

# Food and nutrition policies in the Asia-Pacific region: Nutrition in transition

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## OBJECTIVES

- To consider those transitional nutritional situations which may have their genesis in Indigenous or traditional culture with overall nutritional advantage and how they may retain or lose this advantage on exposure to affluent industrialised environments.
- To understand the shift in nutrition policies around the world over the last few years towards improving household food security for the nutritionally vulnerable.
- To consider the nature, value and limitations of a food and nutrition policy.
- To highlight the development of food and nutrition policies, public health nutrition, and dietary guidelines in the Asia-Pacific region.

## THE CONTEXT

Globally there is sufficient food to feed the human population. Indeed, trade in surplus and value-added food to generate export earnings is becoming an increasing priority for many countries in the Asia-Pacific region. There is also a substantial knowledge regarding the relationships between food and health. This knowledge is translated into the preparation of dietary guidelines and reference standards (see Chapters 36 and 38). In spite of these factors, in many countries nutritional health and well-being are not optimal; too many people suffer from malnutrition or chronic diseases associated with inadequate or poor quality food intakes. Frequently when nutritional health indicators have improved in a country these advances are not shared equally across the population. Inequities in nutritional health status are evident both within regions and within countries. Furthermore, at both the international and national levels, there are numerous demographic, economic and social changes affecting food production, distribution, marketing, selling and, ultimately, consumption. In this context considerable attention is being paid to the formulation, implementation and evaluation of food and nutrition policies as interventions to protect and promote the nutritional health of populations.

## NUTRITION IN TRANSITION

In the past two to three decades many developing countries have made significant progress in combating the ravages of malnutrition and infectious diseases. Overall nutritional status has improved, with the result that infant and child mortality has been reduced and life expectancy increased. These improvements in health in developing countries have paralleled economic growth, urbanisation, industrialisation and national security through the 'transition' from a closed economy to an open economy. The problem of nutrition during the economic 'transition' period and Westernisation of developing countries (that is, nutrition in transition) is reflected in the emerging epidemic of diseases of affluence such as heart disease which co-exist with problems of undernutrition (i.e. epidemiological transition).

The health risks faced by the Asia-Pacific region include traditional environmental issues (such as poor sanitation), modern agricultural hazards (such as pesticide contamination of water and food), as well as risks associated with urbanisation and industrialisation (such as chronic non-communicable diseases). Countries in the region have a wide range of nutritional status, from countries still grappling with problems of undernutrition (such as Papua New Guinea), to those suffering more from health problems associated with overnutrition (such as Australia, Hong Kong, New Zealand, Singapore). In between are countries (such as China, Malaysia) undergoing 'nutrition transition' which are faced with both the old problems of nutrient deficiencies and the new problems of overnutrition (Wahlqvist et al. 1999).

### Models of transition

Although it is the dominant cultures of developed countries that receive most attention regarding the impact of industrialisation on health outcomes, Indigenous populations of countries previously subject to colonisation are usually affected to a greater extent.

These populations often remain in a transitional state between their traditional rural lifestyle and that of the city, in what is described as a *periurban* lifestyle. By comparing these groups it has become clear that the impact of urbanisation is usually progressively unfavourable on such peoples (O'Dea 1988). Figure 40.1 demonstrates the profound difference in life expectancy at birth between Australians in general and Aboriginal Australians.

**Table 40.1 Models of transition in developed countries**

1	indigenous populations
2	urbanisation
3	immigrant populations
	■ old immigrant
	■ recent immigrant
4	cross-cultural comparisons
5	educational and socio-economic differentials
6	age dependency

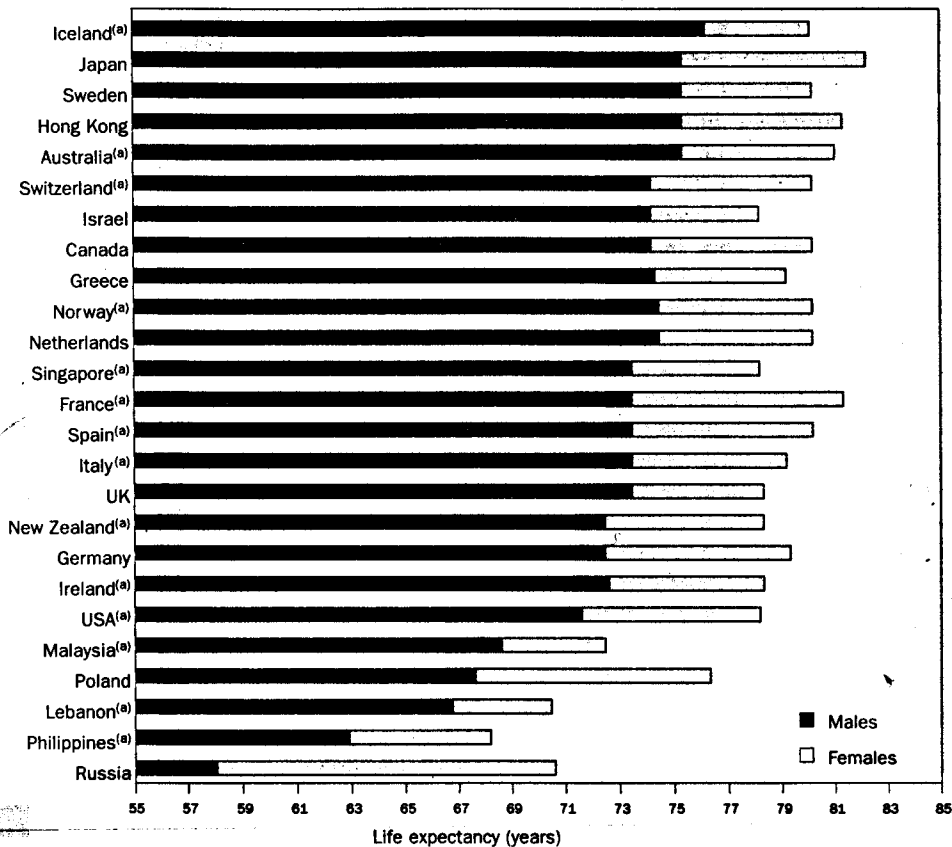
The presumption has been that urbanisation is principally unfavourable to the majority of populations who live in cities. However, comparisons between urbanised communities in different parts of one nation or from nation to nation reveal that there are many other factors which interact with urbanisation to affect health outcomes. Immigrant populations, both old and recent, allow for a further dissection of some of the questions about food intake and health outcome with progressive societal change (Powles et al. 1992). Changes in food intake and the increasing rates of colorectal cancer among immigrants to Australia are such an example (Rutishauser and Wahlqvist 1983).

It seems likely that significant common denominators in nutritionally related health outcomes between communities, and with the passage of time, include both educational and socioeconomic factors.

**Table 40.2 Foods and beverages for which consumption differed by 5% or more between Greek migrants resident in Australia for shorter (<16 years) and longer (>16 years) periods**

Food Item	Per cent consumption by long-stay group and difference from short-stay group (in brackets)	
	Males	Females
Cereals		
pasta dishes	12 (-5)	13 (0)
Milk and milk products		
cheese	56 (-9)	65 (+6)
Meats		
pork, ham and bacon	36 (+11)	12 (+2)
Vegetables		
potatoes	39 (-3)	36 (-5)
pulses	15 (+6)	8 (+2)
wild leafy greens	10 (-4)	10 (-5)
Beverages		
tea	45 (+15)	51 (+18)
soft drinks	32 (+5)	25 (+1)
beer	28 (-6)	8 (-2)
wine	26 (-5)	12 (-6)
water	16 (-5)	24 (-3)

Source: Rutishauser and Wahlqvist 1983



(a) Philippines 1991; Ireland, Italy 1993; France, Iceland, Norway, Spain, USA 1994; Singapore 1996; Lebanon 1990–95; Malaysia 1990–96; New Zealand 1992–94; Switzerland 1994–95; Australia 1995–97

**Figure 40.1 Life expectancy at birth, selected countries, 1995 (AIHW 2000)**

As education and socioeconomic status improves, so also does food variety (Hsu-Hage and Wahlqvist 1996). Diseases which are nutritionally dependent like diabetes, CVD and stomach cancer are also related to social class, although those associated with substance abuse like tobacco (for lung cancer) and alcohol (for accidents) may be more so.

### **Industrial urbanisation**

Urbanisation has brought with it significant changes to the food supply. For food to be available in areas remote from agricultural production, it has to be transported, processed and stored. There is a need for a guaranteed food supply, provided it can be afforded. The food chain can also be precarious when any link in the chain is broken. Urbanisation can bring with it the possibility of urban gardens, and it has been estimated that in some parts of the world as much as 25% of fruit and vegetable

production can be obtained locally in an urban setting. A degree of affluence and of major ecological change is, nevertheless, the requisite for this local availability. A sense of loss of control of food supply through less involvement in production and in preparation can be of consequence to food choice. Less and less food preparation is taking place in the home and convenience foods bring more and more change in eating habits. The Western urban food supply has become characterised by salty and fatty foods from fast food outlets. A major effort to enable convenience to be part of a healthful food supply is now in evidence in newer food and nutrition policies.

