States, indigenous groups in the United States, Canada, and Australia, and coloured/mixed races in South Africa. Studies show there are a substantial number of women in the European Union who continue to drink during pregnancy. It is estimated that this ranges from 25% in Spain to 35%-50% in the Netherlands and even higher rates in the United Kingdom or Ireland (79%) (8).

Research has shown that knowledge is a necessary, although not sufficient, factor for eliciting behaviour change. The knowledge of women, both in the general community and within high-risk groups, of the risks associated with alcohol consumption during pregnancy is limited. In 2007, France introduced health warnings on alcohol products, and this was followed by media campaigns to increase the knowledge of the health effects on the foetus during pregnancy. As a result of the labelling and media campaigns, the knowledge that alcohol should not be used during pregnancy increased from 82 to 87% among pregnant women (9).

Discussion

The impact of alcohol on SRH has been proven to lead to adverse SRH consequences. Alcohol use is linked to unsafe sex, regretted sexual behaviour, increased risk of STIs, FAS and low birth weight. Young people are especially vulnerable, as are pregnant women.

The WHO European action plan to reduce the harmful use of alcohol 2012 – 2020, recognizes the vulnerabilities of these 2 groups and suggests possible policy options that target these groups specifically. The most effective alcohol policies are linked to prices, availability and marketing mechanisms. In this regard, the WHO recommends protecting young people by decreasing the availability of alcohol products. This includes

higher age limits for buying alcohol, decreasing the number of outlets and making it more difficult to buy alcohol by altering opening hours and increasing alcohol prices either by taxation or a minimum alcohol unit price. Alcohol marketing and sponsorship activities that target young people should be regulated. Furthermore, community actions are important in enforcing restrictions, reducing the number of outlets (on- and off- premise) and providing information and guidance for young people in schools and educational institutions on alcohol and the harmful consequences.

For the special target group of pregnant women, the WHO recommends that all midwifery and obstetric services ensure that all pregnant women are offered information and advice about drinking during pregnancy. The general practitioner is often the first to meet the pregnant woman, and advice on alcohol consumption during pregnancy should always be given. Any women in a high-risk group should immediately be referred to specialist services.

By increasing awareness of the SRH issues related to alcohol and adapting policies that address these issues, policy makers in the WHO European Region, and globally, can participate in working towards a decrease in the unintended SRH consequences and ill health that is linked with alcohol consumption.

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CAPACITY BUILDING IN THE DEVELOPMENT OF ORGANIZED CANCER SCREENING AND EARLY DIAGNOSIS PROGRAMMES IN MEDITERRANEAN COUNTRIES

Summary

Inequalities in access to early detection, diagnosis and treatment services are the major reason for the sharply higher cancer mortality rates in many non-European Union (EU) Mediterranean countries, compared to EU Member States. Although the incidence of cancer in non EU Mediterranean countries is still well below that in the EU countries, non EU Mediterranean countries are expected to experience the highest increase in cancer burden in the coming two decades. The increasing trends can be attributed to many factors including population ageing and exposure to risk factors, such as smoking, unhealthy diet, physical inactivity and environmental pollution.

In order to assist countries with facing these problems, the Italian Ministry of Health in collaboration with the French Ministry of Health and the WHO, is financing a project of capacity building to help develop programmes of organized cancer screening and early diagnosis. The project objective is to facilitate dialogue and to exchange experiences on cancer prevention and control between EU and non EU countries in the Mediterranean Area.

Project description

The project is under the scientific overview of the Centre for Cancer Prevention of Piedmont, based in Turin, Italy and is coordinated by the Department of Prevention (ASL TO1) of Turin, which is responsible for the administrative and organizational aspects. The project is assisted by a steering group that includes representatives of the Ministries of Health of Italy and France, the French National Cancer Institute, the WHO, the International Agency on Research of Cancer, as well as, international experts from Spain, France, Israel and Malta.

The project aims to train selected public health decision makers of non-EU Mediterranean countries on the decision making process in the field of early detection of cancer. Participants have the opportunity to discuss the following issues: how to set priorities for comprehensive

cancer plans, including early detection and screening; how to choose suitable strategies based on best evidence, country needs, health priorities, resources and socio-economic characteristics; and how to evaluate the appropriateness of ongoing activities in countries where a national/local screening strategy already exists.

The project's capacity building focus is delivered through training organized in several residential workshops. During the workshops participants revise and discuss general principles of cancer screening and early diagnosis programmes. They also have the opportunity to learn from others' experience, to share their own experience and to agree on common definitions. Participants are invited to assess needs and identify priorities for their country situation. Long distance and/or on site assistance is evaluated case by case, according to country needs and according to both tailored plans of collaboration and available funds. Scholarships, specific trainings and exposures/internships in European cancer screening centres are also offered to non-EU Mediterranean country participants according to available funds.

