

Review Article

Regional food culture and development

Mark L. Wahlqvist, MD (Adelaide), MD (Uppsala), FRACP, FAFPHM, FAIFST, FTSE¹ and Meei-Shyuan Lee DPH²

¹Asia Pacific Health & Nutrition Centre, Monash Asia Institute, Monash University, Australia

²School of Public Health, National Defense Medical Centre, Taipei, Taiwan, ROC

Food culture is most influenced by the locality of its origin, which will have been one of food acquisition and processing by various means. It is generally agreed, and is the basis of much United Nations, especially Food and Agriculture Organisation strategic development policy, that *successful agriculture*, horticulture and aquaculture along with fishing, underpin economically viable and healthy communities with their various food cultures. We also know that this must be in tandem with maternal literacy and operational health care systems. These elements are best represented on a regional basis. There is a growing consumer interest in knowing where one's food comes from as a measure of "food integrity". However, food production alone can be a precarious business and relate to a lesser or greater extent to *local food culture* and to trade, which may be complementary or at-odds with each other. Likewise, the local food culture may have its strengths and weaknesses as far as its *ability to meet nutritional and health needs* is concerned. Local food production may be restricted because of geographical or socio-economic conditions which preclude *food diversity*, although this may be compensated for by trade. Where food adequacy and diversity is compromised, and soils poor, various macro-nutrient, micronutrient (from animals and plants) and phytonutrient (nutritionally-advantageous food component from plants) deficiencies may be in evidence. These food system problems may be intertwined with *food culture* - for example, "rice-based and water-soluble vitamin poor"; "few animal-derived foods like meat, fish, eggs and milk with associated low calcium, vitamin D, Vitamin B₁₂ and long chain n-3 fatty acid intakes"; "low fruit and vegetable intake with limited carotenoids and other phytonutrients". Geo-satellite surveillance and *mapping* is identifying such "hot spots": for *regional food problems*, as well as hot spots where most of the world's biodiversity is found (1.4 % of land on earth). On the other hand, regional food culture can confer considerable advantage for health and economic development, but does not necessarily do so. The challenge is to respect and retain *traditional food knowledge* and *sustainable food systems*, with *good governance* for food security. There has been a recent awakening of interest and concern about the *lack of documentation of traditional and indigenous food cultures* which are important not only for their own sake, but for the legacy of food knowledge which they can confer on future generations, provided they are not lost. Hence, the value of a special focus on African food cultures (www.healthyeatingclub.org/Africa), including Rift and Nile Valleys and North West African foods, which are the cradles of human food systems and habits. This is the case too with indigenous foods and food cultures (whether hunter-gatherer or subsistence agriculture); with relatively long-living food cultures in North East Asia, with food cultural distinction and fusion (FHILL and SENECA studies) and with migratory Food Habits. By and large, there is a remarkable resilience and ingenuity of people and their food systems, but monoculture and lack of diversity encourage food system failure.

Key Words: food regions, food systems, food words, African foods, north-east Asian foods, eco-nutrition, nutritional adversity, ethnicity

Introduction

1. Regional food culture and development

At all stages of human development, from the poor to the affluent, there is a sense of local if not regional food culture. *Food culture* arises out of the place of a people's origin, whether they still live there or not, but is shaped by resources (climate, land, soil, water, and fuel), by belief and information (religion, education and literacy, communication), by ethnicity (indigenous or immigrant), technology (hunting, gathering, agricultural, horticultural, aquacultural, fishing; food processing and storage, transport, cooking); colonisation; and by health status and health care.

In the past, *the rate of change of food culture* has been relatively slow, in response to these factors, but most of the

relevant factors are themselves now undergoing rapid change, notably, population growth, displacement and migration with land degradation, changing affordability with the parallel phenomenon of increasing impoverishment and greater affluence, with resource wastage on both counts. In the interests of available and affordable food, for the short to medium term, an identifiable and sustain-

Corresponding Author: Professor Mark L. Wahlqvist, Asia Pacific Health and Nutrition Centre, Monash Asia Institute, 8th Floor, Menzies Building, Monash University, Wellington Road, Clayton, Melbourne, Victoria 3800, Australia. Tel +61-3-9905-8145; Fax: +61 3 9905 8146 Email: mark.wahlqvist@adm.monash.edu.au

able regional food system and culture may be lost.

