Public Nutrition: An Emerging Paradigm

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The field of public nutrition originally appeared in the scientific literature in the mid-1990s.¹ While it first evolved from an effort to tackle the problems of food insecurity and malnutrition in developing countries, it is now making headway in industrialized countries, notably in the US and Canada.²⁻⁵ Arising largely out of a preoccupation with the very slow progress in improving the nutrition conditions of large segments of the population, it aims to address these at the population as opposed to the individual level, and to do so through health promotion rather than through a biomedical approach.

The field of public nutrition

Public nutrition largely shares the premises, objectives and key elements of the 'population health' strategy,⁶⁻⁸ but applies them specifically to the resolution of nutrition problems (Figure 1). Both aim to maintain and improve the health or nutrition status of the entire population and to reduce inequities between population groups in these areas. The term 'public' in public nutrition reflects clear intentions. It refers to work i) in the interest of the public; ii) with the participation of the public; and iii) with all sectors involved in society, not just the health sector, nor mainly the health sector, though for the benefit of population health and nutrition.

Public nutrition targets research, training and intervention. In line with health promotion,⁹ it focusses not only on an assessment of the problems and the analysis of their determinants but also, and above all, on the concerted action required by civil society, the private sector and the government to solve them. This leads to analyzing and recommending policies and programs which target the environment, social inequity and living conditions, as well as the empowerment of individuals to adopt healthy food habits and to exercise better control over their health generally.

Public nutrition encompasses the areas of "public health nutrition", "community nutrition" and "international nutrition", and extends beyond them. The major share of the nutrition problems of concern in society require action outside of the health sector, particularly with regard to food systems. Hence the identification with public health may be too narrow, in spite of recent efforts to broaden its meaning.¹⁰ The resolution of nutrition problems also requires more work on aspects related to public policy, a focus not immediately evident in 'community nutrition'. And finally, problems that were once associated with developing countries now loom large at home, and vice versa; 'international' nutrition does not reflect this.

La traduction du résumé se trouve à la fin de l'article.

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Raison d'être

The nature and magnitude of nutrition-related problems and the seriousness of their consequences, demand a clear departure from 'business as usual'. In spite of the tremendous amount of biological knowledge accumulated over the last decades, there is worldwide ever more obesity, diabetes and cardiovascular disease,^{11,12} while food insecurity is rampant and micronutrient deficiencies are slow to decline.¹³

Nutrition-related problems contribute significantly to the burden of morbidity, incapacity and mortality in the world.^{11,12} Malnutrition is directly or indirectly involved in half of childhood deaths in developing countries.¹⁴ Even in industrialized countries, the WHO estimates that the prevention of the major risk factors for health – a great majority of which are nutrition-related – could translate into a gain of five years of disability-free life expectancy over the next two decades.¹² It is important to understand how to prevent these problems to accelerate their resolution in a globally sustainable manner; this is the thrust of public nutrition.

In Canada, for instance, the environment – notably the food and the commercial environment – as well as living conditions make it difficult for many Canadians to adopt healthy lifestyles and food habits. Hence our major health problems are nutrition related: cardiovascular diseases, certain forms of cancer, type II diabetes and obesity.¹⁵ Food insecurity affects over 10% of Canadians¹⁶ while deficiencies in iron and other micronutrients still prevail among disadvantaged groups.^{17,18} Other problems result from suboptimal infant feeding and the poor nutritional status of the elderly.¹¹

In developing countries, there is widespread undernutrition, micronutrient deficiencies (iodine, vitamin A, iron, zinc), and growth retardation (stunting),^{12,13} while nutrition-related chronic diseases are rapidly increasing.¹² In addition, fetal malnutrition has been shown to increase the risk of obesity, cardiovascular disease and adult-onset diabetes;¹⁹ poor populations, everywhere, are therefore doubly vulnerable.

Whether they relate to deficiencies or to chronic diseases, these nutrition problems are multifactorial in origin. Thus, a

number of disciplines outside the traditional health sector are called upon to resolve them: agriculture and food sciences, for example, as well as economics, political science, education, communication and other disciplines of the social sciences.

