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DIET, NUTRITION AND THE PREVENTION OF CHRONIC DISEASES

Report of a
Joint WHO/FAO Expert Consultation



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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.

2. Background

2.1 The global burden of chronic diseases

Diet and nutrition are important factors in the promotion and maintenance of good health throughout the entire life course. Their role as determinants of chronic NCDs is well established and they therefore occupy a prominent position in prevention activities (1).

The latest scientific evidence on the nature and strength of the links between diet and chronic diseases is examined and discussed in detail in the following sections of this report. This section gives an overall view of the current situation and trends in chronic diseases at the global level. The chronic diseases considered in this report are those that are related to diet and nutrition and present the greatest public health burden, either in terms of direct cost to society and government, or in terms of disability-adjusted life years (DALYs). These include obesity, diabetes, cardiovascular diseases, cancer, osteoporosis and dental diseases.

The burden of chronic diseases is rapidly increasing worldwide. It has been calculated that, in 2001, chronic diseases contributed approximately 60% of the 56.5 million total reported deaths in the world and approximately 46% of the global burden of disease (1). The proportion of the burden of NCDs is expected to increase to 57% by 2020. Almost half of the total chronic disease deaths are attributable to cardiovascular diseases; obesity and diabetes are also showing worrying trends, not only because they already affect a large proportion of the population, but also because they have started to appear earlier in life.

The chronic disease problem is far from being limited to the developed regions of the world. Contrary to widely held beliefs, developing countries are increasingly suffering from high levels of public health problems related to chronic diseases. In five out of the six regions of WHO, deaths caused by chronic diseases dominate the mortality statistics (1). Although human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), malaria and tuberculosis, along with other infectious diseases, still predominate in sub-Saharan Africa and will do so for the foreseeable future, 79% of all deaths worldwide that are attributable to chronic diseases are already occurring in developing countries (2).

It is clear that the earlier labelling of chronic diseases as “diseases of affluence” is increasingly a misnomer, as they emerge both in poorer countries and in the poorer population groups in richer countries. This shift in the pattern of disease is taking place at an accelerating rate; furthermore, it is occurring at a faster rate in developing countries than it did in the industrialized regions of the world half a century ago (3). This

rapid rate of change, together with the increasing burden of disease, is creating a major public health threat which demands immediate and effective action.

It has been projected that, by 2020, chronic diseases will account for almost three-quarters of all deaths worldwide, and that 71% of deaths due to ischaemic heart disease (IHD), 75% of deaths due to stroke, and 70% of deaths due to diabetes will occur in developing countries (4). The number of people in the developing world with diabetes will increase by more than 2.5-fold, from 84 million in 1995 to 228 million in 2025 (5). On a global basis, 60% of the burden of chronic diseases will occur in developing countries. **Indeed, cardiovascular diseases are even now more numerous in India and China than in all the economically developed countries in the world put together (2).** As for overweight and obesity, not only has the current prevalence already reached unprecedented levels, but the rate at which it is annually increasing in most developing regions is substantial (3). The public health implications of this phenomenon are staggering, and are already becoming apparent.

The rapidity of the changes in developing countries is such that a double burden of disease may often exist. India, for example, at present faces a combination of communicable diseases and chronic diseases, with the burden of chronic diseases just exceeding that of communicable diseases. Projections nevertheless indicate that communicable diseases will still occupy a critically important position up to 2020 (6). Another eloquent example is that of obesity, which is becoming a serious problem throughout Asia, Latin America and parts of Africa, despite the widespread presence of undernutrition. In some countries, the prevalence of obesity has doubled or tripled over the past decade.