Countries involved in the project

The project started at the end of 2010. Countries included in the project were formally invited by the Italian Ministry of Health to select one or two Public Health Officers for participation in the training. Recommended criteria for candidate selection were: good knowledge and work experience in the field of cancer prevention; involvement in the definition of national plans on early diagnosis and cancer control; and responsibility of transferring international guidelines and strategies discussed during the workshops into local needs, capacities and expertise. As selection of candidates was a crucial issue for the success of the initiative, the WHO Regional Offices and the WHO Representatives working at national level were asked to actively collaborate and support the National Ministries of Health in identifying the most appropriate persons eligible for the training. At

the end of the process, countries formally indicated their candidates for the training programme. To date the following countries have participated in the first phase of the project: Albania, Algeria, Bosnia and Herzegovina, Croatia, Egypt, Gaza Strip and West Bank, Jordan, Lebanon, the former Yugoslav Republic of Macedonia, Montenegro, Morocco, Serbia, Syria, Tunisia and Turkey. Of note, Israel was not included, since well established generalized population-based cancer screening programmes already exist in the country. Additionally, Libya, due to the internal political situation of the country at the time of recruitment, did not participate in the first phase, but has recently joined the project with a country candidate.

Candidates selected were asked to collect and send to the workshop organizers information about the resources and organizational structure of their national health systems together with their country cancer data. Information was collected through a standardized Country Profile Questionnaire with the aim of describing the epidemiological situation and the cancer control capacity in each country and with the aim of contributing to the discussion during the first workshop. Results from the questionnaires will be published soon in the first report of the project, which will contain an overview of the cancer burden in the Mediterranean Area and single report sheets on each individual country situation.

Current status of the project

The first workshop was held in Rome at the Italian Health Ministry's premises between the 21st and 23rd of June 2011. Among the 28 candidates selected, a total of 19 attended the workshop. During the workshop the following international agencies had the opportunity to present their mission and initiatives in the field of cancer control: the WHO (Cancer Control Office); the UNFPA; the Union for International Cancer Control; the International Atomic Energy Agency; and the International Agency for Research on Cancer. Power point presentations



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The workshop held in Rome represents the first step of the training project. The information collected from candidates was used to: improve knowledge on the current national situation in each country; to start discussion around agreement on a common definition for screening and early diagnosis; to demonstrate current contradictions among cancer screening programmes; and to highlight needs and priorities within and across countries. A general overview on the principal elements of cancer screening was offered to participants through formal presentations. A non explicit and important objective of the workshop was to start building a collaborative network with the country participants to assist them in defining priorities. At the end of the workshop participants agreed to revise the original information they had collected on the cancer situation in their country, incorporating what was “learned” during the workshop. They were also asked to send a proposal of collaboration, based on an initial assessment of their needs.

Next steps

During the first workshop the request for training courses emerged as the main priority for all participants. In this context the project has established collaboration with the European Partnership for Action Against Cancer (EPAAC). Launched in 2009, EPAAC is a partnership of key stakeholders and leading cancer experts, that encompasses 36 associated partners and over 90 collaborating partners, in a joint response to prevent and control cancer. Presently EPAAC is launching the European School of Screening Management (ESSM) a two-week intensive training course on the principles, organization, evaluation, planning and management of cancer screening programmes. Recognizing the added benefit of such a programme, the project has negotiated with EPAAC to open up the ESSM target audience of participants (EU Member States) to include non EU project participants as well.

In addition to ESSM training, a second workshop has been planned for December 2012, which will be held in Morocco. Based on feedback and experiences to date, the project appears well suited to continue to build capacity in

cancer screening and early diagnosis programmes. Its participatory nature and collaborative environment have been essential in helping to make it a success thus far. It is our hope that by the project’s end many more non EU Mediterranean will be well equipped to deal with the increased burden of cancer predicted over the next decades.

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Participants at the first workshop

BUILDING THE FUTURE IN SHAPING ADOLESCENT LIFESTYLES AND ENVIRONMENTS

In a seminal report published in 2010, the World Health Organization stressed noncommunicable diseases as the leading cause of death, in high, as well as, low and middle income countries (1). With the exception of sexually transmitted infections, including HIV, the threat to adolescent health, both in the short and long term, belongs essentially to these noncommunicable diseases. Indeed, the report states that “Noncommunicable diseases are caused, to a large extent, by four behavioral risk factors that are pervasive aspects of economic transition, rapid urbanization and 21st-century lifestyles: tobacco use, unhealthy diet, insufficient physical activity and the harmful use of alcohol” (1). In addition to these four factors, as far as adolescent health is concerned, one should also add issues such as mental health, violence and unsafe sex. Thus, it can easily be understood that adolescents represent both a resource and a target for interventions, as many habits and lifestyles adopted during this period of life will impact on their future health and well-being. To respond to these challenges, decision-makers and health professionals should keep in mind several concepts and principles:

1) The sooner the better.

If select behaviors acquired during adolescence have a long-term impact on health, it is probably due, among other factors, to the fact that these behaviours partly affect both the development of the brain and emotional health already during early puberty (2). As young people are exposed earlier and earlier to multiple types of incitation's in a world of growing influence of internet and of information and communication technologies, it would seem effective to implement educational interventions targeting these behaviours during late childhood and early adolescence.

2) Policies should prioritize prospective, comparable data and indicators for adolescent health, behaviours and interventions.

