

# NUTRITION INFORMATION FOR PUBLIC HEALTH AND CLINICAL MEDICINE: TRAINING IMPLICATIONS

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## ABSTRACT

Information science provides the opportunity for health care professionals to deal with the need to actively apply nutrition science to their practice. To this end, the domains of public health and clinical nutrition should not be as demarcated as in the past. Prevention is as important as therapeutics in clinical work. A knowledge of disease processes and management need application in community programs. And, in any case, the health care system is pluralistic. The two most important deficiencies in nutrition information for health care professionals are a knowledge of food habits and science and the methods of making a nutrition assessment of the community or the individual. Combined with this is the general problem of the ability to critically appraise information. Experience indicates that learning around problems is the most useful way of learning. Therefore, providing opportunities for health care professional students to learn in the course of public health and clinical work should be paramount. The International Union of Nutritional Sciences has recently met this challenge by producing a manual of patient problems in clinical nutrition. These approaches will make the provision of nutrition information for health care professionals, in training or in practice, less curriculum-dependent, and more responsive to real needs.

## INTRODUCTION

The application of nutrition science to public health and clinical medicine is once again critically important. At various times great figures in medicine, from Chang Chung-Ching in ancient China (about AD 195), Hippocrates in ancient Greece (born about 460 BC), Maiomonides in the middle ages (AD 1135-1204), have appreciated the connections between the way we eat and our health. With the advent of Western scientific medicine, the recognition of the nature of respiration, energy metabolism, gut physiology, macronutrient and micronutrient requirements and utilisation brought with them fresh appraisals and renewed interest in nutrition and health. By the early 1950s, it seemed we knew it all and that what was required was an adequate food supply to deal with the major nutritional problems of developing countries. A lack of information about the way people were eating in developed countries and the changes in health patterns contributed to a delay in the appreciation of the potential for improving further human health through attention to diet (Hegsted, 1985). Moreover, false confidence about the state of food and nutrition knowledge diminished the pace of human nutrition research. And skills for nutrition assessment and nutrition support in medicine were set aside or not developed. Meanwhile, the community at large has always had a general sense of the importance of food in the maintenance of health and its concern has helped force the hands of medical science, public health and clinical medicine to reappraise the importance of food and nutrition. Again, however, because of lack of information in the public domain, misinformation, pseudo-science, quackery and exploitation in the field of nutrition have abounded.

Clearly, throughout the health care professions and in the public domain, nutrition information needs to be much more readily available so that appropriate research questions can be framed and so that, wherever possible, action can be taken in the areas of public health and clinical medicine.

## **NUTRITION INFORMATION**

Nutrition is a particularly multi-disciplinary subject and thus draws on a wide variety of data bases including those of food beliefs and habits, food composition, the basic medical sciences, public health sciences, the clinical sciences, agricultural sciences, food technology, education, sociology, anthropology, politics and economics. For the day-to-day operation of the public health worker and clinician, a core nutrition knowledge is required, as are skills. It is most likely that these will not have been acquired during primary training and, therefore, that, in the course of work, facilities need to be available for their acquisition. For trainees, pragmatically, working with existing curricula is more likely to succeed than to seek curriculum revolution.

## **PUBLIC HEALTH AND NUTRITION**

An understanding of the nutritionally related risk factors for chronic disease, such as atherosclerotic vascular disease, has allowed the prediction that for small changes in a majority of the population, large changes in public health might accrue (Hegsted, 1985).

For all this, the particular health risks of socioeconomic or educational disadvantage are now becoming apparent and this information about communities for whom public health programs are developed needs to be much more accessible (Dobson, et al., 1985; McMichael, 1985). This will allow the targeting of particular vulnerable groups.

## **NUTRITION IN CLINICAL MEDICINE**

The particular information challenges here are for medical graduates to see the relevance of nutrition in the development of disease and also to recognise the nutritional reversible components of established disease. To this end, the International Union of Nutrition Sciences (IUNS) and the World Organization (WHO) have produced a manual of patient problems in clinical nutrition for medical students which can be used in the course of clinical work and in an environment where clinical teachers may not themselves be formally trained in clinical nutrition (Wahlqvist and Vobecky, 1986).

As time goes on, more of these clinical nutrition case study experiences could be made available.

## **Combining Public Health and Clinical Nutrition**

There is a tendency for unnecessary and counter-productive demarcation to develop between public health and clinical nutrition. In reality, public health usually draws on the experience of disease seen in clinical work. Clinical nutrition also draws heavily on the recognition of associations derived from the public health arena. Moreover, the scope for preventive nutrition in the course of clinical nutrition work is great. Therefore, the integration and mutual availability of information from both areas is critical.

## **Health Care Professions and Nutrition**

We need to remind ourselves that, although the medical profession must adopt leadership as far as nutrition and health is concerned, the other health care professions involved are dietetics, nursing, dentistry, physiotherapy, clinical psychology, pharmacy.