Chronic diseases are largely preventable diseases. Although more basic research may be needed on some aspects of the mechanisms that link diet to health, the currently available scientific evidence provides a sufficiently strong and plausible basis to justify taking action now. Beyond the appropriate medical treatment for those already affected, the public health approach of primary prevention is considered to be the most cost-effective, affordable and sustainable course of action to cope with the chronic disease epidemic worldwide. The adoption of a common risk-factor approach to chronic disease prevention is a major development in the thinking behind an integrated health policy. Sometimes chronic diseases are considered communicable at the risk factor level (7). Modern dietary patterns and physical activity patterns are risk behaviours that travel across countries and are transferable from one population to another like an infectious disease, affecting disease patterns globally.

While age, sex and genetic susceptibility are non-modifiable, many of the risks associated with age and sex are modifiable. Such risks include behavioural factors (e.g. diet, physical inactivity, tobacco use, alcohol consumption); biological factors (e.g. dyslipidemia, hypertension, overweight, hyperinsulinaemia); and finally societal factors, which include a complex mixture of interacting socioeconomic, cultural and other environmental parameters.

Diet has been known for many years to play a key role as a risk factor for chronic diseases. What is apparent at the global level is that great changes have swept the entire world since the second half of the twentieth century, inducing major modifications in diet, first in industrial regions and more recently in developing countries. Traditional, largely plant-based diets have been swiftly replaced by high-fat, energy-dense diets with a substantial content of animal-based foods. But diet, while critical to prevention, is just one risk factor. Physical inactivity, now recognized as an increasingly important determinant of health, is the result of a progressive shift of lifestyle towards more sedentary patterns, in developing countries as much as in industrialized ones. Recent data from São Paulo, Brazil, for example, indicate that 70–80% of the population are remarkably inactive (8). The combination of these and other risk factors, such as tobacco use, is likely to have an additive or even a multiplier effect, capable of accelerating the pace at which the chronic disease epidemic is emerging in the developing countries.

The need for action to strengthen control and prevention measures to counter the spread of the chronic disease epidemic is now widely recognized by many countries, but the developing countries are lagging behind in implementing such measures. Encouragingly, however, efforts to counteract the rise in chronic diseases are increasingly being assigned a higher priority. This situation is reflected by the growing interest of Member States, the concerned international and bilateral agencies as well as nongovernmental organizations in addressing food and nutrition policy, health promotion, and strategy for the control and prevention of chronic diseases, as well as other related topics such as promoting healthy ageing and tobacco control. The 1992 International Conference on Nutrition specifically identified the need to prevent and control the increasing public health problems of chronic diseases by promoting appropriate diets and healthy lifestyles (9–11). The need to address chronic disease prevention from a broad-based perspective was also recognized by the World Health Assembly in 1998 (12) and again in 1999 (13). In 2000, the World Health Assembly passed a further resolution on the broad basis of the prevention and control of noncommunicable diseases (14), and in 2002 adopted a resolution that urged Member States to collaborate with WHO to develop “...a global strategy on diet,

for constructive collaboration with the food industry and the private sector.

6.3.3 **Functioning alliances and partnerships**

Change can be accelerated if all groups in favour establish alliances to reach the common objective. Ideally, the effort should include a range of different parties whose actions influence people's options and choices about diet and physical activity. Alliances for action are likely to extend from communities to national and regional levels, involving formal focal points for nutrition within different public, private and voluntary bodies. The involvement of consumers associations is also important to facilitate health and nutrition education. International organizations with nutrition-related mandates, such as FAO and WHO, are expected to encourage the routing of reliable information through these networks. Alliances with other members of the United Nations family are also important – for example, with the United Nations Children's Fund on maternal – child nutrition and life-course approaches to health. Private sector industry with interests in food production, packaging, logistics, retailing and marketing, and other private entities concerned with lifestyles, sports, tourism, recreation, and health and life insurance, have a key role to play. Sometimes it is best to work with groups of industries rather than with individual industries that may wish to capitalize on change for their own benefit. All should be invited; those who share the health promotion objective will usually opt to participate in joint activities.