Although progress has been made over

the last decade (3), we still lack good mortality and morbidity data to be able to monitor the progress that is made over time through educational and environmental interventions. Adequate long term follow up of adolescent health indicators should be a fundamental aspect of all key policies. In this respect, emphasis should be placed on assisting low-income countries within the WHO European Region to build a systematic database of agreed upon indicators, disaggregated by age. As far as indicators other than mortality or morbidity are concerned, such as health behaviors, the Health Behaviour in School-aged Children survey is a good example of a long standing multi-country compilation of adolescent lifestyles and health determinants (4), whose results help to assist decisions makers in setting priorities, selecting preventive interventions and measuring changes across time.

3) Utilization of a combination of strategies to shape behaviours and improve health.

Both educational and environmental approaches should be applied in efforts to positively shape adolescent health and health behavior. In several areas of adolescent health, good evidence of what type of interventions work or do not work exists. For instance, we now know that youth participation in educational programmes such as lifeskills, usually school-based, is effective (5) and we also know that modifying the school climate to improve social skills, participation, respect, coherence and connectedness has a positive impact on mental health and/or substance use (6). Even if some successful measures are context specific, in most instances, they should inspire regional or national governments to design well balanced prevention and health promotion strategies (7).

Adapting lessons learned from sexual and reproductive health to noncommunicable diseases

A specific area in which the effectiveness of the combination of different strategies is provided is the one of adolescent sexual

and reproductive health. Several years ago, a systematic review of the effectiveness of various preventive activities in the area of HIV was conducted by experts from several UN agencies including the WHO (8). Recommendations from this report emphasized the need to prioritize and implement on a large scale multiple strategies, including: curriculum-based interventions in school; the training of health care providers; the improvement of access to health counseling and care; and the spreading of preventive messages through mass media. One important condition for the success of such an approach is that the messages delivered through these various strategies/channels must be congruent.

This type of multichannel approach to adolescent sexual and reproductive health has been used since the early eighties in Switzerland, as a response to 2 key events: 1) the HIV/AIDS epidemic and 2) the lowering of the mean age of first sexual experiences and intercourse among adolescents. As a result, in many parts of the country, sexual education is implemented in the schools at various stages of the educational curriculum, access to health care is universal and most regions offer family-planning facilities; also, young people, as the rest of the population, have benefited from a national campaign promoting the use of the condom, which has also been made easily available to adolescents (9). As a result, Switzerland has one of the lowest rate of adolescent pregnancies and abortions in the world (10).

Just as prioritization of adolescents in national sexual and reproductive health programmes was needed to help shape positive sexual and reproductive health behaviours and outcomes in this population, similar prioritization of adolescents in national noncommunicable diseases programmes is also essential for preventing noncommunicable diseases. Adaptation of similar types of multichannel approaches should also be applied to prevention programmes in attempting to positively shape adolescent behaviour and health where noncommunicable diseases are concerned. For example, policy and



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legislation should focus on protecting the rights of adolescents by protecting them from harmful behaviours and substances through targeting of taxation, marketing, advertising and age limits on harmful products. Schools can provide important knowledge and life skills to adolescents and their families to help promote positive activities and behaviour. Access to youth friendly health services can provide adolescents with essential counseling, prevention and treatment. Families and communities can influence adolescent behaviours through engagement, monitoring, understanding and support. Media and information technology can be used not only to promote healthy lifestyles and behaviours, but also to reach hard to reach adolescent populations.

Conclusion

Adolescents have the right to enjoy the greatest attainable standard of health. Therefore, in Europe as in other parts of the world, governments, health care providers, educators, families and communities share in the responsibility of ensuring that when it comes to noncommunicable diseases, adolescents' are provided with the opportunities, the respect, the information, the participation, the services, as well as, a safe and secure environment to protect their right to positive health and development.

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DIABETES AND PREGNANCY: IMPROVEMENT IN THE CARE OF DIABETIC PREGNANCIES

Introduction

Despite considerable progress in global medicine, diabetes, whether type 1, type 2 or gestational diabetes (GDM) remains one of the largest and most challenging clinical problems of the modern age. The number of people with diabetes is projected to rise from 171 million in 2000 to 366 millions in 2030 (1). As a result diabetes is felt to represent a global non-communicable disease pandemic.

The rising incidence and prevalence of diabetes, means many young adults of reproductive age are affected and, as a result, that more pregnancies are complicated by diabetes. Diabetic pregnancies, whether type 1, type 2 or GDM are a high-risk state for both the woman and the foetus/child. Recent epidemiological data show that in many parts of the world the number of pregnant women with type 2 diabetes now exceeds that of women with type 1, reflecting the growing burden of type 2 diabetes. Unlike type 1 diabetes, type 2 is strongly associated with obesity, which is also increasing in the developed world (2). The link with obesity is also seen with GDM. While the prevalence of GDM may range from 0.6 to 15% of all pregnancies depending on the population studied and the diagnostic tests employed, the risk of developing GDM is about two, four and eight times higher among overweight, obese and severely obese women, respectively compared with normal-weight pregnant women (3). Diabetes in pregnancy might have a role in the increasing prevalence of diabetes in the world (4). About one-third of women with diagnosed GDM have diabetes in the subsequent pregnancy (5) and up to 70% of women manifesting GDM will go on to develop type 2 diabetes over time (6).

