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Introduction

Earlier recommendations for population nutrient intake goals to prevent diet-related chronic diseases were formulated in 1989 by the WHO Study Group on Diet, Nutrition and Prevention of Noncommunicable Diseases¹. Since then, the very rapid development in related scientific fields and available population-based epidemiological evidence underscored the important role that diet and lifestyle plays, in developing* and developed countries alike, in preventing and controlling increasingly significant causes of disability and premature death due to noncommunicable diseases. In addition, the identification of specific dietary components that increase the probability of occurrence of these diseases in individuals is being further clarified and new reports and proposed guidelines are being developed and published by various governmental bodies and professional organizations, creating much debate and discussion.

Moreover, rapid changes in diets and lifestyles resulting from industrialization, urbanization, economic development and market globalization, have accelerated during the last decade and are having a significant impact on the health and nutritional status of populations, particularly in developing countries and those undergoing rapid socio-economic transition. While standards of living have improved and the access to services has increased, there have also been significant negative consequences in terms of inappropriate dietary patterns and decreased physical activity and a corresponding increase in diet-related chronic diseases, especially among the poor.

Food and food products have become commodities produced and traded in a market that has expanded from an essentially local base to an increasingly global one. Changes in the world food systems have contributed to shifting dietary patterns, for example, increased consumption of an energy-dense diet high in fat, particularly saturated fat, and low in complex carbohydrates. This is combined with a decline in energy expenditure that is associated with a sedentary lifestyle—motorized transport and labour-saving devices in the home and the occupational environment, largely replacing physically demanding manual tasks at work and leisure time often being dominated by physically undemanding pastimes.

Because of these changes in dietary and lifestyle patterns in both developing and newly developed

countries, chronic noncommunicable diseases—obesity, diabetes mellitus, cardiovascular disease, hypertension and stroke and various forms of cancer—are increasingly significant causes of disability and premature death that place additional burdens on already overtaxed national health budgets. Updated scientific evidence and policy recommendations were urgently needed to assist in developing effective national prevention and management strategies for addressing the increasing public health challenge related to diet and health.

Thus, the Joint WHO/FAO Expert Consultation on diet, nutrition and the prevention of chronic diseases (Geneva, 28 January–1 February 2002)² was organized as part of the normative work of the World Health Organization (WHO) and Food and Agriculture Organization of the United Nations (FAO), which regularly develop and periodically update nutrient requirements and related global guidelines. The Joint WHO/FAO Expert Consultation was one of three Expert Consultations that FAO and WHO had agreed to hold jointly during the year 2001–2002. The other two concerned energy (Rome, October 2001) and protein and amino acid requirements (Geneva, April 2002).

Earlier versions of the papers presented in this supplement – except the last one by Nishida *et al.* on the process, product and policy implications of the Expert Consultation – were prepared as the background papers for the joint WHO/FAO Expert Consultation on diet, nutrition and the prevention of chronic diseases and were peer reviewed. These papers were prepared following a general framework which includes current epidemiological trends of the concerned diseases; review of scientific evidence linking diet and the concerned diseases; strength and weakness of evidence; and policy implications, where possible. After the Expert Consultation, these papers were further developed, revised and finalized by the respective authors incorporating peer reviewers' comments as well as the discussions of the Expert Consultation in order to be published for wider dissemination of the evidence base for the report of the Expert Consultation.

The first paper by Darnton-Hill *et al.* reviews the continuity of the life course processes and environmental and societal influences that contribute to the development of chronic diseases. There is increasing evidence that chronic disease risks begin in fetal life and continue into old age. Darnton-Hill *et al.* divide the life course into five stages: fetal development and the maternal environment; infancy and childhood; adolescence; adulthood; and ageing and older people. Although distinct in themselves, each stage merges imperceptibly from one stage to the next with different influences providing the cumulative

*Editors note: Public Health Nutrition normally prefers to use the terms 'North' and 'South' rather than 'developed' and 'developing' countries. However, no international consensus exists on this and the terms 'developed' and 'developing' have been used in this special issue, but are not meant to imply any sense of social or cultural hierarchy.

risk and also creating opportunities for prevention at each stage. They emphasize that all ages are part of the continuum of opportunities for the prevention and control of chronic diseases.

In the subsequent six papers, the evidence on diet and/or lifestyle in preventing six major diet-related chronic diseases are reviewed. These include obesity by Swinburn *et al.*, type-2 diabetes by Steyn *et al.*, hypertension and cardiovascular diseases by Reddy and Katan, cancer by Key *et al.*, dental diseases by Moynihan and Petersen and osteoporosis by Prentice. Some of the key findings include:

- **Obesity:** The imbalance between declining energy expenditure due to physical inactivity and high energy in the diet (excess calories whether from sugar, starches or fat) is the main determinant of the obesity epidemic. Increasing physical activity, in addition to reducing intakes of foods high in fat and foods and drinks high in sugars, can prevent unhealthy weight gain. Taking these simple goals to concrete action requires major social and environmental changes in order to effectively promote and support healthier choices at the individual level.
- **Type 2 diabetes:** Excess weight gain, overweight and obesity and physical inactivity account for the escalating rates of type 2 diabetes, worldwide. Diabetes leads to increased risk of heart disease, kidney disease, stroke and infections. Increased physical activity and maintaining a healthy weight play critical roles in the prevention and treatment of diabetes.
- **Hypertension and cardiovascular diseases:** The major killers worldwide, are to a great extent due to unbalanced diets and physical inactivity. Risk of their main forms, heart disease and stroke, is reduced by eating less saturated and *trans*-fatty acids, and sufficient amounts of (*n*-3 and *n*-6) polyunsaturated fatty acids, fruits and vegetables and less salt, as well as by regular physical activity and maintaining a healthy body weight. Reduction of salt intake helps reduce hypertension—a major cause of cardiovascular diseases.
- **Cancer:** Tobacco is the number one cause of cancer, but dietary factors contribute significantly to some types of cancer. Maintaining a healthy weight will reduce the risk for cancers of the esophagus, colorectum, breast, endometrium and kidney. Limiting alcohol intake will reduce risk for cancers of the mouth, throat, esophagus, liver and breast. Ensuring an adequate intake of fruit and vegetables should further reduce risk for oral cavity, esophagus, stomach and colorectal cancer.

- **Dental diseases:** Caries is preventable by limiting the frequency and amount of consumption of sugars and by appropriate exposure to fluoride and by good dental hygiene. Erosion of teeth by dietary acids in beverages or other acidic foods may contribute to tooth destruction.
- **Osteoporosis:** Fragility fractures are a problem of older people. Adequate intakes of calcium (500 mg/day or more) and of vitamin D in populations with high osteoporosis rates helps to reduce fracture risk, so does sun exposure and physical activity to strengthen bones and muscles.

In the last paper, Nishida *et al.* summarize the processes and products of the joint WHO/FAO Expert Consultation to which the seven papers presented in this supplement contributed. They describe the main differences in the content and approach taken by the 1989 WHO Study Group and the 2002 Joint WHO/FAO Expert Consultation, which include the collaboration between health and agriculture & food sectors, attention to lifestyle changes by promoting physical activity, utilization of life course approach as well as some changes in the recommended goals of some dietary components. They also reiterated the difference between population nutrient intake goals and individual dietary guidelines, emphasizing the fact that population nutrient intake goals need to be translated into a national and local context.

References

- 1 *Diet, nutrition, and the prevention of chronic diseases. Report of a WHO Study Group.* WHO Technical Report Series No. 797. Geneva, World Health Organization, 1990.
- 2 *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.

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