Editorial

Population-based studies of nutrition and health in Asia Pacific elderly

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The systematic observation of food habits and health amongst the elderly, both cross-sectionally and longitudinally, in the Asia Pacific region is increasing as reflected in the recent collective report of a number of intake and health variables in Taiwanese communities. Most studies are of Chinese and Japanese-speaking populations, with some from elsewhere in Northeast Asia (notably Korea) and Southeast Asia (notably the Philippines, Indonesia, Malaysia and Singapore). These, and other international studies, demonstrate that older people can eat in various ways and yet achieve longevity and minimum morbidity, provided they remain physically and mentally active and eat a variety of relatively intact foods, including fish and pulses (lentils, legumes, beans). Such studies are the foundation of a new generation of food and health policy for the aged, with reference to EBN (evidence-based nutrition) and reflected in FBDGs (food-based dietary guidelines) which acknowledge cultural difference and support sustainable food systems.

摘要

最近出版的一系列台灣地區老人飲食及健康相關報告，反映出在亞太地區有越來越多關於老人的飲食習慣及其健康的橫斷性及縱貫性系統觀察。大部分的研究族群為使用中文或日文者，其他地區包括東北亞（尤指南韓）及東南亞（尤指菲律賓、印尼、馬來西亞及新加坡）。上述及其他的國際研究指出，假如老年人能夠保持身體及心智的活躍，並且攝取包括魚類及豆類（扁豆、豆莢及豆仁）等不同種類而且相對完整的食物，即使飲食的方式不同，同樣可以達到長壽及最少的病痛的結果。這些研究是新一代老人飲食及健康政策的基礎，即所謂的EBN（實證營養）。考量到文化差異及支持食物系統存續的FBDGs（以食物為基礎的飲食指南）為其中例證之一

Key Words: elderly, indigenous, Australia, China, Fiji, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Taiwan, diet, nutritional status, FHILL (Food Habits In Later Life), health, chronic disease, NRD (nutritionally-related disorders and diseases), policy, EBN (evidence-based nutrition), FBDGs (food-based dietary guidelines), IUNS

The recent publication of the "Elderly Nutrition and Health Survey in Taiwan (1999-2000)"[1] shortly before the United Nations "International Day for Older People" on October 1, 2005 was a land-mark for such studies internationally and in the Asia Pacific region. It illu-strates the advantage of bringing together otherwise dis-parate kinds of information, for and between commu-nities, in the interests of their health and advocacy for it. As a representative cross-sectional study, it canvassed a number of emerging issues in this field including:

1. The situation for indigenous elderly,[2,3] which appears only to have been tackled in the Asia Pacific region previously for indigenous Australians in the Kimberley area in northern of Western Australia[4] and Polynesian of New Zealand.[5]
2. The differential nutritional status of population sub-groups, especially by food culture.[6-10] This has been explored in China for urban and rural elderly in Tian-jin,[11,12] and, comparatively, for urban (Beijing), agri-cultural (Huairou), pastoral (Tuoli), semi-farming and semi-pastoral rural (Xinyuan), and coastal dwellers (Baoshan and Rongcheng) in China.[13, 14] A theme in these studies is that the diversity of food is greater when trade and communication is greater, notably in cities, with implications for how food patterns affect health; and that there may be more than one set of foods which allows optimal health.[15]
3. The particular risks and advantages of rice-based diets for the elderly, in regard to dietary fibre (which tends to be low, although resistant starch can be high de-pending on food preparation),[16] micronutrients (which may be compromised for vitamins B_1, B_2, B_6, folate and B_{12} and low for minerals such as magnesium, with controversy about calcium because of food cultural modulation through, for example, vitamin D, sodium and isoflavone status).[16] This is similar for Indonesia, even 100 years after the discovery of thiamin by Eijkman in Java.[17,18]
4. The risk of nutritionally-related, so called chronic, di-sease (NRD), like diabetes in relation to magnesium status[19]; and macrovascular disease[20] and bone health[21] in relation to homocysteine status. Of interest, the Taiwanese study provides the opportunity to examine the link in population between homocysteine and osteoporosis, but this is yet to be done.