### **Non-communicable diseases**

For much of human history, infectious disease has been the major cause of premature death. Women also have been at risk from the problems of childbirth. As these problems have come increasingly under control in

developed countries, other causes of premature death of greater consequence have emerged (Table 40.3) (AIH 1990). A remarkable phenomenon this century is that, although most of the improvement in life expectancy has been attributable to the decrease in infant mortality in developed countries, there has been a clear increase in life expectancy at age 80. This has become more in evidence from the 1960s onwards. Thus, in Australia for men aged 80 in 1960–62 the life expectancy was 5.6. For women aged 80 the life expectancy was 6.7. By 1988 these figures were 6.7 for men and 8.4 for women (AIH 1990). Life expectancy in Japan and Iceland, for example, still exceeds that in Australia, so there remains further potential for improvement. Even in Japan and Iceland, premature death is still in evidence and greater gains in life expectancy must be possible. The maximum achievable life span, however, must be distinguished from life expectancy and it remains unclear what the maximum achievable life span might be, with most regarding it as in the vicinity of 120 years.

### ***A mixture of under and overnutrition***

When we speak of undernutrition, we generally refer to protein energy malnutrition, although we may also refer to specific nutrient deficiency. By overnutrition we generally mean positive energy balance, reflected in excessive body fat. Clearly, then, it is possible to have a combination of a nutrient deficiency like that of protein or thiamin combined with obesity (see Chapter 31). The problem of obesity continues to worsen in developed countries like Australia. Furthermore there is a growing awareness that the problem of obesity is also on the rise in developing countries, from Asia to Africa. In these countries the combination of under and overnutrition is more serious since the problems of nutrient deficiencies have not been solved as the problem of positive energy balance has emerged. Presumably the basis of this

**Table 40.3 Major non-communicable diseases accounting for premature death in developed countries**

	Directional change
1 Obesity	↑
2 Macrovascular disease	↓
3 Certain cancers	↑→↓
4 Osteoporosis	↑
5 NIDDM	↑
6 Alcohol-related	→
7 Immunodeficiency in the aged	?
8 Dementia	?

nutritional complexity is that, on the one hand, opportunities for physical activity are declining and, on the other hand, the nutritional quality of food is not improving commensurately. If we are less physically active and need to achieve energy balance at a lower plane of energy nutrition, then the nutritional quality of the food we eat must improve (see Chapter 23). The incorporation of more animal fat and refined carbohydrate into the diets of peoples whose level of physical activity is declining is a recipe for obesity.

Improved life expectancy in the face of an increasing prevalence of obesity is itself an interesting nutritional situation. That we are better able to manage obesity does not deny its adverse potential. Indeed, to eliminate it would be to make even greater health gains. Much more work is needed, to know whether further gains are really possible. As in other areas of so-called 'nutritional status', determinants of body fatness are not always nutritional (and even these may be independent of energy balance, as with food type and fat distribution). This is particularly evident in relation to abdominal fatness, currently appraised by an abdominal/hip ratio (AHR). For example, gender, physical activity, cigarette smoking and alcohol all contribute to the distribution of body fat (Despres 1991). The problems of combined undernutrition and overnutrition are likely to be of most consequence during growth and development in childhood, during the reproductive years in a woman's life, and in later life. In the aged, obesity may be less predictive of residual life expectancy than in younger life, while reduced lean mass signals protein deficiency and proneness to immunodeficiency (see Chapter 31).

### ***The new communicable diseases***

The world's major health challenges in developing countries remain malnutrition and infectious disease. In developed countries, however, a new nutrition-communicable disease complex may be emerging. With advancing years, and the advent of a chronic disease, immune status may deteriorate (see also Chapter 31). The extent to which this is nutritionally preventable or reversible is an important question. Some of it would appear to be nutritionally dependent (Table 40.4).

New agents or modes of transmission of infection may also give food intake a changed relevance. For example, as the AIDS complex develops, HIV-positive individuals develop significant nutritional problems.

**Table 40.4 The changing face of communicable diseases of nutritional relevance**

1	The immunodeficient
■	aged
■	wasting disease (e.g. neoplastic, chronic inflammatory bowel disease)
■	eating disorders
■	immunotropic infection (HIV)
2	Food-borne
■	newer food technology
■	<i>listeria monocytogenes</i> in dairy products
■	rotavirus in fruit juice (Australian outbreak of 1991)
■	enteropathogenic <i>E. coli</i> leading to haemolytic uraemic syndrome (HUS)
■	food irradiation (contamination without spoiling)
■	newer cooking techniques
■	inappropriate microwave cooking

Again, there have been concerns that antibiotic resistance may have, in part, emerged because of animal production practices. New food-borne diseases are distinctly possible (see also Chapter 6). The greater use of fruit juices has led to an outbreak of rotavirus-induced gastrointestinal tract illness in Melbourne. The problems of listeriosis have been widely canvassed (AIH 1990) (see Chapter 6). Whether new food technologies allowing the production of so-called 'functional food', 'designer foods' and 'food analogues' will alter the opportunities for food-borne diseases remains to be seen.

### ***Favourable and unfavourable aspects of transition***

For most of the human experience, we were hunters and gatherers (see Chapter 3). Provided the food on which we nibble or graze is not rich in animal fat, it would appear that this pattern of eating is conducive to health or, at least, reduced cardiovascular risk (Jenkins et al. 1989). A pattern of food intake which is low in refined carbohydrate, animal fat and sodium and high in unrefined carbohydrate and fish appears to be the most conducive to long life expectancies and low morbidity rates (Table 40.5).

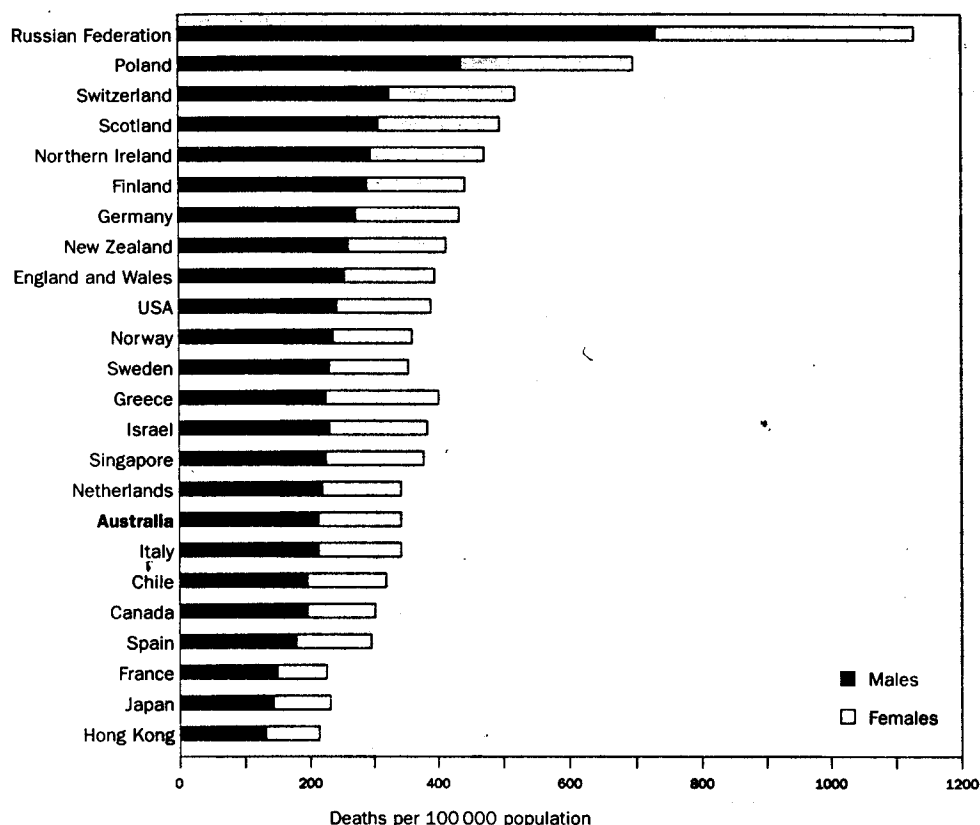
Transition may result in both favourable and unfavourable outcomes. Throughout the twentieth century, food cultures in almost every country have been undergoing radical change, with only the more remote and isolated maintaining high degrees of traditionality. Within Europe, the advent of the European Union (EU) has made major inroads on the food traditions of southern Europe. The progressive introduction of Western food technology into China represents the beginnings of

**Table 40.5 Pattern of eating with industrial urbanisation**

Characterised by	Directional change in non-communicable disease
Nutrient	
↑ saturated fat	↑
↓ unrefined carbohydrate	↑
↑ sodium	↑
↑ alcohol	↑
Food	
↓ fish	↑
↓ fruit (? juice)	↑
Food preparation/technology	
↑ fried	↑
↑ extruded	↑
? reassembled	?
? simulated	?
Meal/snack pattern	
↑ fatty	↑
Elimination of seasonal variation	↑↓
Food variety increased	↓

significant change in Chinese food habits. The surge of development in food technology in Japan hastens the adaptation of the Occidental categorisation of food as food and medicine as medicine. Until recently this has never been a sharp distinction in Oriental thought.

