

Oration

Nutrition and global prevention on non-communicable diseases

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Although much of the public health infrastructure and apparatus of international agencies has been designed to address infectious diseases and undernutrition, coronary heart disease is today's leading worldwide killer, one-third of deaths are caused by cardiovascular diseases, and 60% of all mortality is attributable to non-communicable diseases (NCD). The bases of this epidemiological pattern are diet, tobacco and sedentarism — factors that have their roots in social and physical environments. Over 80% of coronary heart disease and type 2 diabetes and 33% of cancers could be prevented by changes in lifestyle factors, included among them, diet, weight maintenance and physical activity. Nutritional transition is continuing in developing countries, with increased intakes of saturated fats and decreased consumption of dietary fibre. Examples of campaigns to alter lifestyle risk factors for the prevention of NCD can be seen in the North Karelia Project in Finland, which has produced dramatic declines in age-adjusted rates in CHD over the past 25 years. There are multiple practical activities within a national policy framework to prevent NCD in various institutions including: health services; mass media; school curricula; voluntary associations; and food producers, supermarkets and restaurants, along with legislation and policy, and monitoring and research. The WHO will work for NCD prevention at three levels: technical support and advocacy; work through regional and national policies in Member States; and global activities and initiatives.

Key words: alcohol, cancer, cardiovascular disease, chronic disease, dietary fibre, Finland, globalization, healthful diets, ministries of health, North Keralia Project, non-communicable disease, public health policy, tobacco use, World Health Organization.

During the last few years, important information has been obtained on the global burden of diseases. The world's health situation is rapidly changing. The relative role of infectious diseases is diminishing and that of some major non-communicable diseases (NCD) increasing. Of particular feature is that NCDs are rapidly increasing in the developing world.

According to the latest WHO estimates some 60% of all deaths in the world are now caused by non-communicable diseases, together with injuries and violence. Every third death is cardiovascular, and coronary heart disease is the number one killer in the world.¹ In all regions of the world, except in sub-Saharan Africa, NCDs are the leading cause of deaths, and the majority of the world's NCD deaths occur in the economically developing countries.

Non-communicable diseases were once referred to as 'diseases of affluence'. This is no longer the case; these diseases are also rapidly increasing in poor countries, and in most populations NCDs and their risk factors tend to accumulate in lower socio-economic groups. The changing picture of global public health is due to successes in infectious disease control, to rapidly changing lifestyles (especially in urban areas) and to demographic shifts. This development with the predicted further increase in the NCD burden, forms a great threat to national economies, global sustainable development and it also presents the main contemporary public health challenge.

The evidence

Non-communicable diseases are not inevitable consequences of ageing. Research has clearly identified powerful causal factors. Although an individual's risk is influenced by genetic predisposition, the disease development is closely linked with a few risk factors that relate closely to lifestyles that can be modified. These are especially nutrition, tobacco use and physical inactivity – factors that have their roots in social and physical environments.

This solid evidence forms a strong basis for prevention. Although improvement in treatment of diseases is important, the public health potential in control of NCDs lies in prevention. Strong evidence shows that prevention is possible. Non-communicable disease rates can change markedly and in a relatively short time, as a consequence of changes in lifestyles. Such changes can take place as a response to major social, economical or political actions, whether intended for public health consequences or not.

Nutrition is one of the major lifestyle factors related to development of NCDs. Numerous international expert reviews, including those of WHO, have identified the close links between certain nutritional factors and risks of major

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cardiovascular diseases (CVD). Important nutritional risk factors are high blood LDL cholesterol, elevated arterial pressure, impaired glucose tolerance and obesity. Research has also convincingly shown major links between nutritional factors and many forms of cancer, musculoskeletal problems, diabetes, dental caries, Alzheimer's disease and so on.

Trials and population studies have shown a potential for prevention. Certain studies estimate that up to 80% of cases of coronary heart disease and up to 90% of type 2 diabetes could be avoided through changing lifestyle factors, and about one-third of cancers could also be prevented by eating healthfully, maintaining normal weight, and exercising throughout the life-span.^{2,3} Trials in China, Finland and the USA show that among high-risk individuals, close to 60% of type 2 diabetes cases could be prevented by modest changes in diet and physical activity. In the latter trial, the impact of these measures was double that of drug intervention.⁴ Major changes in rates of coronary heart disease and diabetes can be seen within a few years.