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5. The potential importance of ethnic difference and/or genetic polymorphisms in NRD expression - as with highly prevalent hyperuricemia (which may have either "health marker" or "metabolic stress response" relevance).[8]
6. The relationships between indices of wellness, health and nutritional status,[3,13,22,23] first explored in the Asia Pacific region by Garry Andrews and colleagues for WHO in Fiji, Korea, Malaysia, and the Philippines.[24]
7. The importance attached to diet and supplements by elderly people.[7,25-28]

Presently, there are published data, of a cross-sectional kind, for a number of elderly communities through out the Asia Pacific region; these include Austra-lia,[5,13,29,30] China,[10-14,31,32] Fiji,[24] Indonesia,[17,18,33] Japan,[13,34-36] Korea,[37] Malaysia,[24,38] New Zealand,[5,39,40] the Philippines,[13,22,23] and Taiwan.[1,41,42] These will prove more valuable as they are repeated and trends are appreciated. However, more longitudinal cohort studies for determinants of mortality (at least all-cause, if not disease-specific, using national health statistics) and morbidity are required. The FHILL (Food Habits In Later Life) studies of the IUNS (International Union of Nutritional Sciences)[13,22,23,43] (www.healthyeatingclub.org/APJCN/FHILL) have, for some cohorts in the Asia Pacific, been longitudinal (Australia, Japan) and more could follow. These studies have shown clearly that, beyond age 70, diet still matters. Diet is also relatively very important compared with other major determinants of mortality, some unchangeable like age self and gender, with other lifestyle factors also high on the list (notably smoking and physical activity), together with increasing frailty, reflected in cognitive and physical impairment.[43] Of the various food commodities, legumes (lentils, pulses, beans) and fish have particular health protective pro-perties in their own right.[15] But, otherwise, the diet as a whole is more important than single foods or nutrients in determining health outcomes.[44] The Taiwanese studies could now be pursued in follow-up at or beyond five years since the study commenced. Mortality rates amongst the aged are high enough to allow confidence that meaningful answers will be found, even though the sample size of such population studies might be less than for younger cohorts.

Another value of such cohort studies is that they allow for a greater account of social and environmental factors. They, therefore, provide the basis for intelligent policy intervention to decrease nutrition vulnerability amongst the aged.

Even though the Asia Pacific region is immensely populous, with rapidly aging populations, and increasing (but not inexhaustible) resources, it needs to work out the peculiar regional nutritional needs for the aged. These needs can be translated into nutritional policy, which usually includes dietary guidelines. WHO (World Health Organisation) has produced a nutritional manual for the aged supported by the UN General Assembly in Madrid 2002.[45] It developed FBDGs (food-based dietary guidelines) for the aged, building on the WHO-FAO Cyprus report of 1996.[46]

For the Asia Pacific region, an international perspective is most helpful. It is reflected in the longitudinal SENECA studies[47-49] and in the companion FHILL studies.[13,22,23] Other relevant international longitudinal studies include that in Baltimore, USA,[50-52] the Harvard Grant Cohort study[53] and the Swedish studies in Gothenburg.[54] Other important ongoing international studies, which may become longitudinal, are those in South Africa[55] and Guatemala.[56,57] They all provide a wealth of breadth and depth, enabling policy to be set locally and, to some extent, globally.