For all of these major changes in food production, supply routes, processing, and family eating traditions in recent decades, overall life expectancy has, in general, improved (see Figure 40.1). This probably reflects a progressive identification of those aspects of food consumption favourable to health. It also simply reflects a more abundant food supply, so that fewer starve or suffer from specific nutrient deficiencies. What is less clear is how the myriad non-nutrient components of food, also now available in abundance, have favourably contributed to our life expectancy and health. Some health problems have increased as others have decreased (see Table 40.6). Good examples are the increase in colorectal cancer as gastric cancer has decreased. Since the increase in colorectal cancer is probably due to a separate set of dietary factors from those responsible for the expression of gastric cancer in the past, there is a considerable prospect of retaining the gains while addressing the new, nutritionally related health problems (see Chapter 32). Among the most impressive trend disparities have been the changing rates of coronary heart disease in different countries and in cancer deaths (Table 40.7, Figure 40.2). On the other hand, both insulin dependent and non-insulin dependent diabetes appear to be on the increase in most places (AIHW 2000).



Note: Death rates have been age-standardised to the world standard population.

Figure 40.2 Death rates for cardiovascular disease, selected countries, 1994 (AIHW 2000)

Unlike selective pharmacotherapy, food has the capacity to favourably influence health on several fronts at the same time, as in cardiovascular disease, neoplastic disease, diabetes and osteoporosis. To understand these possibilities, it is necessary to understand the relationships between food and disease patterns.

### Dietary tolerance

Although food intake may be in transition from one pattern to another, its impact on health status will depend on tolerance to change. This is a familiar concept with functional reserve capacity in organs like the heart when considering, for example, the impact of unplanned physiological stress or of myocardial disease. The measurement of variation in food intake and how it relates to health outcome is in its infancy. Food variety is one such approach (Table 40.8). A paper and editorial in the *New England Journal of Medicine* on

variation in energy intake in children and the extent to which it comes out on target over several weeks illustrates this point (Birch et al. 1991). Moreover, the ability to make these adjustments in energy intake might ultimately be a predictor of energy imbalance reflected in obesity. Perhaps related to this consideration is the emerging application of chaos theory to human biology (Jurgens et al. 1990). Apparent disorder may well be a marker of health rather than disease, since it may represent error that can be tolerated or managed. This is the case with irregular heart rhythms. Similarly abrupt changes in food intake (e.g. with celebration, travel, eating with different people) may help develop, and also test, dietary tolerance. Models for enquiry into dietary tolerance will include those of intra-individual variation and of intra-cultural difference (which otherwise might be regarded as inter-individual difference and inter-cultural difference).

Table 40.6 Age-standardised death rates<sup>(a)</sup> by selected causes and gender, selected countries, latest year (per 100 000 population)

	Infectious & parasitic	Neoplasms	Circulatory	Respiratory	Injury & poisoning	All causes
<b>Males</b>						
<b>Australia (1998)</b>	<b>8</b>	<b>221</b>	<b>273</b>	<b>72</b>	<b>59</b>	<b>742</b>
<b>Australia (1995)</b>	<b>7</b>	<b>235</b>	<b>320</b>	<b>66</b>	<b>57</b>	<b>802</b>
Canada (1995)	6	238	307	79	63	841
China—selected rural areas (1994)	40	206	371	326	106	1212
China—selected urban areas (1994)	18	234	428	203	58	1099
Denmark (1995)	14	275	408	94	75	1073
France (1994)	12	285	240	60	92	878
Germany (1995)	7	263	443	72	60	1013
Greece (1995)	6	221	381	48	61	846
Ireland (1993)	6	274	515	159	55	1133
Israel (1995)	14	197	366	37	52	859
Italy (1993)	4	276	350	62	59	907
Japan (1994)	14	228	233	117	64	768
Korea, Republic of (1995)	31	276	316	73	131	1230
Netherlands (1995)	7	282	358	100	40	955
New Zealand (1993)	5	261	421	100	71	970
Norway (1994)	7	229	390	83	61	912
Poland (1995)	11	301	687	59	123	1423
Russian Federation (1995)	38	307	1052	142	395	2171
Singapore (1995)	23	257	338	208	60	975
Spain (1994)	11	261	292	93	59	893
Sweden (1995)	6	191	393	60	58	826
Switzerland (1994)	20	248	322	64	82	847
United Kingdom (1995)	6	258	411	144	41	974
United States (1994)	14	244	389	90	85	990
<b>Females</b>						
<b>Australia (1998)</b>	<b>5</b>	<b>139</b>	<b>194</b>	<b>45</b>	<b>22</b>	<b>489</b>
<b>Australia (1995)</b>	<b>4</b>	<b>146</b>	<b>222</b>	<b>36</b>	<b>23</b>	<b>522</b>
Canada (1995)	5	156	185	42	25	515
China—selected rural areas (1994)	22	115	267	241	71	845
China—selected urban areas (1994)	8	126	319	142	38	776
Denmark (1995)	6	209	247	62	38	707
France (1994)	7	127	140	27	39	454
Germany (1995)	4	156	278	29	24	596
Greece (1995)	4	115	303	31	19	571
Ireland (1993)	4	181	308	95	22	709
Israel (1995)	10	160	268	26	26	631
Italy (1993)	2	144	235	23	24	535
Japan (1994)	7	111	154	48	25	423
Korea, Republic of (1995)	9	109	212	32	48	667
Netherlands (1995)	6	159	205	43	20	565
New Zealand (1993)	3	179	267	59	27	625
Norway (1994)	5	154	219	52	26	551
Poland (1995)	4	156	421	21	34	791
Russian Federation (1995)	8	140	633	38	94	1058
Singapore (1995)	15	146	254	125	20	634
Spain (1994)	6	119	206	34	17	501
Sweden (1995)	5	142	221	36	24	512
Switzerland (1994)	8	139	198	29	36	486
United Kingdom (1995)	4	174	245	90	17	624
United States (1994)	10	162	245	55	29	612

(a) Reference population is the European standard population (WHO 1998). Standard death rates in this table are different from the rates in other tables because of the use of a different reference population

Sources: WHO 1996, 1998

**Table 40.7 Major cancers, age-standardised incidence rates<sup>(a)</sup> by sex, selected countries 1988–92 and Australia 1992 and 1996 (per 100 000 population)**

<b>Males</b>	<b>Colorectal</b>	<b>Lung</b>	<b>Melanoma</b>	<b>Prostate/Breast</b>	<b>Stomach</b>	<b>All cancers<sup>(b)</sup></b>
<b>Australia (1992)</b>	<b>46.6</b>	<b>44.3</b>	<b>32.4</b>	<b>63.4</b>	<b>10.4</b>	<b>327.2</b>
<b>Australia (1996)</b>	<b>49.5</b>	<b>41.9</b>	<b>37.3</b>	<b>79.1</b>	<b>9.3</b>	<b>351.6</b>
Canada	43.0	65.4	7.7	64.7	10.6	322.1
England and Wales (1988–90)	33.9	62.4	4.6	28.0	16.1	261.1
Italy (Venice)	35.4	81.9	6.1	26.8	19.9	355.9
Japan (Osaka)	34.2	43.5	0.2	6.8	65.0	272.8
Netherlands	36.4	73.0	6.9	39.6	15.4	288.4
New Zealand (non-Maori)	51.3	46.5	25.0	37.8	11.0	290.3
United States (black)	46.4	99.1	0.7	137.0	14.5	454.5
United States (white)	42.4	61.3	13.1	100.8	7.5	370.9
<b>Females</b>						
<b>Australia (1992)</b>	<b>32.6</b>	<b>15.0</b>	<b>26.3</b>	<b>69.4</b>	<b>4.1</b>	<b>247.2</b>
<b>Australia (1996)</b>	<b>33.0</b>	<b>16.9</b>	<b>29.0</b>	<b>78.4</b>	<b>4.1</b>	<b>263.5</b>
Canada	30.5	28.0	6.9	76.8	4.5	252.8
England and Wales (1988–90)	23.7	22.8	6.6	68.8	6.3	225.5
Italy (Venice)	24.3	13.9	7.0	72.6	8.8	230.6
Japan (Osaka)	19.9	12.4	0.2	24.3	27.3	154.8
Netherlands	27.8	13.0	9.8	79.6	6.1	225.0
New Zealand (non-Maori)	40.8	18.2	29.8	77.2	4.8	274.6
United States (black)	35.3	38.5	0.5	79.3	5.9	271.6
United States (white)	29.5	33.8	10.2	90.7	3.1	280.9

<sup>(a)</sup> Age standardised to the world standard population<sup>(b)</sup> Excludes non-melanocytic skin cancer

Source: Parkin et al. 1997

## THE HISTORY OF FOOD AND NUTRITION POLICY

A catalyst for the development of food and nutrition policies in recent times was the growing appreciation in developed countries of the links between affluent ways of life and chronic non-communicable diseases like obesity, macrovascular disease, neoplastic disease of certain types, diabetes, osteoporosis, degenerative joint disease, alcohol related conditions and the dementias in what had become ageing societies. This led to the development of dietary guidelines. Sweden led the way with a National Farm Policy related to nutrition in 1963, and a ten-year diet and exercise program in 1971. This was a more integrated approach than that of the US Dietary Guidelines developed in 1980 jointly between the Departments of Health, Education and Welfare and Agriculture as a response to the 1977 report of the Senate Select Committee on nutrition and human needs, under the chairmanship of Senator McGovern. In Australia, in 1979, similar guidelines were released by a multidisciplinary working party and by government (Blaxter 1986). By referring to the need for an adequate

**Table 40.8 Relations between food variety and arterial wall characteristics for healthy subjects and people with diabetes considered together (shown as rs which is Spearman's rank correlation coefficient)**

	<b>Total Food variety</b>	<b>Plant Food variety</b>
Aorto-iliac artery compliance	0.38**	0.31*
Pulse wave		
common femoral	–0.38**	–0.31*
posterior tibial	–0.44**	–0.41**

\*:  $p < 0.05$ ; \*\*:  $p < 0.01$  as indices of statistical significance.

