SCIENTIFIC NUTRITION INFORMATION: ITS MANAGEMENT AND DISSEMINATION

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The new information imperative

This is unquestionably the information age, itself driven by technology, and with the profound capacity to generate, evaluate, manage and disseminate scientific knowledge. When combined with biotechnology, the resultant discipline of bio-informatics may shape the lives we lead, and the choices we make. Applied to food and health, the knowledge revolution ought to provide for vast opportunities to improved well-being, bodily function and longevity through food (1).

What is sobering, however, is that the "big questions" in human nutrition may be unanswered whilst we become pre-occupied by the simple reductionist approach of contemporary science. The dilemma is the relentless pursuit of the nutrient (or other food components) rather than the food or cuisine; of one nutritional pathway to a disease, rather than the several interlocking pathways; and with the quest for production or manufacture of the single commodity or food product with its specific health claim, rather than with ecosystems and overall health outcomes (2,3). Yet, as never before, the mathematical demands of integrative science are more readily met than when reductionist science was a more available alternative.

Only a small part of human knowledge, including that to do with food and health, is amenable to reductionist science. The task ahead is to enable the increasingly sophisticated level of scientific nutrition information to contribute to health and socio-economic outcomes (4).

The ongoing relevance of traditional information: its development, transfer and application

Traditional information has been adduced over many generations in a particular geographic or cultural setting. It will have been based on observation, speculation, trial and error, corroboration, and the search for explanation and meaning, all of these not too dissimilar to the current understanding of the scientific methods of hypothesis generation, testing and rejection. Dissatisfaction with traditional information by a contemporary society often stems from the belief system which has originated from the traditional evidence and the way the construct influences subsequent interpretation (5,6) but this, too, is what we now understand as a paradigm which may be shifted (7). The continuity of traditional information, with considered, astute and critical revision, is important to us all for the insight it provides about our origins, our behaviours, our relationships and our health, and the value it can accord sustainability and ecosystem integrity (2,8). Traditional learning methods, before there were any schools, provided invaluable resources for societal development (9). Highly successful food cultures, like that in Okinawa, place a great deal of emphasis on the maintenance of traditional information through social networking, ancestral reverence and festivities, which recite the knowledge (10).

Maternal literacy, food and health

Women, through the biological certainty of maternity, nurturing, relative longevity over men and generally keener appreciation of food and health matters than men, confer particular opportunities for relevant knowledge transfer between generations. For these and other reasons, maternal literacy has repeatedly been shown to have special value in health advancement and economic development (11,12). Successful food-based solutions to vitamin A deficiency and its sequelae, through the leadership of women, support this.

However, with improvement in life expectancy, more and more children have all four grandparents alive, and this provides much more opportunity to derive information from one's antecedent culture or cultures. This phenomenon intersects with the surge of discovery in the field of nutrition and ageing.

Evidence based nutrition

The recent interest in Evidence Based Medicine (EBN) is of great relevance to the field of food and health, as regulatory and health authorities seek to make and encourage scientifically-based decisions. For some time, planning authorities have used modeling approaches, which target priority outcomes, and these have been applied in the food area (13,14,15).

The broader application of modeling science to the recognition of preferred ways of eating is underway. Trichopoulos and colleagues have documented, for example, that a measure of traditionality of the Greek diet allows the prediction of survival amongst older Greeks in different geographic settings and amongst other ethnic groups as well (16,17). The randomised placebo-controlled double-blind (RPCDB) (18) trial, while convincing for causality, is of limited value in establishing the role of food and food culture in health, because these variables are difficult or impossible to

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test in such a trial – yet they may be the more important issues (3,19,20). The corroboration and integration of different kinds of evidence, always important, is even more required in nutrition science.

Economic development through nutrition informatics

Both local food production and food trade have great potential for the simultaneous advancement of health and economic status. Whilst local ecosystems, with biodiversity, can maintain small populations on a moderate range of food stuffs, food trade often overcomes local food and food component deficits (like with seafood, n-3 fatty acids and iodine), through greater variety of food intake, and stimulates economic growth (8). Well-honed systems of governance, however, are required to enhance food security (9).

The particular value of information science is that knowledge is a renewable commodity and that it can allow growth with lesser degrees of adverse environmental impact. Applied to learning about and management of the food supply and the health care system, as well as to personal behaviours, nutrition informatics has considerable potential for economic development.

Towards healthier communities through nutrition informatics

In village, provincial and urban settings, both individuals and communities will have increasing access to telecommunications, Internet and multimedia facilities, along with oral traditions and print. This provides for a new generation of scientifically-based food, nutrition and health information at the individual and local level. Such information can be formatted in user-friendly, culturally-sensitive ways, with technologically appropriate devices, like the hand-held Palm Pilot.

