

A healthy diet sustainably produced

Information sheet

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Key facts

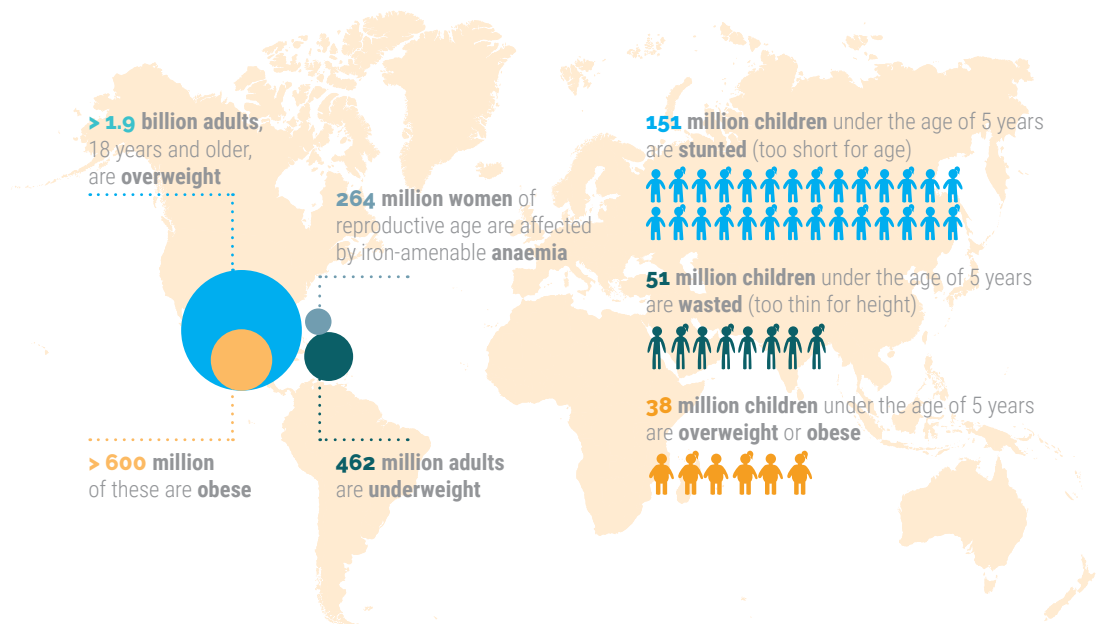
- Healthy diets are crucial for optimal health, yet globally unhealthy diet is one of the top risk factors for the global burden of disease. Nearly one in three people suffers from at least one form of malnutrition and a large part of the world's population is affected by diet-related diseases such as heart disease, stroke, diabetes and cancer.
- Access to food is often related to economic power, inequality, discrimination and social status, so some people have more difficulty accessing a healthy diet than others.
- Good nutrition in early life is critical, and babies should be exclusively breastfed for the first 6 months and continue to be breastfed for two years or longer, with introduction of complementary foods from 6 months of age.
- Highly processed and energy-dense nutrient-poor foods have become cheaper and more widely available. Too often people are eating too many foods high in calories, fat, sugars and salt, while not eating enough fruits, vegetables and pulses.
- A healthy diet balances calorie consumption with energy expenditure and should emphasize a balance of protein, fibre-rich carbohydrates and unsaturated fats, with no *trans*-fats and limited intakes of free sugars, saturated fats and salt.
- Current food production is known to have a major impact on the environment – accounting for 20-30% of greenhouse gas emissions and two-thirds of water use as well as being the leading cause of deforestation and contributing to biodiversity loss – while climate change and other environmental changes threaten food systems' capacity to provide healthy diets for all in the future.
- A healthy diet should be sustainably produced and consumed, and there is growing evidence that health and environment "win-wins" are possible.
- A healthy diet that has a lower environmental impact includes a wide variety of foods – with an emphasis on plant-based foods (fruits, vegetables, whole grains and pulses) and on locally-produced, home-prepared foods – and provides just the right amount of calories. It includes sustainably sourced fish/shellfish, moderate amounts of milk and dairy products (or dairy alternatives) and modest amounts of fats and oils, mainly from vegetable sources. It is limited in meat (if eaten), especially red meat and processed meat products, and limited in processed foods high in fat, sugar or salt. It does not include sugar-sweetened beverages.
- A wide array of policy options exists for governments to fulfill their obligation and key role in shaping and regulating food systems and creating a healthy and secure environment that makes it possible for people to access healthy diet.
- While there have been significant increases in food production through the introduction of higher yielding varieties and breeds, loss of genetic diversity in production systems through mono-cropping of uniform crop varieties or animal breeds has led to instances of large production losses and, in some cases, has had significantly negative health consequences. Loss of diversity has also resulted in the reduced provision of regulating and supporting ecosystem services, requiring additional chemical inputs and creating negative feedback loops (1).
- The use of chemical inputs, particularly pesticides, has had severe negative consequences for human health. The use of pesticides, especially in agriculture, has led to serious environmental pollution, affected human health (25 million people per year suffer acute pesticide poisoning in developing countries) and caused the death of many non-target animals (including pollinators), plants and fish (1).

