Feast and famine: socioeconomic disparities in global nutrition and health

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Abstract

Objective: To review current information on under- and over-malnutrition and the consequences of socioeconomic disparities on global nutrition and health.

Design: Malnutrition, both under and over, can no longer be addressed without considering global food insecurity, socioeconomic disparity, both globally and nationally, and global cultural, social and epidemiological transitions.

Setting: The economic gap between the more and less affluent nations is growing. At the same time income disparity is growing within most countries, both developed and developing. Concurrently, epidemiological, demographic and nutrition transitions are taking place in many countries.

Results: Fully one-third of young children in the world's low-income countries are stunted because of malnutrition. One-half of all deaths among young children are, in part, a consequence of malnutrition. Forty per cent of women in the developing world suffer from iron deficiency anaemia, a major cause of maternal mortality and low birth weight infants. Despite such worrying trends, there have been significant increases in life expectancy in nearly all countries of the world, and continuing improvements in infant mortality rates. The proportion of children malnourished has generally decreased, although actual numbers have not in sub-Saharan Africa and south Asia. Inequalities are increasing between the richest developed countries and the poorest developing countries. Social inequality is an important factor in differential mortality in both developed and developing countries. Many countries have significant pockets of malnutrition and increased mortality of children, while obesity and non-communicable diseases (NCDs) prevalences are increasing. Not infrequently it is the poor and relatively disadvantaged sectors of the population who are suffering both. In the industrialized countries, cardiovascular disease incidence has declined, but less so in the poorer socioeconomic strata.

Conclusions: The apparent contradictions found represent a particular point in time (population responses generally lag behind social and environmental transitions). They do also show encouraging evidence that interventions can have a positive impact, sometimes despite disadvantageous circumstances. However, it seems increasingly unlikely that food production will continue to keep up with population growth. It is also unlikely present goals for reducing protein-energy malnutrition prevalence will be reached. The coexistence of diseases of undernutrition and NCDs will have an impact on allocation of resources. Action needs to be continued and maintained at the international, national and individual level.

Keywords
Malnutrition
Overnutrition
Obesity
Non-communicable diseases
Epidemiological transition
Socioeconomic disparities
in health

The gap between the rich and the poor is growing. Income levels and rates of growth vary considerably among developing countries and between developed and developing countries. In 1982, per capita incomes in low-income countries were 18% of those in middle-income developing countries and 3% of those in developed countries. Ten years later, in 1992, these figures had dropped to 16 and 2%, respectively, reflecting an increasing inequality[1]. The share of global incomes obtained by the poorest 20% of the world's population decreased dramatically from 2.5% in 1960 to 1.3% in 1990[1].

Even within both developed and developing countries the gap between the rich and the poor is generally widening. Countries such as Australia, Sweden, the UK and the USA, have all seen the range between their richer and poorer citizens widen over the last two decades. The Luxembourg Study of Families

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with Children ranked 18 nations of the Organization for Economic Cooperation and Development (OECD) on the basis of both wealth and poverty. The USA ranked first for the income of the wealthy and 16th for the income of the poor[2]. The price of this growing gap is increased poor nutrition and disease disparities between the more and less affluent sectors in all countries[3].

In the wealthier nations this is resulting in the less-advantaged socioeconomic strata being more likely to suffer from obesity and the non-communicable diseases (NCDs) and increasing adult mortality[4]. In less affluent nations the poor are more likely to be food insecure and suffer from undernutrition and premature mortality. It is estimated that some 56% (i.e. 6.7 million) of the mortality in under-5 children in developing countries is attributable to malnutrition's potentiating effects[5]. Recent evidence shows that even more than in the industrialized nations, adult mortality in the developing countries is significantly greater among the least socially favoured[6].