Successful food acquisition, by whatever means, must be sustainable in the long term. This understanding and its application underpins economically viable and healthy communities, as is reflected in most development policy. Such policy must be inter-sectoral and link food and health strategies together. Operationally, whilst there may be international frameworks, the region is where it is likely and needs to work best. This is at least one reason to understand and support regional food culture in development.

2. Consumers, trade and food regions

Not only do consumers have their own food cultural reference point, but as they become more dependent on others to grow, process, deliver and prepare their food, they want to know more about its origins. In some cultures, like Chinese, this has even been represented in the language which makes these distinctions (Table 1) This has to do with *a sense of food integrity*, namely its expected palatability, safety and healthfulness (nutritional value). Food exporters and traders have often relied on place of origin as a selling point and added a profit margin if the region or district were highly regarded – this has applied particularly to rice, meat, seafood, fruit, vegetables, cheese and beverages like wine, beer, tea and coffee.

In recent times *safety concerns* like pest control methods, and animal feeding (BSE is the most prominent example) have accentuated the consumer interest in place of origin.

Greater travel to food growing regions is also sharpening consumer focus on locality and food.

3. Food systems, their strengths and weaknesses

Throughout human history, people have been making adjustments to their food intake, by trial and error, and through necessity or opportunity. There have emerged some major food systems which are known by their original location, the people that mainly consume them or the dominant food items or acquisition methods (Table 2). Their recognition has merit when considering the major risks and benefits of regional food cultures. However, these categorizations generally overlap or merge. They are also gross generalisations of what are often striking differences in the detail of food intake and habits, especially where there are ancient and long-separated micro-ecosystems where people have lived (much of Africa; Meso America and the Andes; the Indonesian archipelago, for example).

It is apparent that some of these food systems are

highly dependent on their original locality (eg. Kalahari bushmen and Aboriginal Australians as hunter-gatherers) and other are very transportable (eg. Chinese restaurants as family businesses in almost every part of the world). This also points to the likely survival or otherwise of certain food cultures and the need for strenuous efforts to understand and document those in same localities before it is too late!

The *strengths and weaknesses* of various food systems relate to their prospects for survival in a changing world, their ecological sustainability, their amenability to commercialization and their health advantage.

Those that are *ecologically sustainable* will be characterized by biodiversity with a plant food orientation and where there are no threats to water (eg. dams upstream) and energy (eg. limited firewood) and loss of habitat (excessive human development).

Those food systems that are *amenable to commercialisation* will generally be best-served by local economies (subsistence agriculture; family and community gardens), circumscribed cash-cropping for trade and supported as necessary through the ability to buy and import foods from elsewhere (hopefully not at an environmental cost in another place).

Food systems that confer health advantage will themselves be characterized by adequacy (enough food and good management of what is produced) and variety to allow for the full range of essential nutrients to be obtained for an omnivorous human species. A staple is a way of providing enough energy (to balance expenditure), but not necessarily optimal health.

4. Regional food culture and health

It is extraordinary how disparate the locations are where people live and eat – hot equatorial and cold arctic, coastal and mountainous, wet forests and dry deserts and much in between. There is a vast array of human food stuffs and dietary patterns.

However, people may have comparable status in health (as judged by measures of disability) and life expectancies (using the combined health expression of DALE (Disability Adjusted Life Expectancy)⁴ (if one examines say the top and bottom 10 on the international league) despite vastly different regionality and food culture.

What then is it that people must have in common about the way they eat for favourable health outcomes, and in what respects can they differ? From cross-cultural studies like FHILL (Food Habits in Later Life)^{5,6} and SENeca (Survey Europe on Nutrition in the Elderly: a

Table 1. Representation of origin of foods by Chinese vocabulary

English	Chinese	Meaning	Other example
Onion	洋葱 /yang cong/	洋: foreign, especially Western	
Pepper	胡椒 /hu jiao/	胡: introduced or imported into China proper in ancient times	胡瓜 (cucumber) 胡蘿蔔 (carrot)
Sweet potato	蕃薯 /fan shu/	蕃: uncivilized; foreign	蕃茄 or 西紅柿 (tomato) 蕃麥 or 玉米 (corn)
Water melon	西瓜 /xi gua/	西: west, Western	西紅柿 (tomato)

Concerted Action)^{7,8}, we can gain some idea of this (Table 3).

