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# **DIET, NUTRITION AND THE PREVENTION OF CHRONIC DISEASES**

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Report of a  
Joint WHO/FAO Expert Consultation



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**World Health Organization**

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Geneva, 28 January–1 February 2002

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# Abbreviations

The following abbreviations are used in this report:

ACC	United Nations Administrative Committee on Coordination
AIDS	acquired immunodeficiency syndrome
BMI	body mass index
CARMEN	Carbohydrate Ratio Management in European National diets
CHD	coronary heart disease
CVD	cardiovascular disease
DALY	disability-adjusted life year
DASH	dietary approaches to stop hypertension
DEXA	dual-energy X-ray absorptiometry
DHA	docosahexaenoic acid
dmf	decayed, missing, filled primary (teeth)
DMF	decayed, missing, filled permanent (teeth)
dmft	decayed, missing, filled primary teeth
DMFT	decayed, missing, filled permanent teeth
DONALD	Dortmund Nutritional and Anthropometric Longitudinally Designed Study
ECC	early childhood caries
EPA	eicosapentaenoic acid
EPIC	European Prospective Investigation into Cancer and Nutrition
ERGOB	European Research Group for Oral Biology
FAOSTAT	Food and Agricultural Organization of the United Nations Statistical Databases
FER	fat to energy ratio
GDP	gross domestic product
GISSI	Gruppo Italiano per lo Studio della Sopravvivenza nell'Infarto Miocardico
GNP	gross national product
HBP	high blood pressure
HDL	high-density lipoprotein
HFI	hereditary fructose intolerance
HIV	human immunodeficiency virus
HOPE	Heart Outcomes Prevention Evaluation
IARC	International Agency for Research on Cancer
IDDM	insulin-dependent diabetes mellitus
IGT	impaired glucose tolerance
IHD	ischaemic heart disease

IUGR	intrauterine growth retardation
LDL	low-density lipoprotein
MGRS	multicentre growth reference study (i.e. the WHO MGRS study)
mRNA	messenger ribonucleic acid
MSG	monosodium glutamate
MUFA	monounsaturated fatty acid
NCD	noncommunicable disease
NGO	nongovernmental organization
NIDDM	non-insulin-dependent diabetes mellitus
NSP	non-starch polysaccharides
PUFA	polyunsaturated fatty acid
RCT	randomized controlled trial
SCN	ACC Subcommittee on Nutrition <sup>1</sup>
SFA	saturated fatty acid
T1DM	type 1 diabetes
T2DM	type 2 diabetes
VLDL	very low-density lipoprotein
WCRF	World Cancer Research Fund
WHR	waist:hip circumference ratio or waist:hip ratio

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<sup>1</sup> In April 2002 the name of the Subcommittee on Nutrition was changed to the United Nations System Standing Committee on Nutrition.

## 1. Introduction

A Joint WHO/FAO Expert Consultation on Diet, Nutrition and the Prevention of Chronic Diseases met in Geneva from 28 January to 1 February 2002. The meeting was opened by Dr D. Yach, Executive Director, Noncommunicable Diseases and Mental Health, WHO, on behalf of the Directors-General of the Food and Agriculture Organization of the United Nations and the World Health Organization. The Consultation followed up the work of a WHO Study Group on Diet, Nutrition and Prevention of Noncommunicable Diseases, which had met in 1989 to make recommendations regarding the prevention of chronic diseases and the reduction of their impact (1). The Consultation recognized that the growing epidemic of chronic disease afflicting both developed and developing countries was related to dietary and lifestyle changes and undertook the task of reviewing the considerable scientific progress that has been made in different areas. For example, there is better epidemiological evidence for determining certain risk factors, and the results of a number of new controlled clinical trials are now available. The mechanisms of the chronic disease process are clearer, and interventions have been demonstrated to reduce risk.

During the past decade, rapid expansion in a number of relevant scientific fields and, in particular, in the amount of population-based epidemiological evidence has helped to clarify the role of diet in preventing and controlling morbidity and premature mortality resulting from noncommunicable diseases (NCDs). Some of the specific dietary components that increase the probability of occurrence of these diseases in individuals, and interventions to modify their impact, have also been identified.