Introduction

A safe and healthy diet contributes to an optimal state of health and protects against all forms of malnutrition. It also reduces the risk of noncommunicable diseases (NCDs) – such as heart disease, stroke, diabetes and some cancers – and promotes a strong immune system that protects against infection. Every human being has the fundamental human right to adequate food and nutrition. However, unhealthy diet is one of the top risk factors for the global burden of disease and, together with maternal and child malnutrition, accounts for about one quarter of global deaths. Nearly one in three people suffers from at least one form of malnutrition – undernutrition, vitamin or mineral deficiencies, overweight or obesity (see Fig.1).

Meanwhile, today's food systems struggle to provide everyone with the safe and sustainably produced food needed to ensure healthy diets. Ensuring a healthy diet now and into the future, therefore, demands that we focus on the most vulnerable populations, on promoting a healthy and diverse diet and on changing to sustainable food production systems.

Fig. 1. Malnutrition affects all regions worldwide



1. Who has special needs and who has most difficulty accessing a healthy diet?

Access to food is often related to economic power, inequality, discrimination and social status. Some groups have more difficulty accessing a healthy diet than others. Those living in or near poverty are less likely to be able to afford nutrient-rich foods and are also more likely to suffer infectious diseases (such as frequent enteric infections, malaria, HIV/AIDS and tuberculosis) that in turn can contribute to and/or worsen some types of malnutrition. In middle- and high-income countries people with lower socioeconomic status are most at risk of overweight and obesity.

Gender also shapes access to a healthy diet and nutritional status. Malnutrition disproportionately affects women and girls; more than two-thirds of the hungry people in the world are female (2). While their nutrient needs can be higher, especially in the case of pregnant and lactating women, the lower social status of women and girls means they often receive less food than male family members (3). Obesity is also more common in women (4).

The nutritional status of girls and women also profoundly affects the development and health of the next generation. Pregnant adolescent girls are particularly vulnerable because they need nutrients for their own growth as well as that of their baby. To promote healthy outcomes for mothers and babies, it is doubly important to ensure a healthy diet among these girls, as well as for pregnant and breastfeeding women in general.

Infants and young children also have special nutritional needs. WHO recommends that babies be exclusively breastfed for the first 6 months and continue to be breastfed for two years or longer, with introduction of complementary foods from 6 months of age. Home-made foods, with local ingredients, or locally produced complementary foods are likely to be more nutritious, affordable and sustainable. (More information in the **WHO Fact sheet of Infant and Young Child Feeding**).

Other groups – such as displaced persons, indigenous populations and people with disabilities – may also face many difficulties, including discrimination, which hinder their access to healthy diets. Furthermore, access to a healthy diet and, more broadly, the right to adequate food and nutrition are threatened in emergency and conflict situations.



2. What does a healthy diet consist of?

While early nutrition is critical for lifelong health and development, healthy diets are essential across the life cycle. Highly processed and energy-dense nutrient-poor foods have become cheaper and much more widely available (5,6). As a result, too often people are eating more foods high in calories, fats, sugars and salt, while not eating enough fruits, vegetables and pulses.