These findings indicate that where there is more food variety, arteries are more compliant and damping of pulse waves is less, which is consistent with food variety being protective against arterial disease with atherosclerosis.

Source: Wahlqvist et al. 1989

intake of water as a preferred beverage, the peculiar needs of people living in a dry and hot continent, with excesses of alcohol intake, were taken into account. This example of differences between nations in guidelines underscores the merits of each national government formally considering its own policy.



### ***Dietary goals, guidelines and policies***

A national food and nutrition policy may be defined as a statement of intent about governmental action to achieve nutrient or dietary goals, explicitly taking into account the relationship between diet and health. A nutrient or dietary goal is defined as the range of nutrients or foods in which population average intakes are judged to be consistent with a low prevalence of diet related diseases in the population, for example, total average carbohydrate for a population should be between 55% and 75% of energy. Dietary guidelines express the goals in terms of foods (or combination of foods) which are to be eaten by individuals. For example, the carbohydrate goal would be expressed in a dietary guideline as: eat more bread and cereals (preferably wholegrain), vegetables and fruits. Guidelines do not have to be quantified but need to be based on goals. Many different dietary patterns can be compatible with a given set of dietary goals. However, dietary guidelines have the potential to be misinterpreted and may result in 'unexpected consequences'. For example, in Australia a major contributor to increased fruit consumption has been an increased consumption of fruit juice (Baghurst et al. 1987). The loss of physicochemical properties of fruit in the production of fruit juice may lead to significantly different metabolic profiles for glucose and insulin (Heaton et al. 1979).

Food and nutrition policy is usually the business of governments, be they national or provincial, and of international agencies like WHO, FAO and UNICEF. The specificity and emphasis of a country's food and nutrition policy objectives will vary with the existing food and health situation, for example whether the country is a net importer or exporter of food or whether malnutrition, overnutrition or both is the problem. Dietary goals and guidelines have most impact on people's lives when they are incorporated into policies, nutrition education handbooks, food labelling, modified foods and health claims. There is a big difference between a government report that induces no action and a policy that is followed through and supported with education, subsidies and tariffs.

Food and nutrition policy addresses the following issues:

- 1 Food security (a dependable and safe food supply). The primary objective of national food and nutrition policy has been and continues to be to obtain a secure, safe and sufficient food supply.

A reliable food supply has been described as a prerequisite for all other activities of humans (Blaxter 1986).

- 2 Health and well-being as far as they can be met by the food supply and food intake. (Many countries in the Asia-Pacific region are undergoing an epidemiological transition, in which disease profiles are emerging that result from both under and overnutrition).
- 3 The ecological impact of food production, processing, storage and transport.

When such policy was in development in Australia, certain specific objectives were identified in support of the above general requirements (CDCSHH 1992). These included the following:

- 1 To produce food locally as far as possible. This reduces energy costs and also gives people a greater sense of control of their food supply. Urban gardens were seen as part of such a policy, and work was done on this as part of the Victorian Food and Nutrition project in Melbourne. The preservation of local food culture can also be increasingly important in an age where cultural internationalisation and loss of diversity are occurring. On the other hand, there is value in moving food from one locality to another if it adds to diversity and reduces the risk of local nutrient deficiencies or of food component excesses and toxicities.
- 2 To assist food-deficit countries to achieve a satisfactory local food production and, where necessary, to produce additional food within Australia (or any other country) to make good food shortages. It is now generally agreed that continuing food aid does little, beyond alleviating food crises, to deal with food deficits (Ramalingaswami 1994).

Policy of this kind requires the participation of several sectors including agriculture, food manufacturing, health, education, finance and economics at the most senior levels of government such as cabinet, at the professional level, and at the community organisation level. The nature and scope of modern public health policy were defined and promulgated by WHO in the 1980s through its Health For All strategy (WHO 1981) and Healthy Public Policy movement (WHO 1986). These key developments emphasised the following factors:

- 1 intersectoral planning and management;
- 2 equity in health outcomes;
- 3 a population-wide setting;
- 4 a prevention focus.

This range of factors was later extended to include an ecological dimension. Management and planning of policy has also been required. The food system is large and complex and nutritional health is just one outcome. As one commentator has noted, 'The food system, in reality, is not driven by nutritional, but market and competitive needs' (Tansey 1994). Thus, while the purpose and outcomes expected of food and nutrition policy are oriented towards nutritional health, there are a variety of different stakeholders critical to its successful implementation. In particular, there is a need to adopt an intersectoral focus to the management and planning of policy. In addition, the management and planning of food and nutrition policy issues extends across all levels of government, from national to local, to address issues of food availability and accessibility. The Plan of Action of the World Declaration of Nutrition adopted by ministers of 159 states at the FAO/WHO International Conference on Nutrition, Rome 1992 (FAO/WHO 1994), states as the first of the strategies 'incorporating nutritional objectives, considerations and components into development policies and programmes'.

## PUBLIC HEALTH NUTRITION

'Public health nutrition focuses on nutrition issues affecting the whole population rather than the specific dietary needs of individuals. The impact of food production, distribution and consumption on the nutritional status and health of particular population groups is taken into account, together with the knowledge, skills, attitudes and behaviours in the broader community' (Commonwealth Department of Health and Aged Care 2000). Food and nutrition policies usually embrace public health nutrition. For example SIGNAL (the Strategic Inter-Governmental Nutrition Alliance in Australia) is taking a national approach to public health nutrition to ensure greater consistency and better coordination of policy and strategy development across Australia; it provides, for the first time at a national level, a common face for public health nutrition in Australia (see below).

## *International food and nutrition policies*

A global Plan of Action for Nutrition (the Plan) containing recommendations on policies, programs and activities resulted from an intensive consultative process of the International Conference on Nutrition (ICN), convened in Rome in 1992 (FAO/WHO 1994). The Plan is designed to provide guidelines for governments, acting in partnership with a range of stakeholders in the food and nutrition system. The goals of the World Declaration on Nutrition, as well as the recommendations of the Plan, are intended to be translated into priority action in accordance with the realities found in each country and must be supported by action at the international level. As such they provide a strong stimulus for the development of national food and nutrition policies. Eliminating or reducing various kinds of food insecurity and hunger in the most vulnerable, and addressing all other major forms of malnutrition have been identified as priority areas. The major policy guidelines include the following:

- 1 commitment to promoting nutritional well-being;
- 2 strengthening of agricultural policies;
- 3 environmentally sound and sustainable development;
- 4 growth with equity (the need for both economic growth and equitable sharing of benefits by all segments of the population);
- 5 priority given to the most nutritionally vulnerable groups;
- 6 focus on Africa;
- 7 people's participation;
- 8 focus on women and gender equality;
- 9 development of human resources;
- 10 population policies;
- 11 health policies;
- 12 promotion of nutritional well-being through strengthened economic and technical cooperation among countries;
- 13 allocation of adequate resources.

There are strategies and actions, namely:

- 1 incorporating nutritional objectives, considerations and components into development policies and programs;
- 2 improving household food security;
- 3 protecting consumers through improved food quality and safety;
- 4 preventing and managing infectious diseases;

- 5 promoting breastfeeding;
- 6 caring for the socioeconomically deprived and nutritionally vulnerable;
- 7 preventing and controlling specific micronutrient deficiencies;
- 8 promoting appropriate diets and healthy lifestyles;
- 9 assessing, analysing and monitoring nutritional situations.

The Plan encourages all governments to establish appropriate national mechanisms to prioritise, develop, implement and monitor policies and plans to improve nutrition within designated time frames, based both on national and local needs, and to provide appropriate funds for their functioning. Support is expected from bilateral, international and multilateral agencies. All involved are encouraged to report on outcomes. As evidence of the higher priority that governments are giving to nutrition, as of July 2000, 149 (78%) of the WHO's member states had given effect to their commitments while another 17 (9%) had plans and policies under preparation.

### ***The Strategic Inter-Governmental Nutrition Alliance (SIGNAL)***

The Strategic Inter-Governmental Nutrition Alliance (SIGNAL) is a national Australian partnership of government health authorities formed to coordinate action to improve the nutritional health of Australians. SIGNAL is made up of representatives or nominees of:

- The Commonwealth Department of Health & Aged Care
- All eight State/Territory Government Health Departments
- The Australian Institute of Health and Welfare (AIHW)
- The Australia New Zealand Food Authority (ANZFA)
- The National Health and Medical Research Council (NH&MRC)
- The New Zealand Ministry of Health (observer status)
- Three independent members with expertise in nutrition and public health

SIGNAL is the nutrition arm of the National Public Health Partnership (NPHP), which was created to provide a more systematic and strategic approach to

public health priorities. NPHP is overseen by a group consisting of senior public health officers at state/territory and Commonwealth levels and reports to the Australian Health Ministers' Advisory Council. The primary goal of SIGNAL is to develop and implement a National Public Health Nutrition Strategy based upon Australia's National Health Priority areas—cardiovascular health, diabetes and cancer. The strategy will include an action plan for Aboriginal and Torres Strait Islander peoples and will initially focus on:

- increasing the consumption of fruit and vegetables;
- preventing overweight and obesity;
- promoting good nutrition for women and children;
- promoting good nutrition for vulnerable and disadvantaged groups.

