

Nutrition

Nutrition of women in the preconception period, during pregnancy and the breastfeeding period

Report by the Secretariat

1. This report complements the report on maternal, infant and young child nutrition with its draft comprehensive implementation plan on maternal, infant and young child nutrition, which is submitted to the Executive Board separately.¹
2. There is a need to take a life-cycle approach and recognize the importance of optimal nutrition for women before they become pregnant in order to minimize the risks associated with malnutrition. Securing the good nutritional status of women across the life course will in the long term reduce intrauterine growth restriction, child underweight and stunting. Effective interventions to reduce low birth weight should focus on adequate nutrition of girls throughout their reproductive life, but start with appropriate infant and young child feeding and continue with adequate nutrition in later childhood and adolescence. The intergenerational cycle of malnutrition must be interrupted in order to eliminate stunting.

NUTRITION OF WOMEN BEFORE THEY CONCEIVE

3. About 468 million women aged 15 to 49 years (30% of all women)² are thought to be anaemic, at least half because of iron deficiency. The highest proportions of these anaemic women live in Africa (48% to 57%), and the greatest numbers are in south-eastern Asia (182 million women of reproductive age and 18 million pregnant women). The prevalence of anaemia in adolescent girls (15–19 years) can be even higher and exceeds 60% in Ghana, Mali and Senegal.³ Anaemia and iron deficiency, which are associated with a lower physical capacity and increased susceptibility to infections, need to be tackled before women become pregnant in order to reduce the risks of poor maternal health and low birth weight babies.

¹ Document EB130/10.

² De Benoist B, McLean E, Egli I, Cogswell M (Eds). *Worldwide prevalence of anaemia 1993–2005: WHO global database on anaemia*. Geneva, World Health Organization, 2008.

³ *The state of the world's children 2011: adolescence – an age of opportunity*. New York, United Nations Children's Fund, 2011.

4. Iodine and folic acid deficiencies in the periconceptional period (three months before and after conception) are associated with a higher prevalence of birth defects and mental retardation. The magnitude of folate deficiency throughout the world is poorly known: few countries have surveyed the folate status of at least one population group at the national level, and most national surveys have been conducted in the Americas and Europe. Every year worldwide, neural tube defects develop in about 300 000 pregnancies, and an adequate folic acid intake before and during early pregnancy would lower the incidence of those defects by 50% to 70%.

5. Low body mass index ($<18.5 \text{ kg/m}^2$) and/or short stature (height $<145 \text{ cm}$) are common in women in low-income countries, with the highest rates of the former observed in southern and south-eastern Asia, followed by sub-Saharan Africa, with “critical” rates ($\geq 40\%$) in Eritrea and Bangladesh, and a “serious” (20% to 39%) prevalence in Cambodia, Chad, Ethiopia, India, Madagascar, Mali, Nepal and Yemen; most other countries have a prevalence of between 10% and 19%. More than 10% of women are shorter than 145 cm in Bangladesh, India and Nepal (in southern and south-eastern Asia) and Bolivia (Plurinational State of), Guatemala and Peru (in Latin America and the Caribbean). Maternal short stature and low body mass index independently have adverse effects on pregnancy outcomes: respectively, an increased risk of complications in pregnancy, the need for assisted delivery, and child’s low birth weight; and poor fetal physical development. Children born with low birth weight are at higher risk of mortality in the newborn period and of developing noncommunicable diseases such as type 2 diabetes and heart conditions in adulthood.

6. Conversely, about 35% of adult women worldwide are estimated to be overweight (body mass index $\geq 25 \text{ kg/m}^2$), a third of whom (297 million) are obese (body mass index $\geq 30 \text{ kg/m}^2$). In the European Region, the Eastern Mediterranean Region and the Region of the Americas this proportion exceeds 50%.¹ The mean body mass index has increased over the past 20 years, leading to adverse metabolic effects on blood pressure, cholesterol and triglyceride concentrations, and insulin resistance, thereby increasing the risks of coronary heart disease, ischaemic stroke, type 2 diabetes and polycystic ovarian syndrome. Globally, 44% of the burden of disease due to diabetes, 23% of that due to ischaemic heart disease, and 7% to 41% for certain cancers, particularly breast cancer, are attributable to overweight and obesity. Breast cancer stands out as the most frequent type of cancer among females, in both high- and low-income countries.