By generations of cultural sifting, reflection, connection, and innovation, in possibly advantageous localities, some communities have gained health advantage in relation to their food supply. An example of this is Okinawa in the Ryuku islands, where the inhabitants have traded and exchanged ideas widely and over centuries. The Okinawans have had one of the longest life expectancies with a rather distinctive diet for, *inter alia*, its culinary herbs and fungi. Against the conventional food-health wisdom, they have successfully incorporated fatty pork into their cuisine. Pigs arrived in Okinawa via China and initially their production and dietary success failed. But, after the sweet potato arrived in China, trans-migrated to Okinawa and was fed to the pigs, their culinary success grew. In a somewhat similar way, longevity amongst Greeks is not just “Mediterranean”, although Crete in the

1950s has served as a valuable food system reference point, but, in Thessalonika, the pigs eaten are grass fed to apparent health advantage. It is worth noting that the fat composition of a monogastric animal, the pig, depends very much on the food eaten (and varies greatly from location to location). This exemplifies the potential value of *an integrated food system*, whether pre-agricultural, subsistence agricultural or modern technologically-supported agribusiness.

The value of *food systems as regionally relevant* is that the “feed-back loops” for sustainability, local economic development and health are more likely to be functional and amenable to good governance. Communities can increasingly take advantage of production, processing, transport and communication, information and health technologies to make these outcomes more likely.^{11,12} *Explicit inter-community collaboration* in these regional food and health pursuits is likely to add further value, with the added potential advantage of *averting conflict* (a

Table 2. Food systems by original location, ethnicity or characterizing foods; some examples

Locality of origin	Ethnicity	Characterizing foods or food production
<ul style="list-style-type: none"> • China (eg. Cantonese, Yangtze delta, Hainan, Northern, Szechuan) • Japan • France (eg. Provincial, Parisian, Coastal) • Africa (eg. North-West, Nile Valley, Rift Valley, Kalahari desert) • India (eg. Chennai (Madras), Punjab, Bengal) • Indonesia • Andes • Scandinavian • Mediterranean 	<ul style="list-style-type: none"> • Various indigenous people (eg. Australian, Pacific Islands, Native Americans, Andean, Okinawans) • Chinese (in various locations – SE Asia, North America, Australia) • European (eg. Italian, Greek, French, Swedish, German, Polish) • Russian • Minangkabau in West Sumatra; Batakese in North Sumatra^{1,2} 	<ul style="list-style-type: none"> • Hunter-gatherer 3 • Subsistence agriculture • Rice-based (eg. Asia) • Potato-based (eg. Andes, Meso-American, Europe) • Wheat-based (eg. Middle East, Europe, America) • Plentiful horticultural products (eg. Tropical, Mediterranean) • Pulses (eg. soy, beans) and leafy greens as a principal source of protein (South Asia, NE Asia, Meso and South America) • Fish (eg. Islands, Coastal) • Meat (eg. Pork in China, beef in Argentina, and USA, lamb in New Zealand, chicken in SE Asia)

Table 3. Food commonalities which allow for optimal health, based on longevity food cultural observations.

Commonalities between regions	Tolerable Differences
<ol style="list-style-type: none"> 1. Secure maternal nutrition 2. An adequate food supply 3. Enough physical activity so that enough food to meet nutritional needs can be consumed without excessive body fat 4. Food diversity (probably more than 20 biologically distinct types/week)⁹ 5. Patterns of eating which are plant-food in orientation, and where the food is relatively intact (not unduly refined), and including legumes⁵ 6. Regular intake of fish, at least once or twice a week 7. Meat or poultry in small quantities which is preferably fresh or refrigerated rather than cured or salted 8. Celebratory occasions (2-3/year) 9. Alcohol not used excessively 10. A safe water supply 	<ol style="list-style-type: none"> 1. Kinds of seed-based foods (cereals, nuts, legumes) 2. Kinds of leafy (eg. Chinese greens or floral vegetables (eg. cauliflower, broccoli)) or vegetable stems 3. Kinds of fruits 4. Distribution of food across day 5. Seasonal variation 6. Less diversity required where some items highly nutritious (especially lean animal-derived foods; legumes, nuts and berries) 7. Celebratory occasions with food (several in a year as in Okinawa)¹⁰