During the last few years much progress has taken place with drugs in reducing nutrition-related risk factors, such as serum cholesterol or blood pressure. While these products have an important place in treatment of high-risk patients, dietary changes have a great potential for reducing the needs of drugs and will remain the main method, from a public health point of view, in reducing the NCD rates in the population.

Experience in Finland

In the early 1970s the cardiovascular mortality rate in Finland was the highest in the world. Based on this alarming situation a national demonstration project, the North Karelia Project, was started in 1972 for the prevention of CVDs. Later on the project was expanded to integrate NCD prevention, and to contribute to national preventive work.⁵

In the planning phase attention was placed on three main risk factors: serum cholesterol; blood pressure; and smoking. All were prevalent in the area and the local diet clearly explained the high serum cholesterol levels. It was well known that elevated serum cholesterol level is a major risk-factor behind the epidemic of atherosclerotic cardiovascular disease. The aim of the project was to lower the generally high serum cholesterol levels in the population through general changes in dietary habits. The intervention was a comprehensive one, involving broad health promotion measures, health services, community organization, inter-sectoral measures, collaboration with industry and policy measures.⁶

The North Karelia Project became the first theory-based national demonstration program to examine whether a comprehensive community-based intervention would lead to major changes in dietary habits, in population cholesterol levels and, ultimately, in coronary heart disease (CHD) rates. The results showed that 25 years since its inception, the mean serum cholesterol level was reduced in the province of North Karelia by 18%. During the same period, the age-adjusted CHD mortality has declined by 73% among 35–64-year-old men.⁷ Separate analyses showed that more

than half of this decline could be attributed to the dietary changes in the population.⁸

The North Karelia Project has contributed to a major national change process in Finland, involving inter-sectoral collaboration, national focal point(s), long-term nutrition education programs, collaboration with voluntary organizations and the food industry, food labelling policies, price policy, research, demonstrations and international collaboration. The experience is now strongly used in WHO's programs.

Global nutrition transition

The emerging global epidemic of NCDs is closely associated with changing dietary patterns, which lead to increased risks of NCDs. Worldwide, we can see trends in reduced intake of fruit and vegetables and increased intake of fats (especially saturated fats), sugar and alcohol. Together with reduced physical activity, this leads to increasing weight and a growing problem of obesity. Salt consumption is high in many populations, greatly contributing to elevated blood pressure values and risk of cerebro-vascular strokes. In many populations intake of saturated fats increases and that of dietary fibre decreases.

In most economically developing countries, unprecedented social and economic change has quickly affected dietary patterns and physical activity, which in turn has contributed to the current rise in non-communicable diseases. Other factors include the reduction in communicable disease rates and the ageing of populations.

This evolution is well illustrated by increasing body weight in most populations, with its detrimental health consequences.⁹ The prevalence of obesity in adults is 10% to 25% in most countries of Western Europe, 20% to 25% in some countries in the Americas, and higher elsewhere – over 50% in some island nations of the Western Pacific.

There is a rapid move from high physical activity needed for daily living, towards considerable physical inactivity, overweight and unbalanced nutrition. At the same time, control of under-nutrition remains an unfinished work in many developing countries and is, indeed, often linked with malnutrition and even over-nutrition in the same country.

Although under-nutrition remains a problem in many developing countries, even in the same countries we see growing rates of overweight and obesity. It should be pointed out that nutritional issues underlying NCDs are not limited to obesity. Many nutrition-related problems, for example elevated blood cholesterol or elevated blood pressure, can be seen in people with normal weight but with unbalanced nutrition.

The changing and unhealthful patterns of nutrition in the world is often linked with the concept of globalization. While globalization can clearly bring benefits in alleviating global poverty and infection disease control – and is seen by many as inevitable – there are obvious negative consequences for NCD-related risk factors. For example, globalized communication and marketing give powerful means to promote tobacco products as well as foods and drinks that replace healthier traditional food habits.

Although increases in NCDs often accompany economic development in countries in transition, NCDs are not inevitable consequences of economic growth. Instead, with successful health policies and promotion, economic development can be linked with healthier lifestyles and nutrition, and consequently with reduced NCD rates.