Although individual dietary needs vary with age, gender, lifestyle and physical activity, there are some common characteristics of a healthy diet for adults. Calorie consumption (energy intake) should balance with energy expenditure and diet should emphasize a healthy balance of nutrients:

- › protein is needed in good quality and adequate amounts to meet individual needs according to factors such as age, gender and bodyweight (7). Protein quality depends on the mix of amino acids (protein building blocks), as well as how easily the protein is digested and used by the body;
- › carbohydrates provide much of the dietary energy, and these should be mainly as unrefined complex carbohydrates in foods that are rich in fibre, vitamins and minerals (8). Fruits, vegetables and whole grains should provide at least 25 grams of dietary fibre every day (8). Free sugars – simple carbohydrates added to foods or drinks by the manufacturer, cook or consumer, or naturally present in honey, syrups, fruit juices and fruit juice concentrates – should provide at most 10% of total calories (9). Reducing free sugars to less than 5% of total caloric intake – equivalent to about 25 grams or six level teaspoons of sugar per day for a person of healthy body weight – provides additional health benefit;
- › fats should be consumed in moderation (accounting for no more than 30% of all calories consumed) and primarily be unsaturated fats (e.g. from fish, avocado, nuts, sunflower, rapeseed and olive oils) (10,11,12). Saturated fats – found in fatty meat, butter, palm and coconut oil, cream, cheese and ghee – should provide less than 10% of total caloric intake per day (10,11). Partially hydrogenated vegetable oils (also known as industrial *trans*-fats) should be eliminated from the diet;
- › salt should be less than 5 grams¹ (~ one teaspoon) daily, including salt from processed foods (e.g. bread, ready meals, processed meats, cheese and salty snacks) (13). Iodized salt should be used; and

- › while animal-source foods are important to cover the needs of protein and minerals and have an important role in pregnancy and children's growth, the consumption of red meat has been associated with an increased risk of certain cancers (14).

3. Food systems for healthy sustainable diets

In order to be healthy for people and planet, a safe and healthy diet should also be sustainably produced and consumed. The agricultural and food production system has direct impacts on the environment. The degree of industrialization matters: current global food production is responsible for two-thirds of water use, is the leading cause of deforestation (in turn, decreasing biological diversity) and produces high levels of greenhouse gases – constituting about 20-30% of all such emissions (15). What food is being produced also matters: plant-based diets tend to produce less greenhouse gas (16) and, overall, use less water than meat and dairy foods (17). In turn, global environmental changes – including climate change and biodiversity loss – threaten the capacity of food systems to provide safe, healthy diets for all (18).

Food distribution and consumption practices also have effects on both individual health and on environmental sustainability. Unnecessary packaging is a source of waste and, globally, a third of all food is currently lost or wasted (19). Food preparation practices also vary greatly in their safety and energy efficiency. For instance, cooking with polluting fuels is a common practice that causes harmful household (indoor) air pollution, which kills 3.8 million people every year (20). Finally, agricultural, distribution and preparation practices affect the safety of food itself, in terms of harmful bacteria, viruses, parasites or chemical substances (including mycotoxins and pesticide residues). Uncontrolled use of wastewater for irrigation or excreta and manure and fertilizer for crops can lead to food contamination. Unsafe food can create a vicious cycle of disease and undernutrition, especially among populations who are already more vulnerable, including infants, young children, pregnant and breastfeeding women, immuno-compromised and older people and those who are ill. In addition, overuse of antimicrobial drugs in food-producing animals contributes to the global public health threat posed by antimicrobial resistance.

¹ 5 g of salt (sodium chloride) is equivalent to 2 g (2,000 mg) of sodium.



A healthy diet is a sustainable diet: recommendations for healthy eating

Currently, few dietary guidelines take sustainability issues into account. However, there is growing evidence that human health and environment “win-wins” are possible and some common messages are emerging to promote both human and environmental well-being (15):