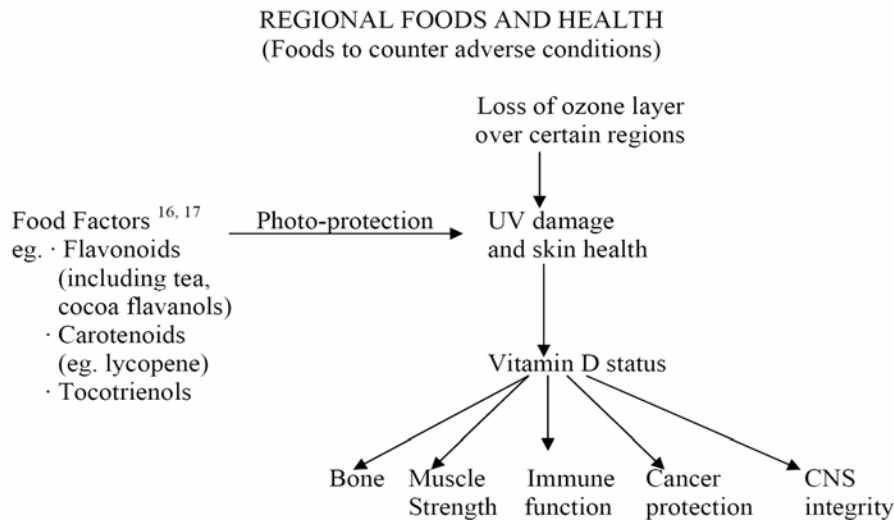


Figure 1. Counteraction of regional health adversity by local foods

major cause of impoverishment and famine as well as a whole spectrum of nutritional disorders).

One of the greatest threats to regional health comes from high *dependence on fuel in the food system*, including the purchase of food where consumers are automobile dependent (eg. at supermarkets).¹³ Not only does this involve less personal energy expenditure, it is part of a culture which orientates food choice towards energy dense, nutrient-poor items, and the misuse of precious natural resources that are required for energy and packaging and waste management. Body compositional (along with mental health and social health) disorders develop. Sustainable food systems are threatened. At the community level, much can be done to avert these problems.¹⁴

Food and Nutrition Policy can support Regional Food Culture through the Food Based Dietary Guidelines (FBDG) approach developed by WHO & FAO, which encourage local food and food system approaches to health policy.¹⁵

FBDGs require an emphasis on sustainability for health-giving food system. An example of how important this is comes from loss of the ozone layer and its contribution to skin health (adverse) and vitamin D deficiency. Even here foods can help counter these new environmental conditions (Fig 1).

5. Indigenous and traditional food cultures

Indigenous and traditional food cultures inevitably have strong locality connections. They are of particular interest in regard to regional food culture and health because they represent the longest period of history of the 150000 years or so of our species. *Homo Sapiens sapiens*. They do represent many generations of observation and adjustment to eating patterns from foraging, to hunting and gathering (especially as technologies developed to assist), pastoralism, subsistence agriculture, and fishing.

The exposé of the Paleolithic diet by Eaton and Konner¹⁸ has encouraged the view that animal foods (fish, meat from land animals, birds and eggs) could, at least episodically, provide for a substantial part of energy intake, but with the macronutrients protein and fat coming from diverse sources, but, with, of course, carbohydrate and dietary fibre being of plant, albeit diverse, origin. Although

an important template for the human diet, it does not follow that it was necessarily optimal. What is optimal allows for survival to old age with disability, for successful reproduction and for security and happiness. Food culture plays a role in each of these optimal health goals.

With time, eco-systems developed around human settlements or camp-sites. For example, preferred fruit-seeds travelled with people and the trees from which they came grew in the new places. There were limits as to how many types of starchy (relatively energy-rich, although not as energy-dense as fatty non-aqueous foods) food species could be grown and translocated so that there are only about a dozen or so (rice, wheat, maize, potatoes, sweet potatoes, cassava, barley, rye, oats) that have formed the basis of energy intake with more settled populations.¹⁹ However, some people, like the Incas in the Andes were remarkable for their plant-breeding facility and developed scores of cultivars of beans and of sweet potatoes, for example.