SIGNAL is responsible to the National Public Health Partnership and through it to the Australian Health Ministers Advisory Council. SIGNAL has a leadership role in building a common approach to public health nutrition across Australia: for example the Australian Dietary Guidelines and the Australian Guide to Healthy Eating underpin SIGNAL's work. It seeks to improve effectiveness, reduce duplication and achieve economies of scale in developing programs, campaigns and educational materials; a more coordinated approach to workforce development, research, monitoring and evaluation will also be encouraged. It has the capacity to foster partnerships, working cooperatively with the food industry, professional associations, government and non-government organisations and consumer groups at a national level to advance public health nutrition.

### ***Household food security for nutritionally vulnerable groups***

People who do not have enough to eat are unlikely to pay attention to educational messages about healthy food consumption behaviours. Food security is essential before particular food consumption patterns can be promoted in a population group. The World Health Organization has identified household food and nutrition security as a basic human right irrespective of wealth or home country and this was identified as a major strategic action area at the 1996 World Food Summit.

Food security has been defined in many ways, but is most commonly understood as 'access at all times by

all people to adequate food for an active and healthy life' (World Bank 1986).

Food security can also be defined as (Wood 2000):

the state in which all persons obtain a nutritionally adequate, culturally acceptable diet at all times through local non-emergency sources. Food security broadens the traditional conception of hunger, embracing a systemic view of the causes of hunger and poor nutrition within a community while identifying the changes necessary to prevent their occurrence. Food security programs confront hunger and poverty.

The term food security is often mistakenly believed to mean food safety. Food safety is embraced to some extent in the definition, but the term is quintessentially used to describe the food problems that vulnerable people can experience. When a person suffers from food insecurity, the immediate effect is hunger. Food insecurity is usually, but not always, exacerbated by poverty in both developed and developing countries.

Food insecurity was previously considered an issue only for poor or developing countries where overt malnutrition and poor food supply have resulted in high rates of illness and death, especially among children. In developed countries, food security is often invisible to those who make decisions at government level. In the last twenty years there has been increasing concern about hunger in food-rich developed countries like Australia and the United States. In these countries, there has been a lack of recognition of the problems of nutritionally vulnerable at risk groups at a decision-making level which has condoned the myth that everyone has enough to eat and adequate cooking skills because 'we are not a developing country'. Another myth that has hindered advocacy at government level is that people in difficult circumstances are there because they are 'no-hopers' and 'mismanage their money'.

There can be inequitable food distribution in remote, rural and sometimes urban communities. In remote areas in the Northern Territory, central and Western Australia, Aboriginal communities often have difficulty accessing food; this food also tends to be more expensive due to the cost of transporting it from market gardens and food manufacturers in distant towns and cities. Also, the closure of many milkbars and small supermarkets in urban suburbs forces many to drive to larger supermarkets—this could be a problem for those without transport. Phone orders and internet supermarket shopping should help to improve food access.

The majority of us are totally dependant on the food supply and we overcome any difficulties in accessing it by having sufficient money, internet or phone access, and transport. But people who do not have these privileges, or any social support, are more likely to be in nutritional strife.

Research in the United States has resulted in a definition of hunger including both qualitative and quantitative components: 'the inability to acquire an adequate quality or sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so' (Radimer et al. 1990). Food security has been defined at a number of levels: national, community, household and individual. Improved agricultural technologies introduced as part of the 'Green Revolution' helped many countries to achieve security at the national level, but these benefits were often not distributed evenly to ensure it at the household and the individual levels. In food-rich countries, food security is only an issue of concern at the household and the individual levels.

About one in ten Australian adults in Victoria reported running out of food at some time during 1995, and did not have enough money to buy more (AIH 1995). One hundred and sixty thousand Victorians used night shelters in 1999, and 30 000 of the 40 000 homeless people in Victoria are children (Australian Broadcasting Commission 1999). Adults aged 16–44 years appear to be at particular risk of food insecurity, especially those living alone and/or paying rent, low income families and single parents with dependent children. 'Improving Food Security for Vulnerable Groups' has recently become one of the priority issues to be addressed to improve public health nutrition in Australia (Victorian Government Department of Human Services 1997, SIGNAL 2000).

Food insecurity can lead to deterioration in energy, well-being and life quality and ultimately to symptoms of malnutrition if the food insecurity is chronic. Malnutrition means 'badly nourished' and it has been referred to as 'the silent emergency'. Malnutrition can occur in both the underweight and the overweight, resulting in an increased frequency of infections and/or chronic diseases through inadequate intake of protein, micronutrients and inadequate or excessive intake of energy (see Chapter 31).

Protein energy undernutrition and low body weight often occur due to inadequate food availability associated with poverty and/or with natural or manmade emergencies and disasters. In this situation malnutrition

is overt and expressed as marasmus and kwashiorkor and is more common in developing countries (see Chapter 30). On the other hand, malnutrition (namely of micronutrients) can also occur in the presence of a good food supply, but where poor food choices are made. For example, micronutrient deficiencies may occur if convenient energy-dense nutrient-poor foods are selected over the long term. This type of malnutrition may occur in the absence of poverty and in the presence of adequate or excessive energy intakes and obesity (see Chapter 31). It is often seen in transitional societies and in certain 'at risk' groups (see below) in both developed and developing countries. The following 'at risk' groups have been identified as being nutritionally vulnerable and at risk of food insecurity in Victoria, Australia:

- 1 low income families (at particular risk are women of child-bearing age, children and adolescents);
- 2 people who have socioeconomic problems;
- 3 people with mental illness;
- 4 people who are non-English speaking;
- 5 chronically ill people (particularly socially isolated individuals and families with a chronically ill member, and the elderly);
- 6 frail elderly people (particularly those who are socially isolated and/or have low incomes).
- 7 people affected by alcohol and/or substance abuse;
- 8 homeless people (particularly youth, women of child-bearing age and the elderly);
- 9 people of Aboriginal and Torres Strait Islander background.

Not belonging to an identified 'at risk' group does not necessarily exclude an individual from the risk of becoming nutritionally vulnerable. There is a lack of recognition that some individuals have to choose between spending their income on electricity, gas and water bills, gambling and food. Alcohol and cigarettes may be a priority for people in vulnerable at risk groups because these soft drugs may be the only thing they have control over, find comfort and security in, and confer a form of pleasure. Some have expressed concern that home economics has fallen off the school curriculum in Australia, which removes the opportunity for many children to gain socially relevant food skills (Wood et al. 2000).

'Potential risk factors' which either individually or together predispose an individual to nutritional vulnerability may include (Wood et al. 2000):

- a lack of access to suitable transportation and readily available nutritious foods;
- poor budgeting skills;
- inadequate cooking skills;
- inadequate storage facilities.

More research is needed to understand the importance of these factors in influencing food security and nutritional health status in 'at risk' groups. For example, a person on a low income with good cooking and budgeting skills may be less nutritionally vulnerable or food insecure because well-prepared home-cooked meals tend to cost less and be more varied and nutrient dense than fast food or pre-prepared foods from the supermarket. Also, having the cooking skills to prepare tasty meals using inexpensive meat alternatives (such as legumes, eggs, nuts, tinned fish) combined with vegetables may also reduce one's risk of nutritional vulnerability. For example, a steak is quick and convenient to cook, but it is at least three times more expensive than a can of baked beans which means that an 'at risk' person would have less money left over to buy other foods. Compared with the single person, families are at greater risk of food insecurity, especially if only one parent is working on a low income to support an entire family. Low income families need to plan and budget carefully for meals because they could find themselves in nutritional strife. For example, a pot of home-cooked lentil and vegetable soup (an excellent meat alternative) will cost around \$5 to prepare and will feed a family of five. In contrast, to feed the same family with red meat or with take-away hamburgers it will cost around \$20.