In this article we highlight the Lithuanian experience with diabetes and pregnancy and how this has evolved with time.

Pathophysiology of diabetes in pregnancy

Pregnancy is characterized by increased insulin resistance and reduced sensitivity to insulin action. Women who are not

able to overcome this resistance end up having high levels of sugar in the blood (hyperglycaemia). In women who do not have diabetes before becoming pregnant this leads to the diagnosis of gestational or pregnancy diabetes. Women with pre-existing diabetes (type 1 and 2) often have worsening of their disease in pregnancy and are at increased risk of: worsening eye and kidney disease during pregnancy, if present prior to the start of pregnancy; congenital malformations due to poor glucose control in the first trimester, the period of organogenesis; and spontaneous abortions. Women with diabetes are also at increased risk of other complications such as hypertensive disorders of pregnancy, infections and preterm labour (7).

Diabetic pregnancies also carry risks for the foetus and newborn, such as: excessive growth (macrosomia); delayed lung maturation resulting in increased respiratory distress after birth; metabolic abnormalities after birth, including low blood sugar; risk of shoulder dystocia (getting stuck at delivery); risk of operative delivery (forceps or vacuum); and increased perinatal mortality. In fact, the perinatal mortality rate amongst the newborns of diabetic mothers is four to five times higher than in the general population (8). Studies have also shown that infants born to diabetic mothers are at much greater risk of developing obesity, diabetes and cardiovascular complications alter in life (2).

Improved glucose control in women with diabetes, both before and during pregnancy, can lead to improved maternal and foetal outcomes. It is this concept that is the backbone of our approach to diabetes care in pregnancy in Lithuania.

Organization and elements of diabetes care in pregnancy

In Lithuania the perinatal mortality rate associated with diabetic pregnancies has been very high for a long time, even with modern foetal surveillance methods. The main reasons were felt to be due to limited experience in the management of diabetic pregnancies (due to limited

numbers of diabetic pregnancies) and poor maternal glucose control, either before and/or during pregnancy. As a result it was felt that very specific and well-organized centralized pregnancy care was needed.

In 1994, two departments, Endocrinology and Obstetrics and Gynaecology, joined together to establish centralized care for diabetic pregnant women at the Kaunas Hospital of the Lithuanian University of Health Science. Prior to this time, endocrinologists on a regional basis performed medical care during pregnancy, with most women coming to Kaunas Hospital only for delivery. Currently, with the establishment of centralized care, 85% of all Lithuanian diabetic pregnant women receive their care at Kaunas Hospital. This means that diabetic pregnancies are supervised in one centre, from the beginning of pregnancy onwards, by a multidisciplinary team of experienced specialists: an endocrinologist, an obstetrician, a dietician, a diabetes nurse and a neonatologist. Ideally women with pre-existing diabetes who are contemplating pregnancy are also referred for pre-conceptional care prior to pregnancy. Evaluation and treatment by a multidisciplinary team experienced in the management of diabetes before and during pregnancy helps to involve and empower the patient in the management of her diabetes and to assure effective contraception until stable and acceptable glucose control is achieved.

Once pregnant, all women with pre-existing diabetes are hospitalized three times: at time of pregnancy diagnosis, 24 weeks and 35 weeks gestation. These hospitalizations allow for review of both glucose control, foetal growth and surveillance and detection of any worsening or superimposed complications, all of which help determine ongoing management. Regional physicians perform the follow-up of pregnant women between these hospitalizations. Intensified insulin regimens with self-monitoring of blood glucose, medical nutrition therapy and physical activity are necessary components of care. Tight blood glucose control



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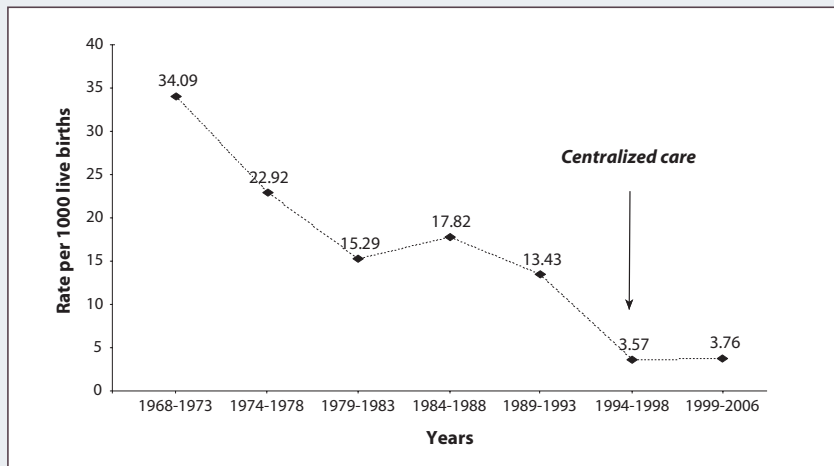


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Figure 1. The perinatal mortality rate in diabetic pregnancies at Kaunas Hospital of the Lithuanian University of Health Science.



during pregnancy is very important, which reduces the risk of macrosomia and its associated consequences.

