New concepts of a balanced diet
by W. Philip T. James

The link between food and health is not new, since history shows that for centuries rich agricultural land has been a prized asset. In Europe, Africa, Asia and the Americas, civilizations were dependent on good agricultural practices, and the introduction of cereal-growing about 10,000 years ago allowed agriculture to become more intensive, thus encouraging the transition from a nomadic existence of hunting and gathering to one where cities could be built and sustained. Complex food storage systems were developed to cope with seasonal shortages of foods, and salt was a prized commodity because it not only provided flavour but also allowed foods to be preserved for many months.

This development of agriculture allowed small farming communities to flourish, but 70 years ago farms were still small and the life of farmers throughout the world was dominated by the weather. In the cold north, there were problems of growing enough food in the summer to provide for the winter, while in the hotter parts of the world the problem was one of rainfall.

Studies in Europe in the 1920s showed that poor people were short, thin and suffered from many infections. Their health improved and children grew taller if they were given a diet rich in protein, energy and vitamins. This diet became the recipe for health. Everybody soon came to know about the balanced diet, and the balanced diet could be guaranteed if a plentiful and varied supply of different foods could be eaten; for example, a mixture of protein foods, derived from animal products, energy foods rich in carbohydrate or fat, and protective foods such as vegetables and fruits which were rich in vitamins and some minerals. Many new vitamins were discovered before the Second World War, and vitamin B<sub>12</sub> was identified in 1947.

The Second World War proved to be a turning point in nutrition because, as armies fought across Asia, North Africa, the Middle East and Europe, countries were devastated, refugees fled in their millions from the war zones and food supplies became critically short. Major efforts had to be made to feed countries blockaded by war, so governments developed highly organized systems of rationing based on meticulous studies of what healthy people were eating. Food coupons were issued and huge public campaigns were launched to encourage children and adults to eat a sensible balanced diet. Milk was good for growing children, and animal foods, such as meat and cream, were luxury items in the diet. Children had to be given plenty of energy foods to grow and men needed energy foods for hard manual work. Vegetable growing at home was encouraged to supply protective foods year-round while women helped men in the fields to grow as much food as possible.

**Enough for everybody**

The experience of the Second World War changed our whole view of public health and food policy. Well-fed children and healthy adults were dependent on a good diet but now we knew what people needed to eat. So successful had been the health education during the War that throughout the world politicians, policy-makers, government officials and economists all knew that the top priority must be to produce enough food for everybody. Milk and meat were the focus of attention, and were seen by the public as not only vital to health but scarce commodities which only the rich could afford. Dairy farming and animal husbandry were therefore top priorities for government subsidies and other help. This led to the second nutritional revolution—that dependent on agricultural production, with intensive efforts to improve our understanding of the nutrition of farm animals. As a result, in Europe, Australasia, Japan and North America there has been a huge surge in food production leading to massive food surpluses, economic readjustments and intense debates about the usefulness of paying such huge subsidies to the farming industry.

Medical research in nutrition was carried out in Africa, India, the Caribbean and South America, where major efforts were made to understand kwashiorkor, marasmus and other diseases of childhood. The problems of malnutrition now dominated nutritional thinking; the concept that society included vulnerable groups, such as children, pregnant and nursing mothers and the elderly, led to major changes in public health policy.
throughout the world. Free school milk and meals became a commonplace in European, North American and other affluent countries. Special antenatal, mother and child and infant welfare clinics were started, and these were adopted in the developing countries when it was recognized that plentiful good food could prevent growth-faltering in children and help them to combat parasitic and other infections.

Despite all this effort, deficiency diseases remain a huge problem, with millions of children dying or suffering from malnutrition, anaemia and vitamin A deficiency. Goitre and cretinism are still a terrible consequence of iodine deficiency and semi-starvation, while seasonal shortages of food are still a scourge in some parts of the world. Given all these problems of the Third World, surely all that is needed is worry about infant malnutrition, the America and northern Europe.

Well fed and healthy-until doctors asked: what about the vulnerable groups in society? Unfortunately other major nutritional problems have developed in the affluent West, and these now threaten the third World too.