- Eat a wide variety of foods from different food groups, with an emphasis on plant-based foods.
- Consume just enough calories to meet energy needs. Overeating is detrimental to human and planetary health.
- Choose fresh and home-prepared, locally produced foods. Avoid highly processed foods, especially those which are high in fat, sugar or salt and/or low in vitamins, minerals and fibre. It is important to check food labels.
- Eat at least two to three portions of fruit every day, preferably fresh, seasonal and locally sourced. WHO recommends eating more than five portions (400 grams) of fruits and vegetables combined per day (10).
- Eat at least two to three portions of vegetable every day. Choose vegetables grown in fields, rather than in a greenhouse or those preserved in sustainable ways (such as fermentation) and which do not need rapid, energy-intensive transport. Reduce food wastage by also eating “ugly” vegetables and fruits – cosmetic imperfections do not mean less nutritious produce.
- Potatoes, sweet potatoes, cassava and other starchy roots do not count as portions of vegetables, but do feature in a healthy diet, preferably in minimally processed forms.
- Cereals should be mainly consumed as whole grains – such as unprocessed maize, millet, oats, wheat or brown rice – rather than in refined forms (e.g. white rice, bread or pasta).
- Consume moderate amounts of milk and dairy products (or dairy alternatives) and choose versions that are low in fat, salt and sugar.
- Limit consumption of red meat and processed meat products (10) – some national and international bodies suggest limits of around 500 grams of cooked meat per week, with very small amounts, if any, of processed meat products (21,22,23,24).
- Consume fish and shellfish around twice a week, preferably from recognized/certified sustainable sources.
- Eat pulses (sometimes known as legumes) regularly. Dried beans, peas and lentils are excellent sources of protein, fibre and other nutrients and are naturally low in fat. Pulses are a good alternative to meat, and can play a key role in future healthy and sustainable diets.
- Include modest amounts of fats and oils, mainly from vegetable sources, and, preferably those containing unsaturated fats. Avoid industrially produced *trans*-fats (e.g. partially hydrogenated oils), which can be found in processed food, fast food, snack food and fried foods. Use healthier cooking methods, use vegetable oils and boil, steam or bake rather than fry.
- Drink safe tap water (or from other improved sources such as protected boreholes) in preference to other drinks, especially sugar-sweetened drinks. Intakes of fruit juice should also be limited, since these contributes to free sugars – one 150 ml glass of unsweetened orange juice, for example, contains around 15 g of free sugars (9).
- Prepare food using hygienic practices – washing hands before handling food and after going to the toilet, sanitizing surfaces and protecting them from insects, pests and animals, separating raw and cooked food, cooking food thoroughly and storing at safe temperatures, and using safe water to wash produce eaten raw (25).

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4. How can governments promote healthy, sustainable diets?

There is an obligation and a key role for governments to shape and regulate food systems and to create a healthy and secure environment that makes it possible for people to access healthy diets. Article 11 of the Convention on Economic, Social and Cultural Rights gives governments duty to establish proper conditions so that everyone can reach adequate food at all times. This requires action across different sectors and involves many stakeholders, including government (at all levels), civil society and the private sector.

There are many ways in which policy-makers can help create healthy food environments and tackle factors affecting access to healthy diets:

- › increase incentives for producers and retailers to grow, use, transport and sell reasonably priced fresh local varieties of fruits and vegetables in a sustainable way;
- › establish regulation and increase incentives for producers not to administer antimicrobials in healthy food-producing animals;
- › reduce incentives for the food industry to produce processed foods with saturated fats and high content of free sugars or salt;
- › encourage reformulation of food products to reduce the contents of salt, fats and free sugars;
- › implement Codex Alimentarius standards, guidelines and recommendations to ensure the safety of foods;
- › implement the WHO recommendations on marketing of food and non-alcoholic beverages to children (26);
- › establish standards to ensure the availability of nutritious, safe and affordable food in pre-schools, schools, other public institutions, and in the workplace;
- › use regulatory and voluntary instruments, such as marketing and food labelling policies, economic incentives or disincentives (i.e. taxation, subsidies), to promote the sustainable production and consumption of a healthy diet;
- › encourage transnational, national and local food services and catering outlets to improve the nutritional quality of their food, ensure the availability and affordability of healthy choices, and review portion size and price;
- › connect smallholder farmers and local producers with consumers to promote easy access to local markets, shorten production chains and use local produce in school feeding programmes, hospitals and other institutions;
- › support point-of-sale information, including through food labelling that ensures accurate, standardized and comprehensible information on nutrient contents in food;
- › protect, promote and support breastfeeding through, for example, laws to protect working mothers, implementation of the international Code of Marketing of Breast-milk Substitutes (27) to stop unethical marketing of baby milks and implementation of the Ten Steps to Successful Breastfeeding (28);
- › initiate educational and training programmes for teachers, social workers, and families to disseminate information on safe, healthy and sustainable diets;
- › initiate training programmes and financial support to include smallholder farmers and local producers into sustainable food systems;
- › promote education about gender equality and girls' right to food: identify adolescent girls living in poverty, and prioritize and support efforts to ensure that these girls are properly nourished;
- › provide all pregnant women (including married and unmarried girls) with reproductive health, nutritional and counselling services in line with WHO recommendations (29) and prevent unintended adolescent pregnancies (30); and
- › in crisis situations, governments and international aid agencies need to take active responsibility for nutrition and humanitarian actors should build nutrition objectives into their programmes, consider the long-term impacts of emergency food aid, pay particular attention to vulnerable people, and promote, protect and support breastfeeding.