For women who do not have pre-existing diabetes, universal screening for GDM is done at 24-28 weeks gestation, using the 75-gram glucose tolerance test. As per WHO recommendations, GDM is diagnosed when the 2-hour glucose level is 7.8 mmol/l or higher. Although there is controversy regarding which diagnostic standards to use for GDM, there is agreement that excellent blood glucose control with medical nutrition therapy, physical activity and, when necessary, insulin will result in an improved perinatal outcome. The diet is the cornerstone of treatment for GDM (9).

In all diabetic pregnancies, if the foetus is not macrosomic and is in good condition the delivery is planned as near as possible to the expected birth date. After birth the detection and management of neonatal low blood sugar (hypoglycaemia) and other neonatal complications must be assured. Early breastfeeding is advised to avoid this and to stimulate lactation. Women with a history of GDM are screened for diabetes 6 – 12 weeks postpartum using nonpregnant criteria since all these women have a greatly increased subsequent risk for type 2 diabetes.

Since establishing the centralized version of care for diabetic pregnancies we have witnessed a decrease in the perina-

tal mortality rate associated with these pregnancies at the Kaunas Hospital of the Lithuanian University of Health Science (Figure 1).

Conclusion

Our experience in Lithuania has shown that the establishment of a centralized multidisciplinary model of care has been successful in improving care and outcomes in diabetic pregnancies. In view of the large health and socioeconomic impact that diabetes has in general, but particularly on women and children, there is a need for concentrated efforts to increase information and awareness about diabetes at all levels of society, including the development of alternative models of service delivery when possible.

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EFFORTS OF THE ROMANIAN MINISTRY OF HEALTH TO INTRODUCE ORGANIZED CERVICAL CANCER SCREENING

Background

Romania has the highest numbers of deaths related to cervical cancer in the WHO European Region. In comparison with 1980, over the last 30 years, this indicator has worsened in Romania. This is in sharp contrast to what has happened with maternal mortality. In the same time period maternal deaths in Romania decreased from 83 deaths per 100 000 live births in 1990 to 24.03 in 2010 (Figure 1 and 2) (1).

Although knowledge of modern contraceptives is high in Romania, contraceptive use remains low with only 23% of women and men using modern contraceptive methods and only 10% of persons aged 15 to 49 using condoms (2). Condom use at first sexual intercourse increased during the last years, but at the same time the average age of starting sexual activity decreased. While the level of knowledge is high, risky behaviours also remain high (2).

The health policies of the government during the last 20 years reflect that reproductive health was a priority (3-7). The decrease in both maternal and infant mortality can be explained by the focused interventions of the Ministry of Health (MoH), supported also by the economic development of the country. Conversely, the apparent plateauing and even worsening of mortality due to cervical cancer can be explained by the lack of any coherent intervention, despite better economic conditions and increased financing of the health system. The “Report of the Presidential Commission for Romanian Public Health Policies Analysis and Development” published in 2008, recognizes specifically cervical cancer as problem that reflects the “inability of the Romanian health system to answer the real need of the population” (8).

Cervical cancer screening: past and present

Historically, the National Public Health Programme of Prevention and Control of Non-Communicable Diseases organized screening programmes for the entire population and high-risk groups. The

sub-programme of cancer prevention and control provided regional opportunistic screening programmes for cervical, breast, prostate and colorectal cancer. Unfortunately, due to lack of resources, screening of the entire population was not possible, and the programmes were limited to certain districts selected on the basis of their technical capacity. As a result, these existing opportunistic screening programmes relied on one centre that developed its own network based on several primary care settings within the regions.

Only one region of the country, the North West, where both the University town of Cluj and the Institute of Oncology are located, had an organized screening programme for cervical cancer that was based on a population based approach and respects the European Union agreed upon clinical quality guidelines (2).

The MoH’s Reproductive Health Strategy (RHS) of 2003-2007 already advocated for organized screening for cervical cancer, as a well defined country-wide implemented national programme, providing authorities with a technical platform for prioritization of cervical cancer screening. In 2008 the screening programme in the North West was recognized as an example of best practice and included as a key component in the National Cancer Plan developed between the MoH and the Federation of Patients Associations.

Implementing this type of nation wide screening proved challenging. The first cervical cancer screening programme designed to cover the entire country and shift from an opportunistic one to an organized one was approved in 2009 but never implemented (4). The main reason for this was decreasing allocation of financial resources due to the economic crises, however, other factors also contributed to its delay. For example, while the general practitioner (GP) is the main entry point for a patient into the system, GP’s were trained only to provide counseling and referral to a specialist gynaecologist, rather than actively participate in screening. In addition dual coordination of the programme at district

level represented by the district health authority and district health insurance house, and dual coordination at national level between the two oncology institutes from Bucharest and Cluj, lead to organizational challenges. Furthermore the decentralization process that was occurring throughout the country meant that roles and responsibilities of local authorities, which the majority of hospitals were now under, and district health authorities were unclear. Given all of these factors it was decided that implementation of the cervical cancer screening programme needed to be delayed in order to rethink its organization, introduction and scale up.