Thus, regional food diversity is a product of the natural environment and human settlement, with associated-changes in wild life, insects and micro-organisms too.

Indigenous and traditional foods and food systems are disappearing, however, and this may be a significant loss and threat to future personal health and security at the regional and international level.²⁰

6. The future of regional food cultures

Although globalization is on the move, it is possible to envisage and identify “the internationalization of locality”. In any case this has happened with the great cuisines of the world – Chinese, Japanese, Thai, French, Italian, Scandinavian, Mexican and Andean, Middle Eastern, Moroccan and more, which have spread well-beyond their original locality. Others, possibly as important, interesting and healthful, have been neglected on the international food stage and are under threat even at home. Should we be concerned? Yes, because there is still a great deal of food-health knowledge embedded in regional food cultures which may be important for all of us. Yes, too, because of the local eco-systems which support these food cultures and whose intrinsic biodiversity is important for planetary health. Yes, again, because, with

a loss of food culture, goes a loss of a sense of identity and dignity. These are reasons why the IUNS (International Union of Nutritional Sciences) and other organisations (www.healthyeatingclub.org/Africa) have promoted regional approaches to their work in food and health.

A recent example of what can be done relates to Hangzhou, Zhejiang province, China.²¹ Hangzhou was a major trading centre during the Southern Song dynasty, about a 1000 years ago (960 – 1279 AD), when the Grand Canal was built between Beijing and Hangzhou, the latter situated in the Yangtze river delta region. It developed a cuisine based on aquatic foods, plentiful fruits and vegetables, soy beans, fungi, culinary herbs and rice. It, arguably, had the world's first restaurant.²² Food also developed into an art form, linked to music, poetry and interior decoration, with cooking skills regarded most highly. Perhaps Hangzhou even over-developed in culinary terms, although its peasant versions with freshness and taste were, of course, very current and contemporary. Food technology, notably in tea (*camellia sinensis*) production and processing, paralleled the exceptional development in textile technology (notably with the development of silk production and trade), and was accompanied by the flourishing of the arts (notably calligraphy). Economic development was integral to this development in regional food culture. Much later there was a major set-back with the Sino-Japanese wars, the rise of Communism, and especially the Great Cultural Revolution in the 20th century. But by the end of the 20th century it was recognized that Hangzhou's food habits were robust and persistent and that they may have been giving Hangzhou citizens relative longevity in China. People, especially from Shanghai, began travelling more and more to Hangzhou for its food.

In 2003, ZAST (the Zhejiang Academy of Science and Technology), with WHO (World Health Organization) and FAO (Food and Agriculture Organization) convened a working group on Regional Cuisine and Health²¹ to document its history, characteristics, and health correlates. We can now see the re-emergence of a regional cuisine, evident in Hangzhou homes and in its many tea-houses, like those around the beautiful West Lake. It is a good example of how regional food, health and economic development can move together.

In Australia, Erlich, Riddell and Wahlqvist²³ have studied the extent to which indicative food regions do or do not have associated health and economic advantage. The short answer is, not necessarily, as the nature of rural food production varies widely both to enfranchise and disenfranchise families and communities of the food patterns which enhance health. Broad-acre farmers with one or two crops, or sheep or cattle farmers, may themselves grow or purchase few fruits or vegetables. Horticulturalists, too, may be compromised through water shortage, and economic and health adversity. Fishermen may be remote from health care. Wine growing and cheese producing regions tend to attract "food tourists" and thrive on this supplementary income; facilities improve as local government and business prospers.

So, whilst, as in Hangzhou, food, health and economic development may go together (although there are now concerns about sustainability and environmental degrada-

tion in that part of China), in Australia and elsewhere they may not. Yet, regional food culture seems worthy of survival and support if we are not to be overwhelmed by a narrowing of the food supply and the associated ill-health and economic cost. It may, of course, be that well managed infrastructural development; town planning, communication technology and crop improvement (as with biofortification^{24,25} and food processing technology) may yet support regional food culture and counter the difficulties it faces.²⁶

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