The Healthy Eating Healthy Living Program funded by the Victorian Health Promotion Foundation (Wood et al. 2000a) examined the 1995 Australian National Nutrition Survey to identify social, lifestyle, health and nutritional features of people in the population reporting food insecurity. As a broad indicator of food security, the survey asked the question: 'In the last 12 months, were there any times that you ran out of food and couldn't afford to buy more?' The food insecure (i.e. those who answered 'yes') ( $n = 559$ ) were compared to food secure Australians ( $n = 10\,662$ ), minus significant statistical differences ( $p < 0.01$ ). As reported in Wood et al. (2000a), the food insecure (versus food secure) tended to:

- be females of all ages (58%)

- be aged 16–24 years (28% vs 12%) and 25–44 years (53% vs 40%);
- have not completed secondary school (47% vs 39%);
- be unemployed (16% vs 4%) or have a low income job (30% vs 20%);
- be low income families, single parent with dependent children (18% vs 6%);
- be living in socially disadvantaged areas (52% vs 37%);
- be living alone (18% vs 14%) or were in mixed family households (23% vs 10%);
- be paying rent (69% vs 25%);
- be reporting poor/fair health (26% vs 16%);
- smoke more (51% vs 23%);
- have higher mean alcoholic drinks (286 g vs 250 g/day) and ethanol intakes (40 g vs 28 g/day);
- be more underweight BMI <20 (11% vs 6%) or obese BMI 30+ (22% vs 19%);
- have similar mean energy (8500 kJ/day) and total fat intakes (74 g/day);
- have lower mean intakes of protein, fibre and micronutrients (probable inadequate intakes of vitamin A, provitamin A, riboflavin, calcium, magnesium, zinc);
- have higher mean intakes of saturated fat (30 g vs 28 g/day);
- have low mean intakes of fruit (90 g vs 150 g), vegetables (226 g vs 261 g);
- have moderate mean intakes of bread/pasta/rice/cereals (196 g vs 210 g);
- have moderate mean intakes of red meat/poultry/pork (135 g vs 154 g);
- have higher intakes of sausages, hamburgers, meat pies, sausage rolls;
- have a low mean intake of fish (22 g vs 26 g);
- have a low intake of inexpensive meat alternatives such as legumes (15 g), eggs (12 g), nuts/seeds (4 g);
- have moderate mean intakes of milk and milk products (330 g vs 294 g);
- have higher mean intakes of refined sweet foods (cakes/biscuits/pastries 137 g vs 123 g), confectionery/health bars (40 g vs 30 g), soft drinks/flavoured mineral water (291 g vs 166 g);
- have higher intakes of snack foods, ready-to-eat foods, easily prepared foods;
- have a lower variety of foods consumed across a week from all major food groups, particularly vegetables.

These data suggest that food insecure people are spending their money on more expensive items such as

meat, refined sweet foods, fast/convenience foods rather than on cheaper plant foods and meat alternatives. The reasons for such food expenditure require in depth investigation. It is suspected that inadequate cooking skills, time management and budgeting skills may be contributing to food insecurity.

### Implementation of policy

Ultimately a food and nutrition policy is only as good as its implementation. Implementation requires an organisational structure to coordinate initiatives, which in turn requires funds, technical expertise and access to policy-makers and the political process. A further critical aspect influencing the likely success of policy implementation is the nature of the 'instruments' the policy will employ (Milio 1990). 'Will they be the politically and economically less risky tools of information, education, research and evaluation? Or will they be strengthened by more powerful measures for creating structural changes, such as revised subsidies and pricing, production controls, development and marketing support, and regulation of food composition and advertising?' (Milio 1990).

The Healthy Eating Healthy Living Program, funded by the Victorian Health Promotion Foundation (Wood et al. 2000a), reviewed 40 Australia-wide programs that targeted food insecure groups. Key recommendations that emerged from the review include:

- several food and nutrition programs with sustainable outcomes need to commence at the local government level;
- future programs are needed which target low income families, youth, independently living older persons, and persons who are homeless;
- further investigation of potential risk factors for nutritional vulnerability are needed—food access, food storage, food budgeting and cooking skills;
- a central repository of 'Healthy Eating Programs' (library and Web) is necessary;
- community capacity building is needed for community workers.

### Monitoring and evaluation

There is a need to put in place a mechanism for monitoring and evaluating policy. Policy is a dynamic

process, with aims and structures that constantly evolve, reflecting change in demographic profiles and economic, social and political transitions in a country. Monitoring and evaluation are important components of the iterative process for the future planning and implementation of policy.

## POLICY AND DIETARY GUIDELINES IN THE ASIA-PACIFIC REGION

Around the Asia-Pacific region various aspects of food and nutrition policy are emerging, even if not fully developed as one integral policy (Florencio 1997). The problem of nutrition in the transition period, that is, in the shift from a closed to an open economy, needs to receive attention together with more intensive efforts toward the control of protein energy undernutrition and nutrient deficiencies. The opening up of the economy impacts not only on culture, morals and lifestyle but also on traditional diet. For these reasons, several countries in the Asia-Pacific region address this issue by recommending in their guidelines to maintain what is good in the traditional diet and selectively accept other diets, for example, the Vietnamese guidelines promote fish and soy products. Food based dietary guidelines also address the importance of retaining the best of traditional diets (see below).

### Australia

It is interesting that Australia considered itself as having a policy in 1980 (Langsford 1980), but it was not truly intersectoral. Indeed, the State of Victoria had a much more integrated draft policy in 1984 around the theme *To make healthy food choices easier choices*. This was finalised and approved by the Victorian State Cabinet in 1987 (Powles et al. 1992). In turn, this led to a concerted effort between government departments to effect healthful changes in the food supply, duly recognised as a model initiative by WHO in 1988 (WHO 1988). Subsequent state and national changes in government and administration have given the policy less status, but its impact is ongoing. For example, the advent of a National Food Authority with a much debated charter to take account of nutrition and health has centralised the responsibility for developing the *Food Standards Code*, thereby ensuring that there are uniform food standards across all States and Territories.

A more substantial Australian national Food and Nutrition Policy of 1992, but with possibly less local immediacy, changed the role of State policy. A change in State government, with greater emphasis on food as an economic rather than as a health consideration, further changed the agenda. The Victorian premier in 1993 began to chair a Food Advisory Group in its own right, with resulting major developments in food science and technology. But externalising from government, a food and nutrition project undertaken by the Deakin Institute of Human Nutrition and its further development elsewhere in the university sector, notably in medicine, allowed the progress of nutritionally related health science and policy. Ultimately in September 1995 a Victorian food and nutrition policy was re-established by the incumbent regime. Most other State governments have likewise formulated food and nutrition policies. Much can be learned from this Australian case study of food and nutrition policy about how an operational policy can exist without an official policy and how the reverse might also apply.

The Australian dietary guidelines and recommended dietary intakes form part of food and nutrition policy (see Chapter 36), providing reference points as targets and a basis for evaluation. The current Australian Dietary Guidelines for adults, children and the elderly are shown in Chapter 36.

### New Zealand

The Food and Nutrition Guidelines, along with a Food and Nutrition Policy for New Zealand, were released in 1991 by the Ministry of Health and the Public Health Commission:

- 1 Eat a variety of foods from each of the four major food groups each day: vegetables and fruit; bread and cereals; milk and dairy products, especially low fat varieties; and lean meats, poultry, fish, eggs, nuts or pulses.
- 2 Prepare meals with minimal added fat (especially saturated fat) and salt.
- 3 Choose pre-prepared foods and snacks that are low in fat (especially saturated fat), salt and sugar.
- 4 Maintain a healthy body weight by regular activity and by healthy eating.
- 5 Drink plenty of liquids each day.
- 6 If you drink alcohol, do so in moderation.

In 1992, dietary guidelines were released for specific groups of the population, including children, adolescents, the elderly, infants and toddlers, pregnant women and breastfeeding women.

### China

In China, nutritional considerations have been built into agricultural policy. Recommendations for food production were made and a China National Program of Food Structure Reform and Development in the 1990s was announced in 1993. Its aim is to plan economically sustainable food production for adequate and healthy nutrition. The program substantially incorporated nutritional considerations and goals for the year 2000 into future production plans. Some of the aims are (Chen Chun-ming 1995):

- 1 to maintain the dietary pattern of Chinese people as a principally vegetable diet with moderate amounts of animal foods;
- 2 to meet nutrient requirements in terms of food items;
- 3 to lower pork intake from the current 84% to 70% of meat intake and to raise the poultry ratio to 20%;
- 4 to encourage soy bean production for upgrading protein quality and to avoid improper increases of animal food consumption;
- 5 to promote vegetable and fruit intake.

The first dietary goals for the people of China were recommended in 1988:

- 1 a national energy intake of 2400 calories per person per day, with 60% from cereals;
- 2 protein intake of 70 g per person per day, contributing 14% of total energy intake, with 30% to 40% of protein intake from a combination of animal and bean/pulse sources;
- 3 between 25% to 30% of total energy intake from fat;
- 4 salt intake of less than 10 g per person per day.

In 1989 dietary guidelines were formulated by the Chinese Nutrition Association and have been accepted as government policy and included in the China National Program of Food Structure Reform and

### Development in the 1990s:

- 1 eat a variety of foods;
- 2 eat an appropriate quantity of food;
- 3 moderate oil and fat intake;
- 4 eat moderately polished cereals;
- 5 limit salt intake;
- 6 eat fewer sweets;
- 7 limit alcohol;
- 8 balance food distribution for three meals.

### Philippines

In the Philippines regular revisions of nutrition programs to counter childhood malnutrition have occurred for more than two decades, withstanding and taking advantage of major political change. In 1990 the Food and Nutrition Research Institute developed the following guidelines which address both over and undernutrition:

- 1 Eat a variety of foods every day (*eat a balanced diet from a variety of foods; pay particular attention to your food needs during pregnancy and lactation; prepare meals for your children that are varied, complete, and adequate for their growth and development; support the elderly with a diet suitable to their conditions; choose ready-to-eat foods with high nutritional value*).
- 2 Promote breastfeeding and proper weaning (*learn about and promote the advantages and value of breastfeeding; learn the techniques of successful breastfeeding; breastfeed for as long as there is milk; start supplementary foods when the baby is 4–6 months old*).
- 3 Achieve and maintain desirable body weight (*weigh yourself and the members of your family regularly and behave accordingly; maintain energy balance to attain desirable body weight; exercise regularly—it is good for you*).
- 4 Eat clean and safe food (*learn to prevent food-borne diseases; practise safe food storage, handling, preparation and service*).
- 5 Practise a healthy lifestyle (*be moderate in what you eat and drink; avoid smoking and control stress; maintain good dental health*).