References

1. Chen WJ, Pan WH, Lee MS (eds). Elderly Nutrition and Health Survey in Taiwan (1999-2000). Asia Pac J Clin Nutr 2005; 14: 202-292.
2. Pan WH. Preface: Elderly Nutrition and Health Survey in Taiwan (1999-2000). Asia Pac J Clin Nutr 2005; 14: 202.
3. Pan WH, Hung YT, Shaw NS, Lin W, Lee SD, Chiu CF, Lin MC, Chen SY, Hong CM, Huang TY, Chang HY, Tu SH, Chang YH, Yeh WT, Su SC. Elderly Nutrition and Health Survey in Taiwan (1999-2000): research design, methodology and content. Asia Pac J Clin Nutr 2005; 14: 203-210.
4. Kouris-Blazos A, Wahlqvist M. Indigenous Australian food culture on cattle stations prior to the 1960s and food intake of older Aborigines in a community studied in 1988. Asia Pac J Clin Nutr 2000; 9: 224-231.
5. Horwath CC, Campbell AJ, Busby W, Robertson C, Worsley A. Stidues in Adelaide, south Australia and Mosgiel, New Zealand. Section 4 (20). In: Wahlqvist ML, Hsu-Hage BHH, Kouris-Blazos A, Lukito W, IUNS study investigators (eds). Food Habits In Later Life. A Cross-Cultural Study. (CD ROM): United Nations University Press & Asia Pacific Journal of Clinical Nutrition, 1995. also available on-line at: www.healthyeatingclub.org/APJCN/FHILL/index.htm
6. Chen KJ, Pan WH, Shaw NS, Huang RF, Lin BF. Association between dietary folate-rich food intake and folate status of elderly Taiwanese. Asia Pac J Clin Nutr 2005; 14: 244-249.
7. Chen SY, Lin JR, Kao MD, Hang CM. The usage of dietary supplements among the elderly individuals in Taiwan. Asia Pac J Clin Nutr 2005; 14: 230-237.
8. Lee MS, Lin SC, Chang HY, Lyu LC, Tsai KS, Pan WH. High prevalence of hyperuricemia in elderly Taiwanese. Asia Pac J Clin Nutr 2005; 14: 285-292.
9. Lin W, Lee YW. Nutrition knowledge, attitudes and dietary restriction behaviour of Taiwanese elderly. Asia Pac J Clin Nutr 2005; 14: 221-229.
10. Wang Y, Roe DA. The difference in food and nutrient intake between smokers and non-smokers in an elderly Chinese population in Beijing, China. Asia Pac J Clin Nutr 1994; 3: 89-92.
11. Side Xi, Mingtang Sun, Shuquan Z, Zhaomei M, Yinzhi X, Yujun L, Jun W, Kui J. Anthropometric and dietary survey of elderly Chinese. Br J Nutr 1991; 66: 355-362.
12. Xi SD, Sun MT. People, place, the living environment and the society. Chinese in Tianjin. Section 2 (4.8). In: Wahlqvist ML, Hsu-Hage BHH, Kouris-Blazos A, Lukito W, IUNS study investigators (eds). Food Habits In Later Life. A Cross-Cultural Study. (CD ROM): United Nations University Press & Asia Pacific Journal of Clinical Nutrition, 1995. Available on-line: www.healthyeatingclub.org/APJCN/FHILL/index.htm