7. More women with a body mass index $>30 \text{ kg/m}^2$ are becoming pregnant, leading to an increased risk of complications during pregnancy and delivery. Their infants tend to be born larger and are at greater risk of becoming obese and developing type 2 diabetes as children and adolescents. These women also tend to retain more weight after birth.

8. In pregnant adolescents growth of the mother competes with that of the fetus, and the child’s birth weight is on average 200 g lighter than that of children born to older mothers. Adolescent pregnancies represent up to 40% of first pregnancies in most countries with high rates of maternal and child undernutrition. Pregnancy may place an additional metabolic burden on obese adolescents.

¹ *Global status report on noncommunicable diseases 2010*. Geneva, World Health Organization, 2011.

NUTRITION OF WOMEN DURING PREGNANCY

9. During pregnancy a woman needs good nutritional status for a healthy outcome. Women who have a poor nutritional status at conception are at higher risk of disease and death; their health depends greatly on the availability of food, and they are therefore unlikely to be able to cope with their increased nutrient needs during pregnancy. Infections such as malaria and HIV and infestation with gastrointestinal parasites can exacerbate such women's undernutrition.

10. An increasing number of women experience micronutrient deficiencies (of iron and vitamin A, for instance); almost half all pregnant women in the world are thought to have anaemia and 9.8 million pregnant women have night blindness. An estimated 19.1 million pregnant women (the highest proportions in Africa and south-eastern Asia) have low serum retinol concentrations. Maternal deficiencies in micronutrients may lower infant birth weight and jeopardize development and survival: maternal iodine deficiency is associated with congenital malformations and mental retardation in children, and a link between vitamin B12 deficiency and an increased risk of diabetes has been described in India. Insufficient intake of specific fatty acids, such as docosahexanoic acid, may also impede children's development.

11. Obese women have an increased risk of complications in pregnancy, such as congenital malformations or pre-eclampsia. Compared with women with normal body mass index, they have higher plasma concentrations of glucose and their fetuses have higher insulin concentrations. Excessive weight gain during pregnancy has been observed frequently.

12. Maternal nutrition is a fundamental determinant of fetal growth, birth weight and infant morbidity; poor nutrition often leads to long-term, irreversible and detrimental consequences to the fetus.

NUTRITION OF BREASTFEEDING WOMEN

13. A woman's lactational performance and the quality of her breast-milk are not influenced by her weight, height or nutritional status, except that obese mothers may be less successful in breastfeeding. Macronutrient intake does not influence milk composition, but maternal fatty acid intake affects the fatty acid profile in breast milk. Breast-milk content of calcium, phosphorus, magnesium, sodium and potassium is not affected by maternal diet, but the content of several vitamins (A, D, thiamin, riboflavin, pyridoxine and cobalamin), iodine and selenium reflects maternal nutritional status and dietary intake. An adequate concentration of iodine in breast milk is essential for creating optimal stores of neonatal thyroid hormone and preventing impaired neurological development in breast-fed neonates. Milk production may be reduced by alcohol consumption.

NUTRITIONAL INTERVENTIONS TARGETING WOMEN BEFORE CONCEPTION AND DURING PREGNANCY AND BREASTFEEDING

14. Despite considerable progress over the past decades, societies still fail to meet nutritional and other essential health needs of women, particularly in their adolescent years. Interventions to prevent and control the double burden of malnutrition can be established at various levels: direct nutrition interventions as well as health and non-health measures that have an impact on nutrition. Effective interventions applicable to all women and to women living in special circumstances are listed in

Table 1a of the draft comprehensive implementation plan on maternal infant and young child nutrition.¹

15. Several specific health interventions that have an impact on women's nutritional status exist, including pregnancy spacing, and prevention and treatment of both communicable and noncommunicable diseases, with measures ranging from provision of insecticide-treated bednets, vaccination (e.g. against rubella and hepatitis B) and deworming to hand washing, health promotion and treatment of depression.