### Singapore

In Singapore, the increased problem of childhood obesity has been seen as an indicator of nutritional problems



and concerted action has been directed towards rectifying these problems in schools, media campaigns and in the armed forces. Dietary guidelines were developed in 1989 by the National Advisory Committee on Food and Nutrition:

- 1 Eat a variety of foods.
- 2 Maintain desirable body weight.
- 3 Restrict total fat intake to 20% to 30% of total energy.
- 4 Modify composition of fat in the diet to one-third polyunsaturated, one-third mono-unsaturated and one-third saturated.
- 5 Reduce cholesterol intake to less than 300 mg/day.
- 6 Maintain intakes of complex carbohydrate at about 50% of total energy intake.
- 7 Reduce salt intake to less than 4.5 g/day (1800 mg of sodium).
- 8 Reduce intake of salt-cured, preserved and smoked foods.
- 9 Reduce intake of refined and processed sugar to less than 10% of energy.
- 10 Increase intake of fruits and vegetables and wholegrain cereal products, thereby increasing vitamins A, C and fibre.
- 11 For those who drink, have no more than two or three standard drinks (about 40 g of alcohol) per day.
- 12 Encourage breastfeeding of infants until they are at least 6 months old.

### Japan

In Japan, various programs address the role of the food supply in health and disease through basic food and nutrition science; food law, including Food for Specified Health Use (FOSHU); nutritional epidemiology of neoplastic and cardiovascular diseases; health care professional education; and care of the aged. Dietary guidelines were developed in 1985 by the Ministry of Health and Welfare (Health Service Bureau):

- 1 Eat a variety of foods to ensure a well-balanced diet (*eat 30 or more different kinds of food daily*).
- 2 Maintain ideal body weight (*avoid excessive calorie intake to prevent obesity; adjust physical activity to match daily calorie intake*).
- 3 Be aware that the type of fat consumed is as important as the quantity (*avoid eating too much fat; use vegetable oils rather than animal fats*).
- 4 Avoid eating too much salt (*aim for a salt intake of*

*less than 10 g per day; appropriate cooking cuts down on excessive salt intake*).

- 5 Make all activities pertaining to food pleasurable ones (*use meal times as occasions for family communication; enjoy cooking at home*).

In 1990, various sets of guidelines were developed for:

- 1 prevention of adult diseases;
- 2 the elderly;
- 3 infancy—diet as a tie between mother and child;
- 4 infancy—meals as a foundation for proper eating habits;
- 5 school age—establishing dietary patterns;
- 6 adolescence—-independent dietary patterns; and
- 7 women (including mothers).

### Thailand

In Thailand, policy emanates from the National Institute of Nutrition headed by Professor Kraissid Tontsirin. The policy seeks to address structural and organisational arrangements which have an impact on ongoing undernutrition, transitional health problems and specific new challenges like the relationship between HIV positivity and nutritional status. In 1996, revised food-based dietary guidelines were issued by an expert panel organised by the Nutrition Division, Ministry of Public Health:

- 1 Eat a daily variety of foods from each of the five food groups and watch your weight.
- 2 Eat sufficient amounts of rice cereals, and wholegrain products.
- 3 Choose a diet with plenty of vegetables and eat fruits regularly.
- 4 Eat fish, lean meat, eggs and legumes regularly.
- 5 Drink a sufficient amount of milk every day.
- 6 Eat only a moderate amount of fats.
- 7 Avoid sweet and salty food.
- 8 Eat clean and well-prepared foods that are free from contamination.
- 9 Avoid or limit alcoholic beverages.

### Malaysia

Malaysia works closely with the Regional Office of WHO in Manila in developing nutritional strategies,

and has paid particular attention to the development of clinical as well as public health nutrition as a resource. It has a cycle of healthy lifestyle programs which take account of food habits and exercise, and which engage the community at large. Dietary guidelines proposed in 1996:

- 1 Eat a variety of foods from each of the four or five food groups every day.
- 2 Maintain healthy body weight by balancing food intake with regular physical activity.
- 3 Eat plenty of rice and other cereal products, vegetables and fruits.
- 4 Minimise fat in food preparation and choose prepared foods that are low in fat and cholesterol.
- 5 Choose foods low in salt and sugar (reduce intake of salt and sugar).
- 6 Drink plenty of water daily.
- 7 Breastfeed.

### **Indonesia**

In Indonesia long-standing foreign aid programs, such as those of the World Bank, the Ford Foundation and the Australian International Development and Assistance Bureau (now called AusAID), to alleviate and eradicate the major nutritional problems of development (PEM, nutritional anaemia, vitamin A deficiency, iodine deficiency, food based illness), continued into the 1990s. They have had a profound effect while, simultaneously, the Indonesian economy gained in strength. Indonesia is such a diverse archipelago of peoples, however, that progress is not uniform, and new problems of urbanisation are becoming apparent in major cities like Jakarta, Surabaya, Bandung, Medan and Padang. There are, especially, problems of food hygiene and chemical safety. A vigorous attempt is being made by key players, like Dr Winarno of Bogor, to have effective food law in place and to provide greater confidence in traditional food suppliers like street vendors. In the process, the sensitive issue of the role of such workers as hawkers in the traditional food culture is being considered. Attention is also now being directed in Indonesia towards the aged and the malnutrition they may suffer; and the conjunction of developing and industrialised society health problems, especially in cities. Nutrition training is embracing those with diverse backgrounds in agriculture, food technology and health. The Jakarta Seameo-Tropmed (South East Asian Ministries of Education Organisation Tropical

Medicine and Public Health) Nutrition Course in the University of Indonesia's Faculty of Medicine at Cipto Mangunkusumo Hospital is also actively training health professionals for the South-east Asian region. Professor Soemilah Sastroamidjojo has played a key role in this development. Dietary guidelines were developed in 1995:

- 1 Eat a wide variety of foods.
- 2 Consume foods to provide sufficient energy.
- 3 Obtain about one-half of total energy from complex-carbohydrate-rich food.
- 4 Obtain not more than one-quarter of total energy intake as fats or oils.
- 5 Use only iodised salt.
- 6 Consume iron-rich foods.
- 7 Breastfeed your baby exclusively for 4 months.
- 8 Eat breakfast.
- 9 Drink adequate quantities of fluids that are free of contaminants.
- 10 Take adequate exercise in sports.
- 11 Avoid drinking alcoholic beverages.
- 12 Consume safe foods.
- 13 Read labels of packaged foods.

### **Vietnam**

The Seameo-Tropmed effort in Indonesia is now conjoined with the National Institute of Nutrition in Hanoi, Vietnam. In Vietnam, many useful lessons about nutrition and health, and ways of monitoring them in adversity, were learned during the war with the French and then the Americans. Outstanding contributions to survival nutrition were made by Professor Tu Giay during this period. The problem of vitamin A deficiency appears to have been virtually eliminated. A program of universal supplementation has been successfully implemented; however, it will not continue indefinitely. The Vietnamese are now growing taller and heavier. While undernutrition and micronutrient malnutrition are still major nutritional problems, the prevalence of overweight in primary school children and that of chronic non-communicable diseases in adults is increasing, particularly in big cities. The National Plan of Action for Nutrition has three primary objectives:

- elimination of starvation;
- improvement of nutritional status in relation to:
  - (a) reducing chronic energy deficiency in adults

- from 40% to 30%, especially women of child-bearing age (classified by BMI);
  - (b) reducing protein energy malnutrition in children under five years of age from 45% to 30%;
  - (c) reducing low birthweight from 14% to less than 10%;
- reducing micronutrient deficiencies including vitamin A deficiency, iodine deficiency and anaemia due to iron deficiency.

