

VOLUME 30: PUBLIC HEALTH INTERVENTIONS AND NUTRITION AS A PREVENTATIVE HEALTH TECHNOLOGY

Irene Lenoir-Wijnkoop

Public Health Nutrition, Faculty of Science, University of Utrecht, Utrecht, The Netherlands

In the wake of the UN Summit on non-communicable diseases (NCDs) (1), the subject has become a priority on most health agendas and scientific publications in this area have increased considerably over the past few years. NCDs are a threat, both for the sustainability of public health structures and for the well-being of the general population worldwide. Many risk factors have been identified as preventable and the determining role of lifestyle habits, such as physical exercise and food, in the pathogenesis of NCDs is now generally acknowledged.

The awareness that nutrition is important for human health is not new; it existed already in ancient civilizations as illustrated by works from the *Corpus Hippocraticum*. However, it was only during the second half of the 18th century that scientists such as Joseph Priestley and Antoine Lavoisier started to investigate how the organism metabolizes food for energy and body functions. They laid the foundation of what became during the last century the discipline of Modern Nutrition.

The development of Public Health as a distinct discipline followed a similar course. Once more, the ancient Greeks were among the first to understand that there is a direct relation between environment and health. At the time of the industrial revolution, characterized by an increase of unhealthy living conditions in urban communities, health gradually started to become a public priority (2). The first definition of Public Health has been proposed less than a century ago, in 1920 as « The science and art of preventing disease, prolonging life, and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals » (3). Later, WHO added that Public Health « aims to provide conditions in which people can be healthy and focus on entire populations, not on individual patients or diseases » (4).

The field of nutrition is rapidly evolving from an empiricism-based practice to a science-based discipline. After the progress in our knowledge on the nutritional needs of macro- and micronutrients during the 20th century, the last decades have witnessed a shift from research in basic nutrition requirements to research in health enhancing nutrition.

Scientists have started to actively investigate the influence of nutrition on health and disease. The resulting rapprochement between nutrition and medical sciences has been strengthened by the many protocols for nutrition intervention trials, designed in accordance with good clinical practice (GCP) standards. The advent of systems biology and integrated omics approaches, has further contributed to a better understanding of the multiple interdependent physiological and metabolic processes underlying the interactions between food constituents and body functions.

That notwithstanding, beyond the clinical and laboratory setting we are only just beginning to apprehend the ins and outs of nutrition. Many other aspects will have to be taken into account, if we want to fight efficiently the nutrition-related part of the NCD epidemics. Indeed, everyday food intake of a non-diseased population is driven by lifestyle, taste, genetics, psychosocial and socio-economic factors, while influenced by personal perception of pleasure, convenience and familiarity. This multi-dimensional character of the food-environment represents a tremendous challenge when aiming to evaluate the potential impact of health promoting strategies.

An important step forward in the efforts to conduct meaningful assessments and obtain high quality evidence in the field of public health nutrition has been made earlier this year, when the HTAi Society formally recognized nutrition as a health technology. This offers a concrete opportunity to elaborate international standards and contextual research methods which will incorporate the multiple particularities of the nutrition field. Some of the well-established methodologies will need to be adapted or redesigned for developing appropriate measurement tools. For example, cost-effectiveness is an important element in health-care decision making, whether it concerns the management of health care or prevention. Although this has facilitated resource allocation and improved insight in the real value of health-care interventions, it remains essentially oriented towards the payer perspective, reimbursement issues and medical treatment guidance. But it represents not necessarily the most appropriate approach in the daily environment of food purchases, motivated

by individual preferences and with multiple confounding factors including supply and affordability.

Even if the NCD goal will be trans-generational and thus exceeds the scope and the lifetime of the average individual, a better understanding of these motivations can provide an excellent lever for inducing behavior changes. A trans-disciplinary endeavor, including biomedical skills as well as psychosocial research approaches, will be mandatory in setting the right balance between quantitative and qualitative measurements. The resulting outcomes will be a major asset in shaping convincing arguments and attractive incentives for the consumer, in spite of the very long-term horizon. The general public is more and more health-conscious, using Internet and social media as easily accessible and frequently consulted sources of information. Although this phenomenon further complicates the picture, it should also be seen as an opportunity for health education programs. It is a benefit for society to have more knowledgeable citizens, but only if the information provided is reliable and useful for the (often naïve) end-user.

Nutritional assessment in the general population is a real challenge, due to the need to incorporate the many multifacto-

rial effects, numerous variables and other aspects of uncertainty. Healthcare science alone has proven insufficient in an area as complex as daily food intake. Reliable evidence datasets have to be built on a principle of fit-for-purpose in the real world setting. With the creation of the Interest Sub-Group INPHORM (Impact of Nutrition on Public Health Outcomes Research & Measurement) (5) within the HTAi organization, it becomes possible to start elaborating on methods in a multidisciplinary approach. Special focus will be on advancing research and measurement of the socio-economic impact of preventative nutrition interventions, from the individual and societal perspective.

REFERENCES

1. <http://www.un.org/en/ga/ncdmeeting2011/>
2. Ashton J, Ubido J. The healthy city and the ecological idea. *Soc Hist Med*. 1991;4(1):173-80.
3. Winslow C-EA. The untilled fields of Public Health. *Science*. 1920;51(1306):23-33. doi:10.1126/science.51.1306.23. PMID 17838891.
4. <http://www.who.int/trade/glossary/story076/en/>
5. <http://www.htai.org/index.php?id=782>