Furthermore, rapid changes in diets and lifestyles that have occurred with industrialization, urbanization, economic development and market globalization, have accelerated over the past decade. This is having a significant impact on the health and nutritional status of populations, particularly in developing countries and in countries in transition. While standards of living have improved, food availability has expanded and become more diversified, and access to services has increased, there have also been significant negative consequences in terms of inappropriate dietary patterns, decreased physical activities and increased tobacco use, and a corresponding increase in diet-related chronic diseases, especially among poor people.

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 economy are

reflected in shifting dietary patterns, for example, increased consumption of energy-dense diets high in fat, particularly saturated fat, and low in unrefined carbohydrates. These patterns are combined with a decline in energy expenditure that is associated with a sedentary lifestyle – motorized transport, labour-saving devices in the home, the phasing out of physically demanding manual tasks in the workplace, and leisure time that is preponderantly devoted to physically undemanding pastimes.

Because of these changes in dietary and lifestyle patterns, chronic NCDs – including obesity, diabetes mellitus, cardiovascular disease (CVD), hypertension and stroke, and some types of cancer – are becoming increasingly significant causes of disability and premature death in both developing and newly developed countries, placing additional burdens on already overtaxed national health budgets.

The Consultation provided an opportune moment for FAO and WHO to draw on the latest scientific evidence available and to update recommendations for action to governments, international agencies and concerned partners in the public and private sectors. The overall aim of these recommendations is to implement more effective and sustainable policies and strategies to deal with the increasing public health challenges related to diet and health.

The Consultation articulated a new platform, not just of dietary and nutrient targets, but of a concept of the human organism's subtle and complex relationship to its environment in relation to chronic diseases. The discussions took into account ecological, societal and behavioural aspects beyond causative mechanisms. The experts looked at diet within the context of the macroeconomic implications of public health recommendations on agriculture, and the global supply and demand for foodstuffs, both fresh and processed. The role of diet in defining the expression of genetic susceptibility to NCDs, the need for responsible and creative partnerships with both traditional and non-traditional partners, and the importance of addressing the whole life course, were all recognized.

Nutrition is coming to the fore as a major modifiable determinant of chronic disease, with scientific evidence increasingly supporting the view that alterations in diet have strong effects, both positive and negative, on health throughout life. Most importantly, dietary adjustments may not only influence present health, but may determine whether or not an individual will develop such diseases as cancer, cardiovascular disease and diabetes much later in life. However, these concepts have not led to a change in policies or in practice. In many developing countries, food policies remain focused only on undernutrition and are not addressing the prevention of chronic disease.

Although the primary purpose of the Consultation was to examine and develop recommendations for diet and nutrition in the prevention of chronic diseases, the need for sufficient physical activity was also discussed and is therefore emphasized in the report. This emphasis is consistent with the trend to consider physical activity alongside the complex of diet, nutrition and health. Some relevant aspects include:

- Energy expenditure through physical activity is an important part of the energy balance equation that determines body weight. A decrease in energy expenditure through decreased physical activity is likely to be one of the major factors contributing to the global epidemic of overweight and obesity.
- Physical activity has great influence on body composition – on the amount of fat, muscle and bone tissue.
- To a large extent, physical activity and nutrients share the same metabolic pathways and can interact in various ways that influence the risk and pathogenesis of several chronic diseases.
- Cardiovascular fitness and physical activity have been shown to reduce significantly the effects of overweight and obesity on health.
- Physical activity and food intake are both specific and mutually interacting behaviours that are and can be influenced partly by the same measures and policies.
- Lack of physical activity is already a global health hazard and is a prevalent and rapidly increasing problem in both developed and developing countries, particularly among poor people in large cities.

In order to achieve the best results in preventing chronic diseases, the strategies and policies that are applied must fully recognize the essential role of diet, nutrition and physical activity.

This report calls for a shift in the conceptual framework for developing strategies for action, placing nutrition – together with the other principal risk factors for chronic disease, namely, tobacco use and alcohol consumption – at the forefront of public health policies and programmes.

## Reference

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