13. Wahlqvist ML, Hsu-Hage BHH, Kouris-Blazos A, Lukito W, IUNS study investigators. The IUNS cross-cultural study of "Food Habits In Later Life"-- an overview of key findings. Asia Pac J Clin Nutr 1995; 4: 233-243.
14. Zhao XH, Wen HM, Ling Y, Fu P. Studies in northern China. Section 4 (21). In: Wahlqvist ML, Hsu-Hage BHH, Kouris-Blazos A, Lukito W, IUNS study investigators (eds). Food Habits In Later Life. A Cross-Cultural Study. (CD ROM): United Nations University Press & Asia Pacific Journal of Clinical Nutrition, 1995. also available on-line at: www.healthyeatingclub.org/APJCN/FHILL/index.htm
15. Darmadi-Blackberry I, Wahlqvist ML, Kouris-Blazos A, Steen B, Lukito W, Horie Y, Horie K. Legumes: the most important dietary predictor of survival in older people of different ethnicities. Asia Pac J Clin Nutr 2004; 13: 217-220.
16. Wu SJ, Chang YH, Wei IL, Kao MD, Lin YC, Pan WH. Intake levels and major food sources of energy and nutrients in the Taiwanese elderly. Asia Pac J Clin Nutr 2005; 14: 211-220.
17. Juguan JA, Lukito W, Schultink W. Thiamine deficiency is prevalent in a selected group of urban Indonesian elderly people. J Nutr 1999; 129: 366-371.
18. Purba M, Lukito M, Wahlqvist ML, Kouris-Blazos A, Diet GD, Hadisaputro S, Lestiani L, Wattanapenpaiboon N, Kamso S. Food intake and eating patterns of Indonesian elderly before the 1998 economic crisis. Asia Pac J Clin Nutr 1999; 8: 200-206.
19. Wang JL, Shaw NS, Yeh HY, Kao MD. Magnesium status and association with diabetes in the Taiwanese elderly. Asia Pac J Clin Nutr 2005; 14: 263-269.
20. Chen KJ, Pan WH, Yang FL, Wei IL, Shaw NS, Lin BF. Association of B vitamins status and homocysteine levels in elderly Taiwanese. Asia Pac J Clin Nutr 2005; 14: 250-255.
21. Lin YC, Chiu JF, Lin MC, Tu SH, Pan WH. Bone health status of the elderly in Taiwan by quantitative ultrasound. Asia Pac J Clin Nutr 2005; 14: 270-277.
22. Wahlqvist ML, Hsu-Hage BHH, Kouris-Blazos A, Lukito W, IUNS study investigators (eds). Food Habits In Later Life. A Cross-Cultural Study. (CD ROM): United Nations University Press & Asia Pacific Journal of Clinical Nutrition, 1995. also available on-line at: www.healthyeatingclub.org/APJCN/FHILL/index.htm
23. Wahlqvist ML, Kouris-Blazos A. International Union of Nutritional Sciences Committee II/4 on Nutrition and Ageing: Food Habits In Later Life (FHILL) Program. Asia Pac J Clin Nutr 1999; 8: 282-284.
24. Aging in the Western Pacific: A Four-Country Study. In: Andrews GR, Esterman AJ, Braunack-Mayer AJ, C.M. R (eds). Western Pacific Reports and Studies no. 1. Manila: World Health Organization, Regional Office for the Western Pacific, 1986.
25. Kouris-Blazos A, Wahlqvist ML, Trichopoulou T, Polychronopoulos E, Trichopoulos D. Health and nutritional status of elderly Greek migrants to Melbourne, Australia. Age Ageing 1996; 25: 177-189.
26. Wahlqvist M, Huang S, Worsley A. Dietary supplementation - what we are doing and why. In: Use and abuse of vitamins. Food versus pills Melbourne: Sun, 1987; 95-105.
27. Worsley A, Crawford D. Australian dietary supplementation practices: health and dietary supplements. Med J Aust 1984; 140: 579-583.
28. Wang RL, Kao MD. Health supplement usage in Taiwan area. (in Chinese). J Chin Nutr Soc 1995; 20: 105-115.
