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Editorial Open Access

Non-Communicable Diseases (NCDs): A Global Challenge

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Editorial

Economic development, education, food security and access to health care and immunization programs in developed countries have resulted in dramatic decreases in under nutrition related diseases. Unfortunately, numerous factors have also led to unhealthy behaviors, inappropriate diets and lack of physical activity which has intensified the development of chronic diseases also known as non-communicable diseases (NCDs). These NCDs are now the main contributors to the health burden in developed and developed countries. In 2002, 28.2 million global deaths (58.6%) were from NCDs. In the same year the predicted mortality for 2020 was 49.6 million (72.6% of all deaths). This is an increase from 448 to 548 deaths per 100,000, despite an overall downward trend in mortality rates. Although the burden will fall increasingly on developing countries, NCDs remain the major cause of death in developed countries.

The nutritional quality and quantity of foods eaten and nutritional status are major adaptable factors in promoting health and well-being in preventing disease and in treating various diseases. It is widely accepted nowadays that our nutritional status influences our health and risk of both infectious and non-communicable diseases. But, it is also accepted that billions of people in both developed and developing countries suffer from one or more forms of malnutrition contributing to the global burden of disease. Mankind has an inherent preference for palatable, sugary, salty, fatty and smooth finely textured, refined foods. These foods are mostly energy-dense and low in micronutrients. Food production, processing, manufacturing, marketing and promotion have responded to this preference by making high energy-dense foods available at increasingly affordable prices. This has led to changes in food consumption patterns which unfortunately coincided with more sedentary and less active lifestyles. The resultant overnutrition of especially macronutrients is the major cause of obesity with a risk factor for many of the non-communicable disease (NCDs) such as type 2 diabetes, coronary heart disease, stroke, hypertension, dental disease, osteoporosis, and some forms of cancer. Developing countries now suffer from a double burden of nutrition-related diseases because of the coexistence of under and over nutrition. This dual burden is further exacerbated by the HIV/AIDS and TB pandemics in these countries.

The NCDs that are related to diet and nutrient intakes are obesity, hypertension, atherosclerosis, ischemic heart disease, myocardial infarction, cerebrovascular disease, stroke, diabetes type II, osteoporosis, liver cirrhosis, dental caries, and nutrition-induced cancers of the breast, colon, and stomach. They develop over time in genetically susceptible individuals because of exposure to interrelated societal, behavioral, and biological risk factors. Also, tobacco use, alcohol abuse, and physical inactivity, an unhealthy or inappropriate diet is an important modifiable risk factor for NCDs. Diet, therefore, plays a major role in prevention and treatment of NCDs. NCDs are sometimes called "chronic diseases" but some infectious diseases such as HIV/AIDS and tuberculosis are also chronic. They have also been called "diseases of affluence," as they are more common in lower socioeconomic groups. Some scientists have a problem with the term "non-communicable" because lifestyles, including diets, are transferable between populations. The term "non-communicable" should therefore be seen as no transfer of an infectious agent from one organism to another. Because of its first emergence in "Westernized" societies and associations with Western lifestyles, it is often called "Western" diseases. It is becoming more prevalent in developing countries in other parts of the world. Another mistaken belief is that it is a group of diseases affecting only older people. The risk factors for NCDs accumulate throughout the life course – from infancy to adulthood, and manifest after decades of exposure. The factors are interrelated and form a chain of events starting with societal factors such as socioeconomic status and environments that influence behavior leading to the development of biological risk factors that cause the NCDs. The biological risk factors often cluster together. For example, obesity is associated with insulin resistance, hyperlipidemia, and hypertension which all contribute to the development of both cardiovascular disease and diabetes. Cardiovascular disease is furthermore one of the complications of untreated diabetes.

The evidence that diets and specific nutrient deficiencies and excesses influence the development of NCDs and may therefore be

used in prevention and treatment is hard. It comes from extensive research which collectively gave convincing evidence of the relationships between nutrition and NCDs: first, from ecological studies which compared different populations, the effects of migration of populations, food availability during economic development, and differences in dietary and nutrient intakes. Second, numerous epidemiological studies have established the associations between diet and biological risk factors of NCDs. Third, interventions with specific nutrients and foods in placebo-controlled trials using both healthy and diseased subjects confirmed the relationships seen in epidemiological studies. And last, molecular and genetic research has elucidated many mechanisms through which diet and nutrients affect genetic mutation and expression, adding to our knowledge of how nutrition influences NCD development. This body of knowledge has led to several sets of international dietary recommendations and guidelines to reduce the burden of nutrition-related NCDs. These generic recommendations could be used as the basis for the development of country specific strategies and food-based guidelines for dietary prevention of NCDs.

The complex chain of events where behavioral and lifestyle factors influence the development of the biological risk factors for NCDs emphasizes the need for a multisectorial approach in which all factors in the chain are targeted throughout the life course. In addition to the medical treatment of some biological risk factors and of the NCD itself convincing that primary prevention is possible, cost effective, affordable, and sustainable. In the developed world, early screening and diagnosis, and access to health care make primary prevention more feasible than in many developing countries. However, overcoming the barriers to increase physical activity and changing dietary behavior towards more prudent, low-fat, high-fiber diets may be more difficult. The strategies and programs to prevent NCDs would be similar in developed and developing countries, although the context and specific focus of different interventions may vary. Because the future burden of NCDs will be determined by the accumulation of risks over a lifetime.