The way forward might be to establish key centres in nutrition informatics and community development at strategic sites around the world. In this, the International Union of Nutrition Sciences (IUNS) may play an increasing role.

REFERENCES

1. **Kouris-Blazos A, Setter TL, Wahlqvist ML.** Nutrition and Health Informatics. 2001; *21*: 269-278.
2. **Wahlqvist ML, Specht RL.** Food variety and biodiversity: Econutrition. Asia Pacific Journal of Clinical Nutrition 1998; 7(3/4):314-319.
3. **Wahlqvist ML, Lukito W, Worsley, A.** Evidence-based nutrition and cardiovascular disease in the Asia-Pacific region. Asia Pacific Journal of Clinical Nutrition 2001; 10(2):72-76.
4. **Wahlqvist ML, Lukito W and Hsu-Hage BH-H.** Nutrition and Ageing in Development. In: Nutrition in the 90s: Policy issues. Edited by M. Biswas and Dr M. Gabr, Oxford University Press, Delhi, 1994:83-108.
5. **Farb, P. Armelagos G.** Consuming passions – The anthropology of eating. Washington Square Press Publication, New York, 1983.
6. **Wahlqvist, ML.** This I believe. pp 318-319. John Marsden (ed.). Random House, NSW, Australia, 1996.
7. **Kuhn, T.S.** Structure of Scientific Revolutions. University of Chicago Press, Chicago, 1997.
8. **Wahlqvist, M.L.** Prospects for the Future: Nutrition, Environment and Sustainable Food Production. Proceedings of the FAO Conference on International Food Trade Beyond 2000: Science-Based Decisions, Harmonization, Equivalence and Mutual Recognition. Melbourne, 11-15 October 1999. http://www.fao.org/docrep/meeting/x2638e.htm
9. **Wahlqvist, M.L., Kouris-Blazos, A, Savige, G.S.** Food security and the Aged. In: Ogunrinade A, Oniang'o R, May J (eds). Not by Bread Alone. Food Security and Governance in Africa. Toda Institute for Global Peace and Policy Research. South Africa: Witwatersrand University Press, 1999: 206-221
10. **Sho, H.** History and characteristics of Okinawan longevity food. Asia Pacific Journal of Clinical Nutrition 2001; 10(2):159-164.
11. **Mishra, V.K., Lahiri, S., Luther, N.Y.** Child nutrition in India. Natl Family Health Surv Subject Rep 1999; 14:35.
12. **Gopalan, C., Sharma, N., Sachdeva, H.P.S.** Relationship of Current Nutritional Status and Cognitive Functioning in 3-10 Year Olds Living in Slums. New Delhi: Nutrition Foundation of India, 1998.
13. **Wahlqvist, M.L.** Objective orientated project planning (ZOPP). South African Journal of Clinical Nutrition. 2000: 13 (1) Supplement.
14. **Wahlqvist, M.L.** The International Union of Nutritional Sciences and Africa in the new millennium. South African Journal of Clinical Nutrition. 2000: 13 (1) Supplement.
15. **Wahlqvist, M.L., Kouris-Blazos, A., Darmadi, I., Purba, M.** Nutrition and the elderly: a global perspective. South African Journal of Clinical Nutrition. 2000: 13 (1) Supplement.
16. **Trichopoulou, A., Kouris-Blazos, A., Wahlqvist, M.L, Gnardellis, C., Lagiou, P., Polychronopoulos, E., Vassilakou, T., Lipworth, L. and Trichopoulos, D.** Diet and overall survival of the elderly. British Medical Journal 1995; 311:1457-1460.
17. **Kouris-Blazos, A., Gnardellis, C., Wahlqvist, M.L, Trichopoulos, D., Lukito, W. and Trichopoulou, A.** Are the advantages of the Mediterranean diet transferable to other populations? A cohort study in Melbourne, Australia. British Journal of Nutrition 1999;82:57-61.
18. **Trichopoulos, D., Lagiou, P., Trichopoulou, A.** Evidence-based nutrition. Asia Pacific Journal of Clinical Nutrition 2000; 9(Supplement): S4-S9
19. **Wahlqvist, M.L., Hsu-Hage, BH-H. and Lukito, W.** Clinical trials in nutrition. Asia Pacific Journal of Clinical Nutrition. 1999; 8(3):231-241.
20. **Trichopoulos, D., Lagiou, P. and Trichopoulos, A.** Evidence-based nutrition. Asia Pacific Journal of Clinical Nutrition. 2000; 9(Supplement):S4-S9.