Framework for nutrition in NCD prevention

The science base for nutrition in NCD prevention is strong. However, that is not enough for effective prevention in real life. Dietary habits and nutrition can be deeply rooted in cultural, economic and political structures.

Substantial changes in national diets can take place as a consequence of major crises or political changes. However, attempts to influence diets for health reasons usually have to employ more elaborate interventions. Basically it is a question of communicating health information and skills to people, arguing for health changes and providing social and environmental support for such changes. From a health policy point of view this calls for a sound policy framework that is based on careful analysis of the local situation and on relevant, evidence-based theoretical approaches, and leads to appropriate policy decisions.

Although dietary changes for prevention are needed for people at high risk (e.g. with hypercholesterolaemia or hypertension), major changes in national NCD rates can only be based on a population approach, that is on influencing the general nutritional level in the population. This is the case, because risks often concern a great proportion of the population and lifestyle changes cannot be isolated to only a fraction of the population. Thus, generally healthy diets should be promoted, diets needed for the prevention of a range of NCDs, and in many ways diet that promote health generally ('an integrated approach').

Practical activities within a national policy framework for healthy nutrition and NCD prevention are multiple. The following sectors/areas should especially be involved:

- health services (especially primary health care);
- schools: curricula, school lunches and school health;
- mass communication, media;
- public organizations (health-related and others);
- restaurants, catering and so on;
- supermarkets, the food industry;
- legislation and policy;
- monitoring and research.

Strategies to prevent NCDs should be organized at a national level. Ministries of Health should have the political leadership, but effective national strategies require inter-sectoral collaboration. To implement national policies and strategies, a technical focal point linked with the government is essential, as is collaboration with relevant expert institutions. National guidelines are needed, as well as surveillance on different levels; moreover rapid and simple monitoring of key dietary habits should be supplemented by less frequent – but more comprehensive – surveys on nutrition and nutritional risk factors.

As far as policy and legislation are concerned, the aim should be to remove obstacles and to enhance people's possibilities to enjoy healthy diets. Practical areas should concern taxation and pricing, agriculture, food labelling and nutritional claims, institutional nutrition and support to nutrition programs for health.

Healthy changes toward healthful national diets do not occur only with policy plans and program protocols, however good these may be. Policies and plans need to be implemented well, and enough resources should be allocated for effective implementation. Financial resources are needed for dietary interventions, although the investments are tiny compared with the costs of treatment of nutrition-related diseases. Such investments are certainly a cost-effective way to improve a nation's health.

WHO's global strategy for nutrition in NCD prevention

The World Health Organization's traditional role is to provide technical expertise and support to member states. To help tackle global health challenges, WHO's strong leadership is needed, but at the same time partnership with national governments and other international agencies and organizations are vital.

The World Health Organization is now building a strong response to the growing burden of NCDs. The base is the Global WHO Strategy on NCD Prevention and Control, endorsed by the World Health Assembly in 2000.¹⁰ After that a more specific paper on 'Diet, physical activity and health' was prepared and endorsed by the World Health assembly in 2002.¹¹ The aim is to develop a global strategy for diet and physical activity in close collaboration with member states, many agencies and organizations that can carry out work that can meaningfully contribute to global nutrition strategy for NCD prevention.

The World Health Organization's work will concern three levels:

1. technical support and advocacy (science-based, evidence-based for interventions and policies),
2. work through Member national and regional programs, state policies, and
3. global initiatives and activities.

For the latest science-based advocacy, WHO and FAO organized in January 2002 a large expert consultation on 'Diet, nutrition and prevention of chronic diseases'. This meeting reviewed the latest evidence between nutrition and major NCDs and gave recommendations on population-based nutritional guidelines. The draft report was widely commented on by experts and various stakeholders.

The World Health Organization's global nutrition strategy will emphasize the work on a global level because of the increasingly global background of dietary trends. The work of the food industry, global marketing, international trade and supranational communication (internet, sky channels, etc.) all mean that the possibility of individual nations to promote healthy nutrition is limited.

Thus national policies and programs should be strongly supplemented by global initiatives to put health and healthy

nutrition effectively to the global agenda. This calls for a level of WHO leadership that we are prepared to take, but only in broad collaboration and partnerships. Success in these actions are measured in improvements in global health that can be rarely matched by other possible measures.

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