6.3.4 **Enabling environments**

Individual change is more likely to be facilitated and sustained if the macroenvironment and microenvironment within which choices are made support options perceived to be both healthy and rewarding. Food systems, marketing patterns and personal lifestyles should evolve in ways that make it easier for people to live healthier lives, and to choose the kinds of food that bring them the greatest health benefits. An enabling environment encompasses a wide frame of reference, from the **environment at school**, in the workplace and in the community, to transport policies, urban design policies, and the availability of a healthy diet. Furthermore, it requires supportive legislative, regulatory and fiscal policies to be in place. Unless there is an enabling context, the potential for change will be minimal. The ideal is an environment that not only promotes but also supports and protects healthy living, making it possible, for example, to bicycle or walk to work or school, to buy fresh fruits and vegetables, and eat and work in smoke-free rooms.

Specific actions to create enabling environments are outlined in greater detail below.

Supporting the availability and selection of nutrient-dense foods (fruits, vegetables, legumes, whole grains, lean meats and low-fat dairy products)

Within this overall concept, the issue of nutrient-dense foods versus energy-dense/nutrient-poor foods is critical as it concerns the balance between providing essential nourishment and maintaining a healthy weight. The quality of the fat and carbohydrate supplied also plays a key role. The following are all important: increasing access – especially of low-income communities – to a supply of nutrient-dense fresh foods; regulations that support this; facilitating access to high-quality diets through food pricing policies; nutrition labels to inform consumers, in particular about the appropriate use of health/nutrition claims. The provision of safe and nutritious food is now recognized not only as a human need but also as a basic right.

Assessing trends in changing consumption patterns and their implications for the food (agriculture, livestock, fisheries and horticulture) economy

Recommendations, which result in changes in dietary patterns, will have implications for all components of the food economy. Hence it is appropriate to examine trends in consumption patterns worldwide and deliberate on the potential of the food and agriculture sector to meet the demands and challenges posed by this report. All sectors in the food chain, from farm to the table, will have to be involved if the food economy is to respond to the need for changes in diets that will be necessary to cope with the burgeoning epidemic of noncommunicable diseases.

Hitherto most of the information on food consumption has been obtained from national Food Balance data. In order to understand better the relationship between food consumption patterns, diets and the emergence of noncommunicable diseases, it is crucial to obtain more reliable information on actual food consumption patterns and changing trends based on representative consumption surveys.

There is a need to monitor whether the guidelines developed in this report, and strategies based on them, will influence the behaviour of consumers and to what extent consumers will change their diets (and lifestyles) towards more healthy patterns.

The next step will be to assess the implications that these guidelines will have for agriculture, livestock, fisheries and horticulture. To meet the specified levels and patterns of consumption, new strategies may need to be developed. This assessment will need to include all stages in the food chain – from production and processing to marketing and consumption. The effects that these changes in the food economy could have on the sustainability of natural resource use would also need to be taken into account.

Traditional diets

Modern marketing practices commonly displace local or ethnic dietary patterns. Global marketing, in particular, has wide-ranging effects on both consumer appetite for goods and perceptions of their value. While some traditional diets could benefit from thoughtful modification, research has shown that many are protective of health, and clearly environmentally sustainable. Much can be learned from these.

6.4 Strategic actions for promoting healthy diets and physical activity

The strategies for promoting healthy diets and physical activity need to reflect local and national realities as well as global determinants of diet and physical activity. They must be based on scientific evidence on the ways in which people's dietary and physical activity patterns have positive or adverse effects on health. In practice, strategies are likely to include at least some of the following practical actions.

6.4.1 *Surveillance of people's diets, physical activity and related disease burden*

A surveillance system for monitoring diet, physical activity and related health problems is essential to enable all interested stakeholders to track progress towards each country's diet-related health targets, and to guide the choice, intensity and timing of measures to accelerate achievement. The data required for implementing effective policies need to be specific for age, sex and social group, and indicate changing trends over time.