Adult chronic diseases

While the developing world was worrying about infant malnutrition, the problem of obesity was emerging in America and northern Europe. Plump babies after the war were considered well fed and healthy-until doctors started worrying about the alarming increase in the number of fat adults. Why were babies becoming fat and did it matter? Many mothers were no longer bothering to breast-feed and their babies grew fatter than ever before on very rich infant milks. The fashion for bottle-feeding spread to the Third World, with companies competing to promote their own brand of infant milk. Slowly the evidence mounted to show that babies were much better if breast-fed, and were less vulnerable to infantile diarrhoea and allergic conditions. Young obese adults reported that they had often been fast-growing and plump or overweight as children, so the slower rate of growth of the breast-fed child seemed no bad thing.

As societies became wealthier, transport and machinery at home and at work took over most of the energy-dependence of work. Physical activity depended more on leisure activities and sport than on the demands of work. Slowly it was recognized that the foods which once had been considered luxuries were now everyday cheap items produced by a new huge food industry selling throughout a country. Eating was for pleasure and the idea of a balanced diet was left to the library books. Intensive advertising of sugary soft drinks, chocolates, sweets, biscuits, cakes, hamburgers, sausages, pies and new foods became a huge profitable industry at a time when people needed to eat less as they did less.

The 1970s saw a change in ideas about public health in the West. Immunization, good nutrition, improved housing and the use of antibiotics had dramatically reduced children's death rates, but 25% of men and about 20% of women were still dying before the age of 65. The disease pattern had changed, and heart disease and cancers of the lung, breast and large bowel were now leading causes of death. Smoking was recognized as a killer which caused lung cancer and bronchitis. Heart disease was then seen to be linked with those dietary factors, such as saturated fatty acids, which cause an increase in serum cholesterol. Where the fat intakes were high, smoking amplified the risk, as did high blood pressure which was also linked to diet, to obesity, alcohol and excessive salt intake.

More recently there has been a huge increase in nutritional studies, all trying to explain why cancer rates differ so widely around the world; dietary factors such as salt, smoked foods have been identified as cancer promoters, and vegetables and fruit as protectors. Obesity is now linked to a high fat diet and not simply to an excess of starchy foods. The many complications of obesity range from diabetes, gallstones, arthritis and high blood pressure to gout, breathlessness and skin disorders. As people eat food rich in fat and sugars, they also become more constipated. This problem is now widespread in wealthy countries and, like large bowel cancer, has been linked to a low intake of the fibre-rich starchy foods. Dental decay is also closely related to the frequent consumption of sugary foods.

So how have we responded to these new ideas? Rather badly seems to be the answer, and it is not difficult to see why. Ministries of agriculture have worked for two generations with farmers to produce plenty of good cheap food, and tend to get angry if doctors tell them they are responsible for producing the wrong foods. The food industry now involves huge multinational concerns selling intensively to increase their share of the market. Their policies were developed on the assumption that cheap foods free of toxins and with a reasonable content of protein and vitamins were ideal. Fat- and sugar-rich foods clearly provide...
Food habits that encourage obesity and overweight are becoming ever more common in the big cities of the Third World.

plenty of energy, so they must be good!

Doctors with complex theories on why diet produces these chronic diseases which develop over a number of decades are seen to be far less dogmatic than they were in the days when increasing the supply of a single vitamin or mineral could rapidly cure the disease. Thus there is ample room for dispute and research workers delight in coming up with new theories and arguing over the details.

The challenge to the Third World

Health patterns are changing in developing countries. While malnutrition and deficiency diseases continue as major problems, particularly in rural areas, many societies are now changing their eating habits and becoming more “Westernized”. As a result, the incidence rates of heart disease, high blood pressure and cancers are increasing very rapidly in some Third World urban societies. Childhood obesity is now common in Cuba, the rest of the Caribbean, and Latin America, and high blood pressure is becoming a huge problem in West and East Africa. Heart disease is escalating in Mexico, India and the Middle East.

Yet governments dominated, as in the West, by ideas about food security and deficiency diseases unwittingly contribute to the deleterious dietary changes by fostering the importation of Western ideas on diet. International food companies, like the tobacco companies, also see major opportunities for developing huge markets, and offer the attraction of providing new local industries which help to feed the rapidly expanding cities.

Intensive marketing and a pervasive sense that what the West managed to achieve in good quality, variety, taste and life-styles is what everybody strives for, leads to an automatic assumption by food technologists and economists that people, when offered the choice, will automatically demand a northern European or North American style of life and diet. This is to neglect the delights of the Mediterranean, southern Indian, traditional south-east Asian, Chinese and African diets which, when provided in adequate amounts, are usually much healthier than Westernized ones.

