



# ***Movement and Nutrition in Health and Disease***

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| Editorial

**Movement and nutrition play a pivotal role in the promotion of long-term health and the prevention of chronic disease. Obesity and physical inactivity are among the leading causes of premature death, while lifestyle factors such as exercise and healthy eating can reduce the risk of becoming obese and developing related diseases. Movement and nutrition may therefore be able to assist in the prevention and therapy of chronic diseases. Regular physical activity and better dietary choices are effective means of extending not only lifespan but also healthspan.**

**Healthy nutrition is important throughout life, and diet is the most important risk factor of illness worldwide. Moreover, childhood obesity has become a global health crisis. While high body-mass index and high fasting plasma glucose contribute substantially to the rising burden of disease, they also provide promising opportunities for intervention. In addition, mounting evidence suggests vital relationships between nutritional quality and mental health. Approaches tackling dietary improvements include community-based health promotion, school-based interventions, mass media campaigns, open online platforms and policies sanctioning unhealthy food choices.**

**The high prevalence of sedentary behavior and physical inactivity is a major health risk and a leading cause of death worldwide. The extensive health benefits of a physically active lifestyle are well established. Exercise is a viable way to help prevent and combat many chronic diseases, and an increase in physical activity could markedly improve health worldwide. A challenge in this context is the promotion of an active lifestyle, including the initiation of and adherence to effective exercise and sport programs.**

As early as in ancient China and Greece, physicians emphasized the special role played by diet and exercise in health and wellbeing. In modern times, socioeconomic development and an ageing population are contributing to an increase in health risk factors such as low physical

activity and high body-mass index. The Global Burden of Disease Study 2015 has found that diet is the most important risk factor for illness worldwide. Although underweight remains a major problem in many parts of the world, more people are obese than underweight globally. A disability-adjusted life year quantifies the burden of diseases, injuries, and risk factors, and can be thought of as one lost year of "healthy" life. Across health outcomes in the population, attributable disability-adjusted life years are highest for non-communicable diseases. Risk assessments have identified several groups of risk factors that deserve policy attention. Major global risks showing great opportunities for intervention include high systolic blood pressure, high cholesterol and diets high in sodium. Two major risks, high body mass index and high fasting plasma glucose, are increasing in prevalence at a particularly alarming rate. A childhood obesity epidemic, which is facing many countries worldwide, poses a significant public health challenge for the 21st century. Overweight children are likely to be obese in adulthood and to have a higher risk of developing chronic diseases. A study of trends in obesity found that approximately one in five people will be obese by 2025. Since overweight, obesity and related diseases are largely preventable, prevention needs to become a high priority.

While most physicians and scientists agree that good nutrition is a mainstay of physical health, its importance with respect to mental health is less commonly recognized. In recent years, however, growing evidence has revealed a significant relationship between quality of diet and psychiatric disorders. Many nutrients have been linked to brain development and functioning, and nutrition appears to be a key factor in the high incidence and prevalence of mental disorders. The association between unhealthy diet and impaired mental health suggests that dietary improvement may have the potential to assist in the prevention and management of common psychiatric disorders.

A wide array of options are available to improve dietary habits and nutrition. Early education with respect to nutrition is essential, since childhood eating patterns affect health and wellbeing across the lifespan. Online learning platforms offering integrated nutrition education and cooking instruction may have the potential to improve eating behaviors and meal composition. Since prevention science including nutrition and diet is widely neglected by physicians, better education and training of clinicians in this regard should become compulsory. With respect to its fight against sugar, the World Health Organization has called for governments to ban junk food advertising and to introduce subsidies for fruits and vegetables and taxation of unhealthy foods, with a particular emphasis on sugary beverages.

While a healthy diet has been acknowledged to be effective in the prevention and therapy of non-communicable diseases, the importance of an active lifestyle has long been neglected. Urbanization, mechanization and motorized transport have caused substantial changes in physical activity throughout the world. Physical inactivity has been recognized by the World Health Organization as one of the leading global risk factors for morbidity and premature mortality, and physical activity is considered by the United Nations to be a cornerstone for combating non-communicable diseases.

The significance of physical activity remains underestimated despite compelling evidence of its protective effects. Physical activity is a core determinant of energy expenditure and therefore fundamental to weight control, even though it may not fully counter the effects of a high calorie diet. A growing body of evidence points to beneficial effects of exercise, including a decreased risk of cardiovascular disease, stroke, obesity, diabetes, cognitive decline, depression and overall mortality. Since people may benefit from even modest exercise, physical activity has great potential to improve health. The benefits of a physically active lifestyle extend beyond mere health effects and include improvements in physical and mental wellbeing, social relationships and quality of life. Movement based learning and educational processes can contribute to cognitive, emotional and social development during childhood and adolescence. Physical exercise needs to become an integral part in the prevention, management and rehabilitation of diseases. Consequently, the pandemic of physical inactivity should be a public health priority in order to promote health and to reduce the burden created by chronic diseases.

Physical activity is an individual, social, cultural, environmental and political challenge. A major focus for health professionals and public health efforts should be to induce the behavioral shifts required to reduce sedentary time and to increase exercise, producing long-term alterations in patterns of physical activity. Many evidence-based approaches, including school-based physical education and community-based health promotion, have been demonstrated to increase physical activity and to reduce disease risk factors. Outside the health sector, environmental factors such as urban planning, transportation systems and recreational areas influence physical activity levels. In this context, policies are required to provide supportive environments at the population level.

Basic research can investigate the physiological mechanisms underlying the health-related effects of movement and nutrition. Evaluation studies are required in order to assess the efficacy and cost-effectiveness of dietary and physical activity interventions. Another important avenue of research is whether such programs achieve ecological validity. Many approaches are effective in highly controlled research settings, but their efficacy in regard to sustained health effects needs to be shown in multiple community sectors. For example, school-based interventions can support students not only in learning about but also in practicing healthy behaviors related to eating and physical activity. Public health care practices, such as community programs using mass media campaigns, have shown promise in raising awareness and leading to behavior change.

In summary, movement and nutrition have the potential to assist in the prevention and management of chronic diseases at the individual and population levels. The resulting extension of lifespan is associated with an increase in healthspan. Major scientific and political goals concerning the importance of movement and nutrition in health and disease include the promotion of public awareness and debate, the dissemination of knowledge, the exchange of information between scholars, physicians and the public, the provision and evaluation of educational programs, the initiation of research projects with both individual and societal impact, and the development of policies addressing the risks that increasingly contribute to the global burden of disease.

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