6.4.2 *Enabling people to make informed choices and take effective action*

Information about fat quality, salt and sugars content, and energy density should be incorporated into nutrition and health promotion messages, and as required in food labelling tailored to different population groups – including disadvantaged population groups – through the wide reach of modern media. The ultimate goal of information and communication strategies is to assure availability and choice of better quality food, access to physical activity and a better-informed global community.

6.4.3 *Making the best use of standards and legislation*

The Codex Alimentarius – the intergovernmental standard-setting body through which nations agree on standards for food – is currently being reviewed. Its work in the area of nutrition and labelling could be further strengthened to cover diet-related aspects of health. The feasibility of codes of practice in food advertising should also be explored.

6.4.4 **Ensuring that “healthy diet” components are available to all**

As consumers increase their preference for healthy diets, producers and suppliers will wish to orient their products and marketing to respond to this emerging demand. Governments could make it easier for consumers to exercise healthier choices, in accordance with the population nutrient intake goals given in this report by, for example, promoting the wider availability of food which is less processed and low in trans fatty acids, encouraging the use of vegetable oil for domestic consumers, and ensuring an adequate and sustainable supply of fish, fruits, vegetables and nuts in domestic markets.

In the case of meals prepared outside the home (i.e. in restaurants and fast-food outlets), information about their nutritional quality should be made available to consumers in a simple manner so that they can select healthier choices. For example, consumers should be able to ascertain not only the amount of fat or oil in the meals they have chosen, **but also whether they are high in saturated fat or trans fatty acids.**

6.4.5 **Achieving success through intersectoral initiatives**

Approaches to promoting healthy diets call for comprehensive strategies that cut across many sectors and involve the different groups within countries concerned with food, nutrition, agriculture, education, transport and other relevant policies. They should involve alliances that encourage the effective implementation of national and local strategies for healthy diets and physical activity. Intersectoral initiatives should encourage the adequate production and domestic supply of fruits, vegetables and wholegrain cereals, at affordable prices to all segments of the population, opportunities for all to access them regularly, and individuals to undertake appropriate levels of physical activity.

6.4.6 **Making the best of health services and the professionals who provide them**

The training of all health professionals (including physicians, nurses, dentists and nutritionists) should include diet, nutrition and physical activity as key determinants of medical and dental health. The social, economic, cultural and psychological determinants of dietary and physical activity choice should be included as integral elements of public health action. There is an urgent need to develop and strengthen existing training programmes to implement these actions successfully.

6.5 **Call to action**

There is now a large, convincing body of evidence that dietary patterns and the level of physical activity can not only influence existing health levels, but also determine whether an individual will develop chronic

diseases such as cancer, cardiovascular disease and diabetes. These chronic diseases remain the main causes of premature death and disability in industrialized countries and in most developing countries. Developing countries are demonstrably increasingly at risk, as are the poorer populations of industrialized countries.

In communities, districts and countries where widespread, integrated interventions have been implemented, dramatic decreases in risk factors have occurred. Successes have come about where the public has acknowledged that the unnecessary premature deaths that occur in their community are largely preventable and have empowered themselves and their civic representatives to create health-supporting environments. This has been achieved most successfully by establishing a working relationship between communities and governments; through enabling legislation and local initiatives affecting **schools** and the workplace; by involving consumers' associations; and by involving food producers and the food-processing industry.

There is a need for data on current and changing trends in food consumption in developing countries, including research on what influences people's eating behaviour and physical activity and what can be done to address this. There is also a need, on a continuing basis, to develop strategies to change people's behaviour towards adopting healthy diets and lifestyles, including research on the supply and demand side related to this changing consumer behaviour.

Beyond the rhetoric, this epidemic can be halted – the demand for action must come from those affected. The solution is in our hands.

Reference

1. Resolution WHA55.23. Diet, physical activity and health. In: *Fifty-fifth World Health Assembly, Geneva, 13–18 May 2002. Volume 1. Resolutions and decisions, annexes*. Geneva, World Health Organization, 2002 (document WHA55/2002/REC/1):28–30.

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