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Mark Wahlqvist is one of Australia's leading authorities on human nutrition. His background reflects an interesting diversity of teaching, research and clinical positions together with membership of a remarkably large number of professional and learned societies.

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INTRODUCTION

Generally, we think of the nexus between agriculture and human nutrition as having to do with an adequate food supply for a hungry world (1, 3, 8, 14, 15). It has almost seemed improper that a major food exporter like Australia should reflect on the effect of its food production on its own population. It might even be argued that since, for some commodities, more than 80 per cent of production is exported, little impact would be made on local food habits by altering local production (11, 17). Yet it is quite clear that agricultural policies selective for domestic and export markets respectively have and can operate and that it may also be desirable for a domestic requirement to apply abroad.

Health of Australians

Life expectancy and perinatal and infant mortality rates are the most commonly used indices of health. Morbidity rates are not as easy to come by unless there is reason to follow a particular disease, like diabetes or infectious illness, in a community. Life expectancy at birth has increased progressively this century in Australia (17). Most of this can be attributed to a reduction in infant and childhood mortality since life expectancy at age 20 has increased to a lesser extent and that at 65 scarcely at all. Presumably, then, part of the gain in life expectancy in adult life through control of infectious disease, for example, has been offset by losses with other diseases. In the adult years of life, ischaemic heart disease, cerebrovascular disease and neoplastic disease (mainly lung, breast, large bowel cancer, pancreas and uterine) are the leading causes of premature death (17). If we are to make further gains in life expectancy, it is these conditions we must prevent and control.

That there is this possibility is borne out of comparison of life expectancy in different countries — Sweden, Greece and Japan being 3 or 4 years greater than Australia (17). Likewise, migrants from Greece to Australia can expect shorter lives after migration than if they had stayed in Greece.

Food Intake of Australians

An analysis of changing food intake patterns is important for several reasons:

1. It allows an assessment of food production, processing and distribution needs
2. It alerts to any trends towards an unhealthy diet, inadequate in essential nutrients or not attuned to optimal health for other reasons (such as excessive alcohol or fat intake) (2).

FOOD CONSUMPTION, HEALTH STATUS AND AGRICULTURAL POLICY IN AUSTRALIA.

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The only national survey of food intake was conducted in Australia in 1944. We therefore have to rely on apparent food consumption data (4) and on various small surveys of particular groups (5). The National Heart Foundation Triennial Profile of Australians will provide an opportunity to reinstate the National Dietary Survey, at least in capital cities.

Putting all available data together, important trends in food intake appear to be:

- a. An overall increase in fat consumption since the 1940s
- b. The advent of polyunsaturated margarine and vegetable oils in the last 20 years
- c. A fluctuating ruminant meat consumption, with a decline in lamb and mutton together in the last decade
- d. An increase in poultry consumption in the last decade
- e. A fairly steady fish consumption despite access to coastal waters and abolition of the Friday fish practice by Roman Catholic Australians
- f. A decrease in wheat flour consumption, especially as bread, since the early 1970s
- g. An increase in fruit, especially juice, consumption since the early 1960s. A decline in vegetable consumption seems attributable to a fall in potato usage.
- h. An increase in coffee and decline in tea consumption
- i. An overall increase in beer consumption over 40 years and wine in the last 20 years
- j. No change in total sugar consumption, but more from manufactured foods and less discretionary sugar intake
- k. Uncertainty about changes in sodium consumption, but present intakes high.

The relative contribution to total food energy per head of population in Australia is protein 12 per cent, fat 38 per cent, carbohydrate 45 per cent and alcohol (as ethanol) 4 per cent (4). It is possible, of course, to have similar macronutrient contributions to energy intake from widely disparate sources and this applies particularly to fat which, in Australia, comes mainly from ruminant animal sources whereas, around the Mediterranean, it is more likely to come from olive oil, and in fishing communities, from seafood. Thus, it is just if not more, important to consider the food sources of energy. In Australia, grain contributes about 25 per cent of total food energy, meat about 19 per cent, oils and fats about 17 per cent, sugar about 17 per cent, milk and dairy products about 10 per cent, alcoholic beverages about 7 per cent, vegetables only about 4 per cent, fruit and fruit products only about 3 per cent, and with even lesser amounts of energy coming from poultry, seafood, eggs and nuts. There is much scope for shifting energy intake amongst these commodities for a constant energy intake. If we were more physically active, the scope for increasing intake from presently underutilised commodities would be even greater.

Having made these general observations, it is important to realise that Australia is made up of different socioeconomic groups, different cultures, different climates, different degrees of urbanisation and people with different work patterns. The range of food intake patterns is therefore bound to be wide and the health relationships of these food intake patterns differs.

Nutrition and the Health of Australians

There is a food intake pattern which can be associated with a disease pattern even though the mechanisms connecting particular aspects of the food intake with disease may be many and varied (2). In developed countries the food intake pattern is:

- a. Energy dense food
- b. Relatively high proportion of energy from animal fat
- c. Relatively high intake of alcoholic beverage
- d. Relatively low intake of foods rich in dietary fibre (which may serve as a marker for nutritionally desirable foods).