A major means of addressing these issues is through varying the kinds of food grown, based on the traditional gardening approach in Vietnam, which emphasises growing vegetables and fruits, production of food from ponds, and animal husbandry. The recommended daily allowances and dietary guidelines, the main instruments of NPAN implementation, have been reviewed, and were adopted in 1996. The 'Recommendations for Appropriate Food Intake' in Vietnam acknowledge the multiple roles of food with respect to health, family, culture and religion and have a more practical food-based approach:

- 1 Consume foods according to the body requirement.
- 2 Mother's milk is the best and most appropriate food for infants. *Mothers should eat, drink and sleep sufficiently to have enough milk to completely breastfeed their children during the first four months and continue to have milk as long as 18 to 24 months. Promote complementary feeding in the fifth month (add oil, vegetable and a protein source to the porridge).*
- 3 Reduce salt intake to below 300 grams/month/person.
- 4 Limit sugar consumption. *Adults as well as children must not take candy, cakes or sweet beverage before the meal. It is recommended that everyone takes about 500 grams of sugar every month.*
- 5 Limit fat consumption. *Increase oil intake to an average of 600 grams/person/month. Each household should have a jar of sesame-peanut powder with little salt.*
- 6 Consume appropriate amounts of protein-rich food. *Eat both animal and vegetable proteins (meat, eggs, milk, beans) and at least three meals with fish per week. Increase the intake of products from soy bean such as tofu and soy bean milk.*
- 7 Increase intake of fibre. *Consume a large amount of vegetable, roots, tubers and fruits; they provide vitamins and minerals. In addition, fibre can help wash out all toxicants and excess cholesterol.*

- 8 Set up healthy family meals. *Build the household VAC ecosystem to ensure a variety of clean and fresh foods to make family meals delicious, wholesome, clean, economical and affectionate. Commonly a meal should consist of rice, soup, vegetables, protein-rich food, dessert and drinking water. A variety of foods should be eaten.*
- 9 In order to have a good appetite and good digestion, maintain a dynamic, healthy lifestyle. *Take up regular and appropriate sports activities. An average of three meals/day is recommended. Avoid big meals in the evenings.*

### Papua New Guinea

Papua New Guinea progressively overcomes the major problems of undernutrition, and some unusual ones that are culturally specific like pigbel (gut necrosis following feasts of pork eaten with plant food containing trypsin inhibitors) and kuru or 'laughing sickness' (a slow virus disease of the central nervous system thought to be due to the ingestion of the brains of close relatives who were also sufferers). Iodine deficiency disorders have been systematically addressed through the use of depot iodine in women of child-bearing age. Over the years there have been food shortages where sweet potato monocultures have been established, or where cash-cropping has replaced traditional food crops or sources. By and large, food and nutrition policy initiatives have proceeded through targeted programs.

### Pacific Islands

Fiji, Nauru and a number of Pacific Island populations of Melanesian, Micronesian and Polynesian descent have suffered marked increases in the prevalence of non-insulin dependent diabetes, its associated complications and cardiovascular disease. Island food sources of fish, sweet potato, taro, coconut and greens have yielded to processed food, with an increase in energy density of the diet and exercise levels have fallen, with resulting obesity. Food and nutrition policy is facing serious challenges in these settings.

## FOOD-BASED DIETARY GUIDELINES

The dietary guidelines apply to the total diet, and it is not appropriate to use them to assess the 'healthiness' of individual food items. Similarly, the guidelines are

designed for consideration as a coherent set of advice or information, and individual guidelines cannot be considered in isolation. Food-based Dietary Guidelines (FBDGs) are a more recent WHO response to the appreciation that people are more likely to be helped towards healthy eating practices, and the food supply more relevant to these practices, if food rather than nutrient guidance is given. FBDGs provide a basis for nations to develop their own FBDGs in accordance with the following principles (see also Chapter 38).

- 1 FBDGs should be developed in a cultural context, recognising the social, economic and environmental aspects of foods and eating patterns.
- 2 Public health issues should determine the relevance of dietary guidelines.
- 3 Dietary guidelines need to reflect food patterns rather than numeric goals.
- 4 Dietary guidelines need to be positive and encourage enjoyment of appropriate dietary intakes.
- 5 Various diets and food patterns can be consistent with good health.

For these guidelines to be at all possible, several developments are required:

- 1 a broad socio-cultural approach to food and health, with sensitivity to food traditions and beliefs;
- 2 major advances in food science which allow an appreciation of food component complexity and its implications for human biology;
- 3 scientific studies which show that food patterns, food scores (like variety, traditionality and acculturation), and not simply nutrient intakes, are predictive of health outcomes and are amenable to useful change in their own right;
- 4 the ability to handle large databases of food intakes, health outcomes and trends in those variables with time: the new discipline of nutrition information applied to nutritional epidemiology;
- 5 an appreciation of the ecological implications of dietary guidelines.

Some would argue that the labelling of food with ingredient, nutrient, nutrition and health messages (duly approved by a national expert committee) would allow greater scope and choice from food products and formulations, but a greater degree of nutritional literacy is also required.

Food-based dietary guidelines have not yet been developed in Australia or other WHO member states/countries according to the principles outlined by Wahlqvist et al. 1999 (see Chapter 38 and the website <[www.healthyeatingclub.com/research-library/archive/diet-guide/fbdgs.htm](http://www.healthyeatingclub.com/research-library/archive/diet-guide/fbdgs.htm)>). However, the dietary guidelines developed in Japan and Vietnam before the advent of FBDGs come very close to the principles being advocated in this new approach.

## IS FOOD AND NUTRITION POLICY NECESSARY?

The objectives of food and nutrition policy can be achieved without any official policy, as case studies from the Asia-Pacific region show. There is usually some de facto policy in:

- 1 quasi governmental institutes of food and nutrition, with good access to decision-makers;
- 2 well-established tertiary institutions with active research and development and training programs in food and nutrition science and in policy;
- 3 active professional organisations, both national and international. Presently in the Asia-Pacific region there are:
  - i the Federation of Asian Nutrition Societies (FANS);
  - ii the Asia-Pacific Clinical Nutrition Society (APCNS);
  - iii the Asian Association of Dietitians (AAD).

These bodies can play the required roles in:

- 1 nutrition-health problem definition;
- 2 advocacy and engagement of decision-makers;
- 3 monitoring and surveillance.

Ultimately, however, government and inter-department commitment to food and nutrition policy is crucial to the process of progressive improvement of nutritionally related health conditions and the insurance of a sustainable and safe food supply. Food and nutrition policy provides a cohesive framework and a set of objectives that outline the values and intentions of the country for food and nutrition and thereby assists with the planning, implementation and evaluation of initiatives to achieve these objectives.

## WELL-BEING

As the prospects for long life expectancy improve and excessive morbidity decreases, more and more people have become interested in well-being in its own right. Its assessment requires better measurement than presently available. It may be self-reported or reflected in health-seeking behaviour. It is worth noting that a sense of well-being is likely to depend on how adequate or available food is. One of the functions of food is to facilitate social activity. The pleasures of food which derive from its presentation are important in their own right. The frequency of food ingestion has been much discussed in relation to well-being. Most of the evidence in favour of particular mealtimes and breakfast would suggest that the value of these is culturally bound (see also Chapter 3). A major phenomenon in contemporary society has been an appeal to increase nutrient intakes to improve well-being (see also Chapter 16). There is a legitimate interest in the many classes of compounds in food which may have biological importance, but are not regarded as nutrients. An example of such a class of

compounds, phytoestrogens, is of particular relevance to peri-menopausal women.

## AN ECOLOGICAL APPROACH

Ultimately the food chain may be more important for our health than nutrient pathophysiology.

The need for a sustainable food production with minimal impact on the environment increasingly will be part of food and nutrition policy (Table 40.9). The new 'nutrition in transition' will be a re-direction with an ecological consciousness (Wahlqvist 1990).

**Table 40.9 Requirement for an ecological approach to nutrition in transition**

- 
- |   |                  |
|---|------------------|
| ■ | Food production  |
| ■ | Food transport   |
| ■ | Food storage     |
| ■ | Food processing  |
| ■ | Food packaging   |
| ■ | Food preparation |
| ■ | Food choice      |
-

## SUMMARY

- Those populations or individuals who have been undernourished generally have been of low birthweight and are shorter. Their later life exposure to physical inactivity and energy-dense diets may place them at risk of excessively high rates of chronic non-communicable diseases.
- Indigenous populations who were hunter-gatherers were relatively biologically advantaged, with life expectancies after neonatal life exceeding 60 years, minimal infectious disease and little, if any, chronic non-communicable disease. This is provided they did not live in geographical areas that created unavailable micronutrient deficiency or food toxicities, or hold unhealthy food taboos or beliefs.
- Traditional communities were sometimes advantaged by a diet characterised by regular intake of fish or seafood, low intake of fat from ruminant domesticated animals, modest alcohol intake and some food variety. They may have been advantaged by the increased food variety and reduced use of cured and salted foods on migration, and with affluence and education, or disadvantaged by setting aside certain food traditions.
- Loss of ecosystem for indigenous or traditional peoples and disappearance of culture, with its social cohesive forces, may have health effects dependent or independent of food. Education, additional resources of socioeconomic advancement and the exposure to new ideas and opportunities on migration may bring health advantage.
- An ageing population develops a new profile of nutritionally related health problems, but also provides a cultural memory and resource for younger members of the community who may, thereby, be advantaged.
- Early identification is required of the adverse consequences of transitional nutrition, notably where diets are energy dense, or where energy expenditure is too low to allow an adequate nutrient intake without obesity and related problems.
- It is possible to combine the advantages of the antecedent and prospective food cultural environments, provided there are supportive social networks in the face of change, and with the emergence of a pluralistic or synthetic food culture, with preferred health outcomes. However, we are learning how to accomplish this as we go and are unlikely to be able to adopt a sufficiently planned approach. We are beginning to appreciate that the 'under- to over-nutrition paradigm' of transitional nutrition is too simple, and that part of the problem is that we have acquired new food component deficiencies. Regular physical activity, wide food variety (crossing cultural boundaries) and avoidance of substance abuse seem to be useful ways to negotiate the transition.
- Food and nutrition policy draws together the several sectors required to ensure food security, optimise health and well-being from a nutritional point of view, and monitor the ecological impact of food production. Such policy can proceed even where not formalised, but it is more likely to be effective with articulated integrated senior government commitment. Such policy requires ongoing monitoring and evaluation.

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# FOOD AND NUTRITION

Australasia, Asia and the Pacific

Second Edition

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