29. Flint DM, Shannon K, Parish A. The vitamin status of elderly independent people living at home in an Australian community [proceedings]. Proc Nutr Soc 1978; 37: 74A.
30. Flint DM, Wahlqvist ML, Smith TJ, Parish AE. Zinc and protein status in the elderly. J Hum Nutr 1981; 35: 287-295.
31. Stookey JD, Zhai F, Zohoori N, Popkin BM. Nutrition of elderly people in China. Asia Pac J Clin Nutr 2000; 9: 243-251.
32. Wang Y, Roe D. People, place, the living environment and the society. Chinese in Beijin. Section 2 (4.7). In: Wahlqvist ML, Hsu-Hage BHH, Kouris-Blazos A, Lukito W, IUNS study investigators (eds). Food Habits In Later Life. A Cross-Cultural Study. (CD ROM): United Nations University Press & Asia Pac J Clin Nutr, 1995. also available on-line at: www.healthyeatingclub.org/APJCN/FHILL/index.htm
33. Oenzil F. Food-health consideration in a nursing home for the elderly in Sicinsin, west Sumatra, Indonesia. Section 4 (24). In: Wahlqvist ML, Hsu-Hage BHH, Kouris-Blazos A, Lukito W, IUNS study investigators (eds). Food Habits In Later Life. A Cross-Cultural Study. (CD ROM): United Nations University Press & Asia Pacific Journal of Clinical Nutrition, 1995. also available on-line at: www.healthyeatingclub.org/APJCN/FHILL/index.htm
34. Darmadi I, Horie Y, Wahlqvist ML, Kouris-Blazos A, Horie K, Sugase K, Wattanapenpaiboon N. Food and nutrient intakes and overall survival of elderly Japanese. Asia Pac J Clin Nutr 2000; 9: 7-11.
35. Horie Y, HorIe K, Sugase K. Current status of food and nutrient intakes of the elderly in Japan. Section 4 (22). In: Wahlqvist ML, Hsu-Hage BHH, Kouris-Blazos A, Lukito W, IUNS study investigators (eds). Food Habits In Later Life. A Cross-Cultural Study. (CD ROM): United Nations University Press & Asia Pacific Journal of Clinical Nutrition, 1995. also available on-line at: www.healthyeatingclub.org/APJCN/FHILL/index.htm
36. Sho H. History and characteristics of Okinawan longevity food. Asia Pac J Clin Nutr 2001; 10: 159-164.
37. Kim CSH, Choi SJ. A study of nutrition and other measures of health amongst elderly Koreans. Section 4 (23). In: Wahlqvist ML, Hsu-Hage BHH, Kouris-Blazos A, Lukito W, IUNS study investigators (eds). Food Habits In Later Life. A Cross-Cultural Study. (CD ROM): United Nations University Press & Asia Pacific Journal of Clinical Nutrition, 1995. also available on-line at: www.healthyeatingclub.org/APJCN/FHILL/index.htm
38. Shahar S, Earland J, Rahman SA. Food intakes and habits of rural elderly Malays. Asia Pac J Clin Nutr 2000; 9: 122-129.
39. Horwath CC. Dietary intake studies in elderly people. In: World Review of Nutrition and Dietetics. Basel: Karger, 1989; 1-70.
40. Horwath CC, Campbell AJ, Busby W. Dietary survey of an elderly New Zealand population. Nutr Res 1992; 12: 441-453.
41. Huang KC, Lee MS, Lee SD, Chang YH, Lin YC, Tu SH, Pan WH. Obesity in the elderly and its relationship with cardiovascular risk factors in Taiwan. Obes Res 2005; 13: 170-178.
42. Tsai AC, Chang JMC, Lin H, Chuang YL, Lin SH, Lin YH. Assessment of the nutritional risk of 53-year-old men and women in Taiwan. Public Health Nutr 2004; 7: 69-76.
43. Wahlqvist ML, Darmadi-Blackberry I, Kouris-Blazos A, Jolley D, Steen B, Lukito W, Horie Y. Does diet matter for survival in long-lived cultures? Asia Pac J Clin Nutr 2005; 14: 2-6.