5. What is the role of WHO in ensuring healthier and more sustainable diets for all?

In order to realize the commitments of the 2014 Rome Declaration on Nutrition – where world leaders pledged to end all forms of malnutrition and ensure universal access to healthier and more sustainable diets (31) – the United Nations has declared a Decade of Action on Nutrition (2016-2025) (Nutrition Decade).¹

WHO is co-leading implementation of the Nutrition Decade. In addition, WHO has set out a new 10-year strategic vision “Ambition and Action in Nutrition 2016-2025”, including to support countries to ensure universal access to healthy and sustainable diets. Defining such diets is now a priority for WHO, along with work to help countries achieve universal access by identifying priority actions, developing guidance, supporting implementation and monitoring progress (32).

WHO's nutrition work is in support of the 2030 Agenda for Sustainable Development, endorsed by the UN General Assembly in 2015, which recognizes the importance of healthy diets for the future. Sustainable Development Goal 2 (SDG2) aims to end hunger, achieve food security and improve nutrition and promote sustainable agriculture by 2030. SDG3 includes a number of ambitious health targets, some relevant to nutrition (e.g. target 3.2 aims to end preventable deaths in children under 5 years of age, and malnutrition is responsible for nearly half of such child deaths). Nutrition is a marker and maker of development and as such nutrition and healthy diet are woven throughout the SDGs.

¹ http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/70/259

Related links

WHO Fact sheet on Food Safety (<http://www.who.int/mediacentre/factsheets/fs399/en/>)

WHO Fact sheet on Infant and Young Child Feeding (<http://www.who.int/mediacentre/factsheets/fs342/en/>)

WHO Fact sheet on Physical Activity (<http://www.who.int/dietphysicalactivity/pa/en/>)

WHO Fact sheet on Alcohol (<http://www.who.int/mediacentre/factsheets/fs349/en/>)

WHO Fact sheet on Tobacco (<http://www.who.int/mediacentre/factsheets/fs339/en/>)

WHO Fact sheet on Healthy Diet (http://www.who.int/nutrition/publications/nutrientrequirements/healthydiet_factsheet/en/)