This food intake pattern is often associated with a low level of physical activity and with cigarette smoking and these lifestyle considerations may be important in determining the health consequences of the food intake pattern.

The related disease pattern (6, 7, 9) is:

- a. Premature atherosclerotic vascular disease (cardiac, cerebrovascular and peripheral arterial)
- b. Neoplastic disease affecting lung, breast, large bowel, pancreas and uterus
- c. Alcohol related disease (neurological, liver, cardiac muscle, hypertension, pancreatic damage, nutrient deficiency, neoplastic disease)
- d. Non-insulin dependent diabetes mellitus (NIDDM) associated with obesity
- e. Obesity and its sequelae (premature death and morbidity).

For any one of these disease groups, several nutritional factors and pathways may be operative (16). In the case of atherosclerotic vascular disease, hyperlipidaemia can be influenced by several dietary factors, as can hypertension, haemostasis and carbohydrate metabolism.

Because of these food-disease pattern relationships, confidence in promoting change in food intake pattern can be greater than if only one disease group were under consideration.

It must be remembered, however, that nutritional factors most favourable to the propagation of the species and therefore operative during growth, development and the reproductive years, may not be those most favourable to longevity or maintenance of low morbidity in the aged. The differential needs of older "survivor", as opposed to younger Australians, remain poorly understood. Also, as life expectancy increases, so those nutritionally-related diseases of later life become relatively more important for the community as a whole.

Changes in Australian Agriculture which could benefit Australian Health

Bearing in mind the extent to which food grown is for domestic consumption, the limited knowledge of food intake for subgroups of the Australian population and the differential risks of nutritionally-related disease for different groups, it would still seem reasonable to encourage certain developments in agricultural practice. That this is worthwhile is predicated on a need for choice amongst produce where range is presently restricted, on the extent to which food and beverage availability influences its purchase, and on a recognition of geological, climatic, energy, environmental and economic factors in Australian food production.

Changes for consideration would be:

- 1. Decrease in ruminant fat (carcass and dairy)
- 2. Increased availability of lean non-ruminant muscle meats (pork, poultry game)
- 3. Increased availability of fresh and seawater fish and other seafood
- 4. More varied production of vegetables, fruits and nuts, including tropical varieties

- 5. Attention to essential and toxic element content of produce (eg. selenium, cadmium)
- 6. Self-sufficiency where it does not exist and where it is possible (eg. citrus fruit and nuts)
- 7. Consideration of beer, wine, spirits and tobacco production.

A National Nutrition Policy

Many developed nations now have dietary guidelines like those in Australia which were formulated by a working party set up by the Australian Association of Dietitians in 1978. Its members included those from the health professions, academic nutritionists, home economics, a food industry representative, consumer interests and government.

Perhaps noteworthy was the absence of an agriculturist. Nevertheless, the dietary guidelines were released in August 1979 and are these:

- 1. Eat a variety of foods each day
- 2. Prevent and control obesity
- 3. Limit the fat in your diet
- 4. Decrease sugar consumption
- 5. Limit alcohol consumption
- 6. Increase your intake of fruit, vegetables, bread and cereals
- 7. Reduce sodium intake
- 8. Drink more water relative to other beverages
- 9. Encourage breast feeding.

Also, in 1979, the Australian Department of Health announced similar guidelines although these did not include reference to water; however, the water guideline has subsequently been supported by the Australian Department of Health. It is also noteworthy that the Royal Australasian College of Physicians has promoted these guidelines officially and the National Heart Foundation of Australia has similar guidelines.

A national nutrition policy with reference to health professionals (nutritionists and dietitians, nurses, physical educationists, medical practitioners), farmers and agriculturists, the food industry, educators, consumers and Government in the way that has been accomplished in Norway (10, 12, 13), has yet to materialize in Australia.

In 1977, the 30th World Health Assembly of the World Health Organisation adopted a resolution urging member governments "to further multi-sectional programs specifically orientated to improve the nutritional situation of the population ... and to consider the food and nutritional implications of their development policies and plans".

The objectives of a national nutrition policy would be:

- 1. To produce food locally or within Australia as far as possible; the less the food imports the less vulnerable the food supply system; the total energy costs of locally grown food would also be less
- 2. To produce food with as little ecological disturbance as possible and with the least demand on non-renewable resources
- 3. To ensure an adequate energy and nutrient intake for all Australians, — an adequate diet
- 4. To promote a food intake pattern that carries the least risk for those disorders that most affect Australians; — a prudent diet
- 5. To assist food-deficit countries to achieve a satisfactory local food production and, where necessary, to produce additional food within Australia to make good the food shortages in those countries.

The first conference on agriculture and human nutrition at Albury-Wodonga in August 1983 could well be the starting point for an Australian nutrition policy.

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