In June 2012 the new cervical cancer screening programme was approved (5). The specific objectives of the programme are: early detection of cervical cancer; referral of patients with incipient lesions to specialized diagnosis and treatment facilities and services; increase the population’s awareness of cervical cancer; and encourage the use of screening services. There are important changes within this programme: it sets as its target the entire female population between 25 - 64 years of age; it involves GP’s not only for counseling, but also for collection of samples; and its technical supervision and management is the responsibility of a special commission nominated by the MoH, rather than the MoH and National Health Insurance House. In this regard, the national coordination of the programme was delegated to the National Institute of Public Health. There are 8 regions grouping all 41 districts where the coordination at local level will take place. The regional coordination centres will have the main role in implementation of the programme with specific duties such as selection of providers, training of GP’s, financing, and information and awareness campaigns, as well as, planning for screening of the female cohorts.

In line with the efforts of the Romanian MoH to tackle cervical cancer, the intention to introduce the HPV vaccine is worthy of mention. In 2008 the MoH decided to include the HPV vaccine in its vaccination programme. It was intended



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Figure 1: Maternal deaths per 100 000 live births (1).

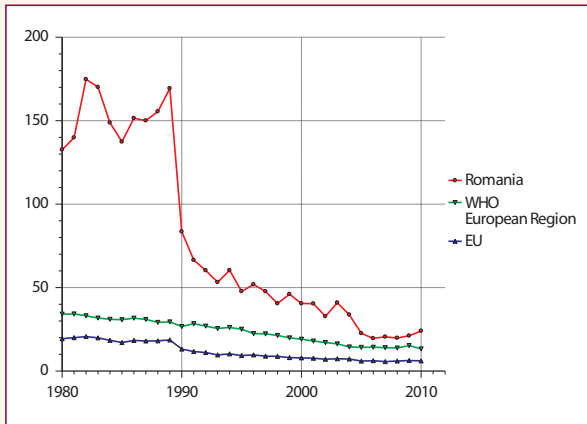
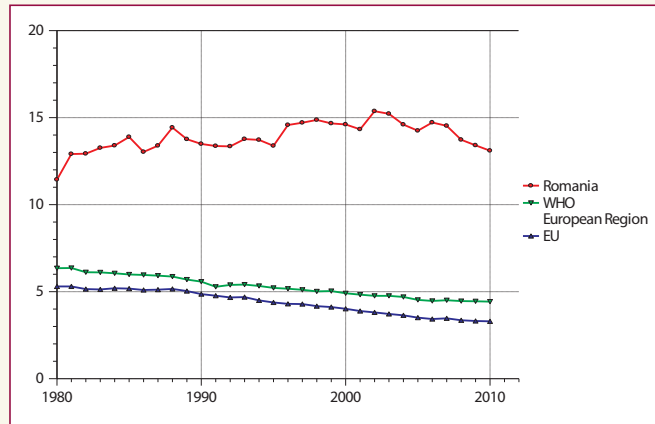


Figure 2: Standardized death rate (females) from cervical cancer per 100 000 (1).



to reach girls aged 10, enrolled in grade 4 of primary school. After a very rapid preparation of the system and precarious information and awareness activities, HPV vaccination started within the early school vaccination campaign. On this occasion the entire country witnessed one of the most aggressive anti-vaccination media campaigns, with anti-vaccination activists, as well as, select health care providers speaking out against the vaccine. Under these circumstances only 2% of the targeted population was vaccinated and the HPV immunization programme was consequently stopped. The following year, 2009, with better technical preparation, the MoH tried again to introduce HPV vaccines, but the effects of the previous negative media coverage were still present and results were discouraging. Thus, introduction of the HPV vaccine into the national immunization programme was stopped and postponed. While issues around perceptions and communication played a significant role in the poor success of the programme, additional contributing causes are currently under analysis. It is seen in the social and health care field as an important case study.

Conclusion

In Romania, the healthcare reform in the 1990s were marked by a gradual approach to changes while the following decade

showed more dynamic reforms with the introduction of many more free market elements and redistribution of the roles between stakeholders. Therefore, the pressure to address reproductive health and noncommunicable diseases has been stronger in the last decade. As a result during the last decade both noncommunicable diseases and reproductive health have been recognized and placed as priority issues on the health policy agenda. The previous RHS for 2003-2007, the forthcoming RHS for 2011-2015 and the strategy to address noncommunicable diseases currently under preparation, highlight the MoH and larger government's ongoing commitment to these important issues.