References

1. Connecting Global Priorities: Biodiversity and Human Health: A State of Knowledge Review. World Health Organization and Secretariat of the Convention on Biological Diversity; 2015 (<https://www.cbd.int/health/SOK-biodiversity-en.pdf>, accessed 6 November 2018).
2. Study on discrimination in the context of the right to food. Prepared by the drafting group of the Advisory Committee on the right to food (A/HRC/AC/6/CRP.1). Office of the High Commissioner for Human Rights (OHCHR); 2010 (https://www.ohchr.org/Documents/HRBodies/HRCouncil/AdvisoryCom/Session6/A.HRC.AC.6.CRP.1_en.pdf, accessed 6 November 2018).
3. Report of the Special Rapporteur on the right to food. Note by the Secretariat. (A/HRC/31/51). Office of the High Commissioner for Human Rights (OHCHR); 2015 (<https://documents-dds-ny.un.org/doc/UNDOC/GEN/G15/293/26/PDF/G1529326.pdf?OpenElement>, accessed 6 November 2018).
4. World Health Organization. Obesity, situation and trends (https://www.who.int/gho/ncd/risk_factors/obesity_text/en/, accessed 6 November 2018).
5. Monteiro CA, Moubarac J-C, Cannon G, Ng SW, Popkin B. Ultra-processed products are becoming dominant in the global food system. *Obes Rev*. 2013;14:21–8. doi:10.1111/obr.12107.
6. Food systems and diets: Facing the challenges of the 21st century. London: Global Panel on Agriculture and Food Systems for Nutrition; 2016.
7. Protein and amino acid requirements in human nutrition: report of a joint FAO/WHO/UNU expert consultation. WHO technical report series; no. 935; Geneva: World Health Organization; 2007.
8. Mann J, Cummings JH, Englyst HN, Key T, Liu S, Riccardi G, et al. FAO/WHO Scientific Update on carbohydrates in human nutrition: conclusions. *European Journal of Clinical Nutrition* 61 (Suppl 1). 2007;s132-s137.
9. Guideline: Sugars intake for adults and children. Geneva: World Health Organization; 2015.
10. Diet, nutrition and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation. WHO Technical Report Series, No. 916. Geneva: World Health Organization; 2003.
11. Fats and fatty acids in human nutrition: report of an expert consultation. FAO Food and Nutrition Paper 91. Rome: Food and Agriculture Organization of the United Nations; 2010.
12. Hooper L, Abdelhamid A, Moore HJ, Douthwaite W, Skeaff CM, Summerbell CD. Effect of reducing total fat intake on body weight: systematic review and meta-analysis of randomised controlled trials and cohort studies. *BMJ*. 2012; 345: e7666.
13. Guideline: Sodium intake for adults and children. Geneva: World Health Organization; 2012.
14. Red meat and processed meat. IARC Working Group on the Evaluation of Carcinogenic Risk to Humans. Lyon, France; 2015.
15. Gonzalez Fischer C, Garnett T. Plates, pyramids and planet. Developments in national healthy and sustainable dietary guidelines: a state of play assessment. Food and Agriculture Organization of the United Nations and the Food Climate Research Network at the University of Oxford; 2016.
16. Tilman D, Clark M. Global diets link environmental sustainability and human health. *Nature*. 2014;515, 518-522.
17. Mekonnen MM, Hoekstra AY. A global assessment of the water footprint of farm animal products. *Ecosystems*. 2012;15, 401-415.
18. United Nations General Assembly. Right to food. Interim report of the Special Rapporteur on the right to food. A/70/287.
19. Food Loss and Food Waste. Food and Agriculture Organization of the United Nations (<http://www.fao.org/food-loss-and-food-waste/en/>, accessed 6 November 2018).
20. Burning opportunity: clean household energy for health, sustainable development, and wellbeing of women and children. Geneva: World Health Organization; 2016.
21. 10 guidelines of the German Nutrition Society (DGE) for a wholesome diet. Deutsche Gesellschaft für Ernährung e. V. (<https://www.dge.de/ernaehrungspraxis/vollwertige-ernaehrung/10-regeln-der-dge/10-guidelines-of-the-german-nutrition-society/>, accessed 6 November 2018).
22. Find your way to eat greener, not too much and be active. National Food Agency of Sweden; 2015 (<https://www.livsmedelsverket.se/globalassets/publikationsdatabas/andra-sprak/kostraden-eng-a4-utskriftversion.pdf>, accessed 6 November 2018).
23. World Cancer Research Fund/American Institute for Cancer Research. Food, nutrition, physical activity and prevention of cancer: A global perspective. Washington DC: AICR; 2007.
24. Qatar Dietary Guidelines. Doha: The Supreme Council of Health; 2015 (<http://www.fao.org/nutrition/education/food-dietary-guidelines/regions/countries/qatar/en/>, accessed 6 November 2018).
25. Five keys to safer food manual. Geneva: World Health Organization; 2006 (<https://www.who.int/foodsafety/publications/5keysmanual/en/>, accessed 6 November 2018).
26. WHO Set of Recommendations on the Marketing of Foods and Non-Alcoholic Beverages to Children. Geneva: World Health Organization; 2010 (<https://www.who.int/dietphysicalactivity/publications/recsmarketing/en/>, accessed 6 November 2018).
27. International Code of Marketing of Breast-milk Substitutes. Geneva: World Health Organization; 1981 (<https://www.who.int/nutrition/publications/infantfeeding/9241541601/en/>, accessed 6 November 2018).
28. Ten steps to successful breastfeeding. Geneva: World Health Organization; 2018 (<https://www.who.int/nutrition/bfhi/ten-steps/en/>, accessed 6 November 2018).
29. WHO recommendations on antenatal care for a positive pregnancy experience. Geneva: World Health Organization; 2016 (https://www.who.int/reproductivehealth/publications/maternal_perinatal_health/anc-positive-pregnancy-experience/en/, accessed 6 November 2018).
30. Preventing early pregnancy and poor reproductive outcomes among adolescents in developing countries. WHO guidelines. Geneva: World Health Organization; 2011.
31. Second International Conference on Nutrition (ICN2). Rome declaration on nutrition. Rome: Food and Agriculture Organization; 2014 (<http://www.fao.org/resources/infographics/infographics-details/en/c/266118/>, accessed 6 November 2018).
32. Ambition and Action in Nutrition 2016-2025. Geneva: World Health Organization; 2017.



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