Effective intervention programs and policies must be based on a sound analysis of the causes or determinants of the problems and of the ways in which they interact. They also require a solid evidence-based corpus of data on the relevance and effectiveness of the proposed programs and policies. Such analyses and data are sorely lacking; this was identified as a serious constraint²⁰ to the implementation of the National Nutrition Plan for Canada.²¹ Whether the concern lies with changing food-related behaviours or the environmental factors that influence them, new knowledge must be developed.

Significance

Identifying public nutrition as a unified field will contribute to marshalling the efforts of all the key players who could play a role to accelerate the resolution of nutrition-related problems and to implement ethical and sustainable solutions. It should also contribute to strengthening training programs, to encouraging the financing of relevant research and to facilitating better linkages between intervention programs, training and research. Such linkages, while needed, are often weak or unplanned for. Thus the frequent recommendation to implement 'evidence-based practice' remains largely unfulfilled. It is therefore necessary to foster more action-oriented and theory-based research²² in order to inform intervention and training programs.* The experience gained as a result of sound interventions should in turn be actively sought to identify priority research topics and to establish appropriate training programs. Finally, action-oriented training should help to ensure the effectiveness of intervention programs and the acquisition of the skills necessary to carry out relevant research.

It is in this spirit that a public nutrition study group (GENUP) is being set up

* For example, to move beyond the KAP (knowledge, attitudes and practices) studies to foster changes in food habits.

Population Health Approach

Focus on the health of populations
Address the determinants of health and their interactions
Demonstrate accountability for health outcomes

Base decisions on evidence
Increase upstream investments
Apply multiple strategies
Collaborate across sectors and levels
Employ mechanisms for public involvement

Public Nutrition Approach

Focus on the nutrition of populations
Address the determinants of nutrition and their interactions
Demonstrate accountability for nutrition outcomes

Figure 1. Congruence of key elements of the 'population health approach' and the 'public nutrition approach' (adapted from ref. 7)

within the *Département des sciences des aliments et de nutrition* at Université Laval. A graduate programme in public nutrition has been in place there since 1997. In the *Département de nutrition* at Université de Montréal, public nutrition has been explicitly integrated into the architecture of the training and research programs, as illustrated in Figure 2. Note that public nutrition integrates all three broad topics: 'Nutrition and disease', 'Nutrition and the life cycle' and 'Food systems'.

The public nutrition approach will make it possible to increase the impact of current initiatives which aim to reverse the course of the major nutrition problems, but, above all, and on a more positive note, to promote nutritional security and health. It is by consolidating this approach that in the medium term and in the local context, the emergence of a string of measures such as the following can be envisioned:

- a better connection between people's needs related to food security and the interventions implemented to address them in various contexts;
- the concrete development of conditions favourable to healthy food habits in our schools; that is, nutrition education based on sound data as to the behaviours to be influenced and the methods to be used, with a simultaneous offering of appropriate foods, along with actions targeting other determinants of health, including physical activity.

Globally, as locally, public nutrition should also lead to developments such as:

- increased consideration of health concerns in the production, transformation and distribution of food, alongside that of commercial interests;
- interventions that try to address simultaneously the prevention of nutrition-related chronic illnesses and

disorders linked to nutritional deficiencies – for developing countries, this is a major challenge;²³

- careful evaluation of the various interventions and policies, with a view to generating reliable data on the key factors underlying their effectiveness.

Public nutrition emerged in response to the drawbacks of approaches that are often too individualistic, 'bullet-style', empirical or technological to address complex societal problems. The proposed approach will likely contribute to the impact of interdisciplinary efforts on food and nutrition security. Public nutrition does not intend to replace the other areas of nutrition, but rather serves to unify and strengthen their contribution to the nutritional health of populations.

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Topics Levels (areas)	Nutrition and disease	Nutrition and the life cycle	Food systems
Cells, organs, nutrients: <i>FUNDAMENTAL NUTRITION</i>	Biochemistry; physiology; anatomy; genetics		Food science
Individuals: <i>APPLIED NUTRITION</i>	Clinical nutrition	Normal (preventive) nutrition	Consumer behaviour
Communities, populations: <i>PUBLIC NUTRITION</i>	Epidemiology; Policies and intervention programmes; Consumption; Surveillance, evaluation, advocacy; Information, education, communication; Management of services and programmes		

Figure 2. Conceptual architecture of training and research programs, Département de nutrition, Université de Montréal

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