44. Trichopoulou A, Kouris-Blazos A, Wahlqvist MS, Gnardellis C, Lagiou P, Polychronopoulos E, Vassilakou T, Lipworth L, Trichopoulos D. Diet and overall survival in elderly people. BMJ 1995; 311: 1457-1460.
45. Wahlqvist ML, Kouris-Blazos A, Savige G. Food-based dietary guidelines for elder adults. Healthy aging and prevention of chronic noncommunicable diseases (Annex 3). In: Keep fit for life. Meeting the nutritional needs of older persons. Malta: World Health Organization, 2002; 81-105.
46. WHO/FAO. Preparation and Use of Food-Based Dietary Guidelines. Report of a joint FAO/WHO consultation, Nicosia, Cyprus 1996. Geneva: Nutrition Program, World Health Organization, 1996. Report No.: WHO/NUT/96.6.
47. de Groot L, van Staveren W. EURONUT-SENECA study on nutrition and the elderly in Europe: Formulation. Section 4 (18). In: Wahlqvist ML, Hsu-Hage BHH, Kouris-Blazos A, Lukito W, IUNS study investigators (eds). Food Habits In Later Life. A Cross-Cultural Study. (CD ROM): United Nations University Press & Asia Pacific Journal of Clinical Nutrition, 1995. also available on-line at: www.healthyeatingclub.org/APJCN/FHILL/index.htm
48. de Groot L, van Staveren W, Amorim Cruz JA, Dirren H, Schroll M. EURONUT-SENECA study on nutrition and the elderly in Europe: Intake of foods at four sites. Section 4 (19). In: Wahlqvist ML, Hsu-Hage BHH, Kouris-Blazos A, Lukito W, IUNS study investigators (eds). Food Habits In Later Life. A Cross-Cultural Study. (CD ROM): United Nations University Press & Asia Pacific Journal of Clinical Nutrition, 1995. also available on-line at: www.healthyeatingclub.org/APJCN/FHILL/index.htm
49. de Groot LCPGM, van Staveren WA, Hautvast JGAJ (eds). EURONUT-SENECA. Nutrition and the elderly in Europe, A concerted action on nutrition and health in the European community. Eur J Clin Nutr 1991; 45(suppl 3): 1-196.
50. Rodriguez A, Muller DC, Engelhardt M, Andres R. Contribution of impaired glucose tolerance in subjects with the metabolic syndrome: Baltimore Longitudinal Study of Aging. Metabolism 2005; 54: 542-547.
51. Shimokata H, Andres R, Coon PJ, Elahi D, Muller DC, Tobin JD. Studies in the distribution of body fat. II. Longitudinal effects of change in weight. Int J Obes 1989; 13: 455-464.
52. Tucker KL, Hallfrisch J, Qiao N, Muller D, Andres R, Fleg JL, Aging BLSo. The combination of high fruit and vegetable and low saturated fat intakes is more protective against mortality in aging men than is either alone: the Baltimore Longitudinal Study of Aging. J Nutr 2005; 135: 556-561.
53. Vaillant G. Ageing Well. Melbourne: Scribe Publications; 2002.
54. Steen B, Landin I, Mellstrom D. Nutrition and health in the eighth decade of life. In: Wahlqvist M (ed). XVth Internaitonal Congress of Nutrition; 1993 26 September-1st October; Adelaide: Smith-Gordon, 1993; 331-333.
55. Charlton KE, Kruger M, Labadarios D, Wolmarans P, Aronson I. Iron, folate and vitamin B12 status of an elderly South African population. Eur J Clin Nutr 1997; 51: 424-430.
56. Herman DR, Solomons NW, Mendoza I, Gonzales C, Qureshi AK. Anthropometric measures and indices of body composition among Guatemalan elderly: Relationship with self-rated health and activities of daily living and comparison with other in sites in the 'Food Habits in Later Life' multicentre study. Asia Pac J Clin Nutr 1998; 7: 55-66.
57. Solomons N, Lacle A, Mazariegos M, Mendoza I. Spontaneous gerontological research initiatives in Central America. Section 4 (25). In: Wahlqvist ML, Hsu-Hage BHH, Kouris-Blazos A, Lukito W, IUNS study investigators (eds). Food Habits In Later Life. A Cross-Cultural Study. (CD ROM): United Nations University Press & Asia Pacific Journal of Clinical Nutrition, 1995. also available on-line at: www.healthyeatingclub.org/APJCN/FHILL/index.htm