16. Improving women's nutrition needs action in sectors other than health. Social and economic interventions include universal women's education, preferential treatment for minority groups, redistribution of resources (through welfare systems or cash transfers) and microcredit for women. In agriculture, actions include improving the nutritional quality of crops, investing on smallholders' agriculture and developing technologies that raise productivity while safeguarding women's time for child care. In order to reduce environmental hazards, potential interventions include provision of sanitation and clean water, elimination of vectors, and improved housing to prevent crowding and control indoor pollution. Maternity protection laws, such as the ILO Maternity Protection Convention,² need to be implemented. Interventions that may reduce inequities in micronutrient status include legislation for food fortification, maximizing the opportunity of contacts with the health system (for example, delivery of supplements with vaccinations), education about infant and young child feeding, empowerment of women, cash transfers leading to improved child diets, and training staff in nutrition counselling. Many partners need to be engaged in the implementation of these programmes and policies, including governmental institutions, civil society and nongovernmental organizations.

17. In countries affected by disasters and crises women are also often already chronically undernourished. Access to food and the maintenance of an adequate nutritional status are crucial determinants of women's survival in a disaster. Women often play the major role in planning and preparation of food for their households. Following a disaster, household-livelihood strategies may change. Recognition of the distinct roles in family nutrition is central to improving food security at the household level.

18. Understanding the unique nutritional needs of pregnant and breastfeeding women is also important in developing appropriate food responses, and better preparedness would pave the way for better food security and nutrition responses in disasters. Such preparedness depends on the capabilities of, relationships between and knowledge held by governments, humanitarian agencies, local civil society organizations, communities and individuals, and their ability to anticipate and respond effectively to likely, imminent or current hazards. It covers contingency planning, stockpiling of equipment and supplies, emergency services and stand-by arrangements, communications, information management and coordination, personnel training and community-level planning.

FUTURE DIRECTIONS

19. Improving the health and nutritional status of women before conception and during pregnancy and breastfeeding requires a series of actions to raise the quality and increase the coverage of services,

¹ Document EB130/10.

² ILO Maternity Protection Convention 2000 (No. 183) and Recommendation (No. 191).

information about nutrition-related conditions, and the formulation of evidence-based policy and programme guidance. Suggested actions are mentioned in the draft comprehensive implementation plan on maternal infant and young child nutrition,¹ but further activities could raise the profile of women's nutrition. Specifically, Member States may consider expanding proven interventions targeting women's nutrition in the health, agriculture, social protection, education and environmental sectors: raise the quality and increase the coverage of antenatal and postnatal care services; improve access to antenatal care of women with low socioeconomic status and other disadvantaged groups; monitor low birth weight, maternal undernutrition and obesity, weight gain in obese pregnant women and in those infected with HIV, maternal iron and folate status; develop and disseminate food-based dietary guidelines for pregnant women; make healthy diets and access to facilities for physical activity available and affordable; provide nutritional support to pregnant and lactating women living with HIV; mount social-marketing campaigns to advocate healthy nutrition in the preconception period and for adolescents; run educational programmes and awareness campaigns to prevent adolescent pregnancy; and include specific provisions for women in preparedness plans for emergencies.

20. In addition, it is proposed that the Secretariat could:

- expand the evidence base, issue guidance on health and nutrition interventions that target women's nutritional status, and disseminate that guidance through the WHO e-Library of Evidence for Nutrition Actions and the *WHO Reproductive Health Library*
- produce model food-based dietary guidelines for pregnant women
- include proven nutrition and health interventions with an impact on nutrition in the Integrated Management of Pregnancy and Childbirth
- prepare guidance on optimal weight gain in pregnancy, indicators and cut-off points for folate deficiency.

ACTION BY THE EXECUTIVE BOARD

21. The Executive Board is invited to note the report.

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¹ See document EB130/10, Tables 1a and 1b.