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CARDIOVASCULAR DISEASE AND MATERNAL MORTALITY: LESSONS LEARNED FROM THE CONFIDENTIAL ENQUIRY INTO MATERNAL DEATHS IN THE UNITED KINGDOM

With the rapid globalization that is occurring in today's society, cardiovascular disease has emerged as the single largest cause of death worldwide, causing 17 million deaths in 2008 (1). This represents 30% of all deaths and 50% of deaths due to noncommunicable diseases (NCDs). Further more 80% of the CVD burden is due to tobacco use, physical inactivity and unhealthy diets (2). Presently heart disease is, in fact, the leading cause of death in women, killing 9.1 million women annually, even during reproductive years (3). The increasing burden of cardiovascular disease during these reproductive years has significant implications: heart disease is now the leading cause of maternal death (both indirect and overall) in western countries, including the United Kingdom (Figure 1) (4, 5). The Confidential Enquiry into Maternal Deaths in the United Kingdom has served as an invaluable source of evidence for the growing burden of obstetrical and neonatal morbidity and mortality due to cardiovascular diseases, leading to the development of clinical practice and policy guidelines to improve care.

Cardiovascular disease and pregnancy

In the United Kingdom, the incidence of heart disease in pregnancy is 0.9%, with minimal change over the past several decades (7). Yet despite this stability in incidence, the severity of heart disease and its risk in pregnancy appears to be increasing. The maternal mortality associated with heart disease reported in the most recent confidential inquiry for 2006-2008 was 2.31 per 100 000 maternities, more than double that reported in the late 1980's (Figure 2) (4). Of these the leading causes of death were acquired heart disease such as ischemic heart disease and myocardial infarction, aortic dissection, cardiomyopathy and sudden adult/arrhythmic death syndrome, while deaths from congenital heart disease and pulmonary hypertension have continued to decrease (4). The increase in deaths due to acquired heart disease is a reflec-

tion of the rise in risk factors such as advanced maternal age, unhealthy diet, smoking and physical inactivity, leading to increased rates of diabetes, hypertension and obesity in reproductive aged and pregnant women. In the 2006-2008 report the importance of risk factors related to lifestyle is striking: 60% of the women who died from cardiac disease were overweight or obese; and all of the women who died from ischemic heart disease or myocardial infarction had identifiable risk factors such as obesity, age older than 35 years, smoking, diabetes, pre-existing hypertension, family history and parity greater than 3 (4). Equally concerning was the finding that in 46% of the maternal deaths due to ischemic heart disease, care was considered substandard, highlighting the fact that acute coronary syndrome was repeatedly not considered as a cause for chest pain in pregnant women (4).

Recommendations for care (6, 7)

A team approach is essential in caring for women with cardiac disease. Women with known pre-existing cardiac disease should be referred for preconceptional counseling with an obstetrician and cardiologist to ensure that appropriate investigations, counseling regarding maternal and foetal risk of pregnancy and optimization of maternal health can occur. Once pregnant regular antenatal care, again with an obstetrician and cardiologist should occur in order to monitor and optimize maternal and foetal health and plan for labour and delivery. Close attention should be paid to screening for congenital cardiac disease in the foetus (in women with congenital cardiac disease), screening and preventing the development of anemia, the functional status of the mother, the growth of the foetus and the development of any superimposed cardiac and non cardiac complications such as chest pain, shortness of breath, palpitations, hypertension, diabetes, haemorrhage, infection etc. Consultation with an anesthesiologist is also warranted in order to optimize care during labour and delivery, with the plan for delivery varying depending on the underlying

cause of cardiac disease (i.e. need for invasive cardiac monitoring, prophylaxis against spontaneous bacterial endocarditis, ability to push/bear down, use of appropriate medications for prophylaxis against postpartum haemorrhage etc). In general cesarean section is necessary only for obstetrical indications. Given the significant hemodynamic challenges that occur during the immediate postpartum period close monitoring of the women is crucial for the at least the first 48 hours. The need for any additional measures such as anticoagulation for thromboprophylaxis or increased monitoring in the postpartum period should be part of the team discussion around the delivery plan. In addition, advice about contraception should also be provided. For women with new onset of heart disease that is diagnosed in pregnancy referral should immediately be made to a team of specialists (obstetricians and cardiologists) with expertise in the care of women with cardiac disease in pregnancy.

Of special note, given the increased incidence of deaths due to acquired heart disease, care providers need to have a higher index of suspicion and lower threshold for investigation for cardiac disease in pregnant or postpartum women, who present with complaints of severe chest, back or epigastric pain, that may radiate to the jaw or neck or be associated with symptoms of vomiting and shortness of breath, and/ or clinical signs such as tachycardia, tachypnea, acidosis and agitation. The index of suspicion should be even greater in women with underlying risk factors such as obesity, smoking, hypertension and diabetes. Appropriate investigations include an electrocardiogram (ECG), cardiac enzymes, arterial blood gases, computed tomography pulmonary angiography and an echocardiogram (4). It is crucial to emphasize that ischemic heart disease can present with atypical features in pregnancy and that pregnancy should not be a contraindication for further investigation or treatment.



Lisa Avery

Figure 1. Leading causes of maternal death per 100 000 maternities, United Kingdom, 2006- 2008 (4).