WHO has now drawn together the dietary evidence linked both to the chronic diseases of adulthood and to malnutrition. New nutritional goals for a country have been established. These suggest that, ideally, a country's food supplies should contain only modest amounts of fat, sugar and salt, with the majority of the energy coming from starchy foods such as cereals and tubers. A substantial intake of vegetables and fruit is also important. This amounts to a completely different concept of the balanced diet, in which protein and energy are no longer the priorities while excessive fat, sugar and salt are a cause for concern.

The challenge is now how to prevent not only malnutrition linked to want but also these diseases of affluence which threaten such widespread misery. Few developing countries will have the resources to cope with the emerging demands for treatment, yet prevention will require new thinking and a completely different set of priorities. WHO has recognized the urgency and complexity of the problem; it proposed that every health ministry should establish a nutrition council to reorient trade, financial, educational, agricultural and health policies.

Experience in the West suggests that the political will for change will only come about if the major voluntary organizations in society take these issues in hand, so that a community itself becomes the driving force for policy changes which must influence many sectors of a country. Departments of health must therefore involve community leaders in developing a new food policy if they are to prevent widespread disease and promote the welfare of adults as well as children.

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Obesity

Being too fat is one of the great phobias of the industrialized world, where the 20th century has imposed on most of us the aesthetic ideal of a wasp waist, a non-existent tummy and twig-like thighs. In other cultures, a fat tummy and a prominent backside are signs of prosperity and confer a certain prestige. But it would be wrong to take either of these fashions too lightly, since they apply psychological bias and social pressures that can influence health to a considerable degree.

Obesity is involved in hypertension, cardiovascular diseases, arthritis, gallstones and other gastro-intestinal ailments. In women, it increases the risk of cancers of the gall-bladder, the breast (after the menopause) and the womb, and in men, cancers of the prostate and the kidney.

So at what point should we start talking about excessive weight or obesity?

If we divide our weight in kilograms by the square of our height in metres, we arrive at a value called the “body mass index.” If this lies between 20 and 25, we can be sure that our weight is perfectly normal, and entirely compatible with good health. If it lies between 25 and 30, our weight is excessive and we are heading for obesity. As for a value of 30 and over, that indicates real obesity.

As an example, let us take someone who is 1.6 metres tall and normally weighs 60 kilograms; 1.6 x 1.6 equals 2.56, so if we divide 60 by 2.56 we get 23.4, well within the bracket of good health. But if that person weighed 80 kilograms, we should have to divide 80 by 2.56, giving an alarming index of 31.2.

The more serious the obesity, the greater the risk. Moreover, the fat accumulated around the abdominal area brings added risks. A simple way of measuring abdominal obesity is to measure one’s waistline and one’s girth at the hips and divide the waist measurement by the hip measurement. A result greater than 0.85 represents a health risk. For example, somebody who measures 90 centimetres round the waist and 100 centimetres round the hips would be considered very obese.

Obesity can be hereditary, in which case it calls for medical treatment. But in most cases, it develops slowly but surely—one could say it grows on one— whenever there is an imbalance between absorption and expenditure of energy, in other words when we eat more energy-rich foods such as fats and sugar compared to what we can burn up through physical exercise. The message then is clear. In some societies people are often sedentary and therefore use fewer calories. Sports or physical leisure activities and an appropriate diet are then essential in order to avoid overweight.

There is plenty the individual can do—limiting the consumption of red meat to once or twice a week and replacing it by fish, radically cutting down on refined sugar (especially when it is concealed in luxury foods like cakes and sweets), and eating considerably greater quantities of foods that are rich in fibre, vitamins and minerals, such as vegetables and fresh fruit. Natural sugars found in cereals, for instance, are quite enough to supply the body’s needs in carbohydrates.

Obesity is far from being a sign of prosperity. It frequently affects low-income groups, especially in the poor areas of big cities where people have only limited access to high quality foodstuffs like vegetables, fruit and fish, or to education about healthy behaviour, and have little time to manage their diet properly or leisure to take part in sport. Furthermore, people often prefer certain prestige foods to the modest but health-giving apple or orange, and this adds a sizeable psychosocial component to the problem of obesity.

So it is important for governments on the one hand and the food industry on the other to support our individual efforts by affording everyone access to the kinds of food that are needed for good health; the former by stepping up their efforts to inform the public and implement healthy agricultural and nutrition policies, and the latter by ensuring the widest possible distribution of healthy foods.

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