## **MEDICAL TRAINING**

Nutrition information data bases can be responsive to recommendations for undergraduate curriculum content. Those from the National Health and Medical Research Council of Australia are shown below:

### **Check List of Nutrition Topics for Medical Schools: National Health and Medical Research Council of Australia, 1979**

- . Alcohol - metabolism and effects on tissues
- . Assessment of nutritional status (food intake measurements, clinical signs, anthropometry, biochemical tests)
- . Bacterial food poisoning
- . Carbohydrates in foods, and metabolism
- . Deficiency disease (xerophthalmia, beri beri, Wernicke/ Korsakoff, peliagra, nutritional anaemias, scurvy, rickets and osteomalacia, haemorrhagic disorders of the newborn)
- . Diet and dental disease
- . Diet in prevention and management of diabetes
- . Dietary fibre
- . Dietary goals and nutrition policies
- . Diets for inborn errors of metabolism
- . Electrolytes (nutritional aspects of Na, K, Mg, acid-base balance)
- . Energy expenditure, balance and regulation
- . Fats, essential fatty acids, effects of different fatty acids
- . Fluoridation
- . Food and cancer, cancer and nutritional status
- . Food contamination and pollution
- . Food habits in different groups of people
- . Food intolerances
- . Food processing and additives
- . Food standards and legislation
- . Fuels of the tissues
- . 'Health foods'
- . Historical landmarks in nutrition
- . Infant feeding
- . Interactions of food, nutritional status and drugs
- . Lactation and breast feeding

- . Megavitamin usage, 'orthomolecular medicine'
- . Metabolic adaptation to fasting, starvation, overeating
- . Metabolic balances
- . Minerals
- . Mycotoxins in foods
- . Nutrition and coronary heart disease
- . Nutrition and immunity
- . Nutrition and other degenerative disorders (gallstones, hypertension, diverticulosis, urinary tract stones)
- . Nutrition and pregnancy
- . Nutrition and the brain
- . Nutrition education
- . Nutritional deficiencies secondary to other diseases
- . Nutrition problems in Aborigines and other vulnerable groups
- . Obesity (epidemiology, aetiology, complications, comparison of methods for management)
- . Parenteral nutrition (nutrition for Intensive Care)
- . Protein - calorie (energy) malnutrition
- . Protein quality in foods and amino acid metabolism
- . Prevention of malnutrition
- . Recommended dietary allowances and requirements for nutrients
- . Toxicants naturally occurring in foods
- . Trace elements
- . Tube feeding (nutrition and Intensive Care)
- . Use and understanding of food tables
- . Use of diet modification in management of other diseases (renal, gastrointestinal, gout, hyperlipidaemia)
- . Vitamins (A, D, E, K, thiamin, riboflavin, niacin, pyridoxine, panthothenate, biotin, folate, B-12, C)
- . World food problems

(From: Wahlqvist, 1981)

**Those of the International Union of Nutrition Sciences are:**

- . Food habits and culture of the community
- . Nutrition-related diseases
- . Food science (chemistry, technology, hygiene)
- . Nutrient science (physiology and biochemistry of macronutrients and micronutrients)

- . Nutrition assessment, community and individual
  - Food intake (patterns, composition, adequacy of nutrient intake, methodology)
  - Medical history and examination, including anthropometry
  - Laboratory investigation
- . Preventive nutrition
- . Therapeutic nutrition
- . Nutritional support systems (oral, enteral, parenteral)

(From: Wahlqvist and Isaksson, 1983).

The various colleges responsible for postgraduate training in internal medicine, surgery, obstetrics and gynaecology, pathology, psychiatry and general practice, are beginning to formulate the requirements for nutrition knowledge and skills, and, again, nutrition information data bases must take these developments into account (Wahlqvist and Isaksson, 1983). The IUNS Committees on Medical Schools and Clinical Nutrition have proposed arrangements for the inclusion of clinical nutrition in specialist training (Wahlqvist and Isaksson, 1983).

Aside from these developments, those already in practice require access to courses and to this end a Graduate Diploma of Human Nutrition has been developed at Deakin University, available with distance education technology. A summary of the course units is as follows:

- . Principles of Nutrition
- . Food Science 1
- . Food Science 2
- . Applied Nutrition 1
- . Nutrition Education
- . Research Projects
- . Nutrition in Catering
- . Nutrition and Anthropology
- . Applied Nutrition 2.

This program began in 1986 and enrolled in the program are medical graduates, pharmacists, nurses (with the equivalent of a bachelors degree), teachers and food technologists. It is conceivable that modules of this program could be made available in other ways to user groups.

In the course of clinical work, doctors commonly scan updating journals. This impending educational activity provides a particular challenge for developers of nutrition information data bases.

## **NUTRITION INFORMATION DELIVERY IN CLINICAL PRACTICE**

This is usually different to the efforts to create simple messages in the area of public health. Individual counselling can provide opportunities to respond to patient heterogeneity (age, sex, education, socio-economic differences, family structure, other health needs and more), to justify management approaches, and to indicate limits to evidence. The latter is particularly important in preparing the way for reception of newer findings - inevitable as nutrition research proceeds.

## **FUTURE NEEDS**

There are several reasons why nutrition information needs will actively change. They are:

1. the effects of dietary guidelines themselves;
2. the changing age structure of the population;
3. the changing cultural mix with migration;
4. the effect of newer food technologies.

The latency periods of these effects are not known and nutrition information data bases will assist their determination.

## **SYSTEMS AND TECHNOLOGY**

We are now in an era where information arrives in various forms, print, electronic (audio, video/tv) and by computer and intelligent systems. It should not be expected that any one of these will stand alone, but we must examine the ways in which they can be best integrated to fulfil the challenges that nutrition now presents to improve human health.

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