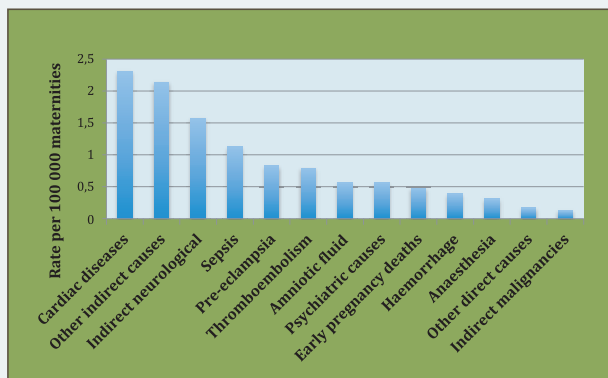
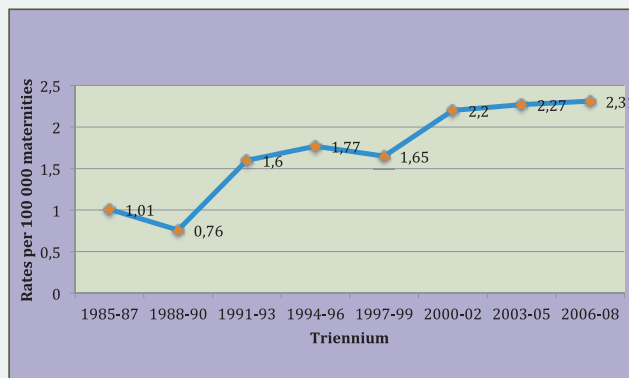


Figure 2. Indirect maternal deaths from cardiac disease (congenital and acquired), United Kingdom, 1985- 2008 (4).



The European Registry of Pregnancy and Heart Disease

In response to the recognition that maternal deaths due to cardiac causes were increasing in the developed world, in 2007, the European Society of Cardiology established the European Registry on Pregnancy and Heart Disease in order to learn more about the consequences of heart disease on pregnancy outcome (both maternal and foetal) and how to best provide care for these women. At present over 40 countries are participating in the registry, providing important information that will ultimately help improve counseling advice regarding maternal and foetal risk both before and during pregnancy, as well as, clinical care protocols and treatment interventions. Findings from their recently published article “Outcome of pregnancy in patients with structural or ischaemic heart disease: results of a registry of the European Society of Cardiology” emphasized that as long as adequate preconceptional care and high quality specialized care during pregnancy, delivery and the postpartum period are available and accessible the majority of women in developed countries can go through pregnancy and delivery safely (8). More information on the registry can be found at: <http://www.escardio.org/guidelines-surveys/eorp/surveys/pregnancy/Pages/welcome.aspx>

Conclusion

With the global increase in cardiovascular disease, including among women of reproductive age, it is critical that health care providers are aware of the increasing burden of cardiac disease in pregnancy and the contributing role it plays in maternal death in the developed world. While public health and individual efforts should focus on targeting modifiable risk factors such as obesity, smoking, poor diet and physical inactivity to prevent cardiovascular disease, initiatives such as the Confidential Enquiry into Maternal Deaths and the European Registry on Pregnancy and Heart Disease will help raise awareness of cardiac disease in pregnancy and ensure quality care is delivered through evidence based clinical protocols, programmes and policies.

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Useful websites

The Noncommunicable Disease Alliance: www.ncdalliance.org

World Economic Forum: www.weforum.org

NCD net: Global noncommunicable diseases network: <http://www.who.int/nmh/publications/9789241597418/en/index.html>

WHO Regional Office for Europe Noncommunicable diseases: <http://www.euro.who.int/en/what-we-do/health-topics/noncommunicable-diseases>

European Partnership for Action Against Cancer: www.epaac.eu

Taskforce on Noncommunicable Diseases and Women's Health: www.womenandncds.org

Health 2020: <http://www.euro.who.int/en/what-we-do/health-topics/health-policy/health-2020>

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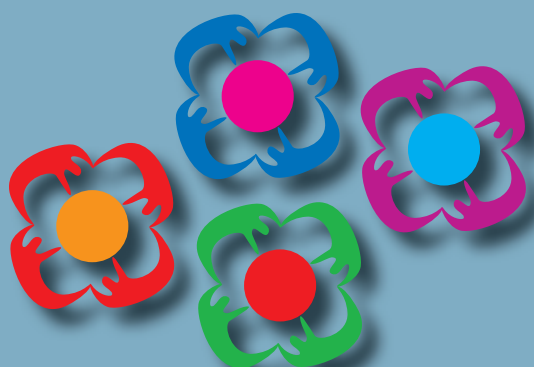
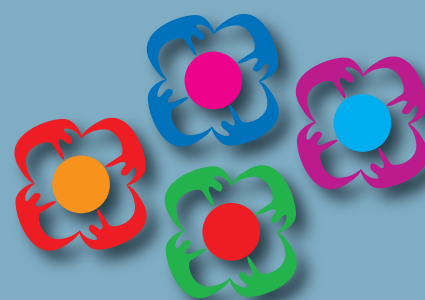
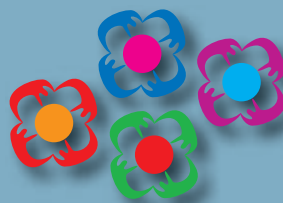
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