The International Food Policy Research Institute (IFPRI) has warned that: 'At the threshold of the twenty-first century, widespread poverty, hunger, and malnutrition threaten to destabilize global economic, social, political, and environmental conditions'[1]. There is increasing evidence that the technological developments that allowed us to say that the problem of food shortages were those of maldistribution, may no longer be true. There is now a real possibility of limits being reached in the continuing expansion of food supplies[7]. At the same time, international assistance is slowing down[1]. However, as shall be seen, there are also some encouraging signs, although these are by no means universal.

This paper will look at the current situation as it relates to 'famine', which is being interpreted in a colloquial sense to cover food insecurity and undernutrition; and 'feast', the epidemic of NCDs and obesity. It will then look at the coexistence of 'feast'- and 'famine'-related diseases seen in many countries undergoing epidemiological and demographic transition. The impact of health and nutrition differentials and economic disparities affecting health and nutrition are briefly addressed; then, some emerging trends; and finally, activities that might be directed at these food, nutrition and health disparities.

'Famine'

In the world today, 700–800 million people are food insecure (i.e. one in every five persons in the developing world does not have enough to eat)[1,8]. Over 1.1 billion people live on incomes of a dollar a day or less per person[1,8,9]. Nearly three-quarters of east Africa's population lacks the income to meet its nutritional needs. In 1990, a total of 780 million people out of 4 billion in the developing world were living on diets that are not sufficient to maintain a healthy life[10]. Although famine in the real sense of the word is on the decline except in zones of armed conflict[11], there are currently approximately 200 million preschoolchildren underweight because of malnutrition (more than 30% of the world's children under 5 years of age)[12,13].

Micronutrient malnutrition continues to affect over 2000 million people worldwide[13]. The iodine deficiency disorders, the greatest worldwide cause of preventable brain damage and intellectual impairment, are a significant public health problem in 118 countries[13]. More than 250 million children have deficient vitamin A body stores and therefore have on average a 20 times greater risk of death from severe infections[13]. Iron deficiency makes maternal and infant mortality more likely, as well as contributing to limited learning capacity, impaired immune function and reduced working and productive capacity of those affected. Approximately 2000 million people in developing and developed countries are iron deficient, half of them showing clinical signs and symptoms of iron deficiency anaemia[13]. Even in affluent countries, subsections of the population experience nutritional deficiencies at a far greater degree than the general population. For instance, in the USA two to three times as many African-American women (22–36%) have low haemoglobin levels compared to white women[14].

In the next 25 years, about 90 million people are likely to be added to the world's population each year[1]. The developing world's urban population is expected to more than double, and involuntary displacement of people is likely to increase. But growth in food production has begun to lag[1]. The causes of undernutrition are multiple and complex but are predominantly poverty and the related problem of food insecurity, although accessibility to food and production resources, politics, geography, cultural beliefs and a lack of power and knowledge all play a role[9].

'Feast'

Concurrently there is an epidemic of the so-called 'diseases of affluence'. Populations of countries like Australia, Germany and the USA get fatter, on average, with every national survey that is done. Almost half of north American adults are overweight. Overweight among adults of varying ages has increased within the last 10 years despite widespread health concerns and dieting[15]. More than a third of Australian and American populations are overweight[16] and in the USA, this prevalence has increased from 25% in the 1960s[14]. Childhood obesity is becoming a significant problem in the industrialized countries, including those south-east Asian countries recently more affluent[17].

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In virtually all countries there has been an increase in life expectancy and hence larger proportions of the population moving into the age range in which chronic degenerative diseases become the major causes of ill-health and death. There has been a transition in diseases to the NCD type due to life-style shifts such as greater amounts of saturated fat and energy in the diet and a higher prevalence of other risk factors for the chronic degenerative diseases[16,18,19]. Cardiovascular disease is the leading cause of morbidity and premature death in most countries, and in the developed countries is followed by cancer[13]. The increase in diabetes represents a global epidemic. In the Western Pacific Region of the World Health Organization (WHO), over three-quarters of all member countries that keep such statistics, at least three of the five leading causes of death are now the NCDs[20].

'The worst of both worlds': societies in transition

However, it is not simply a matter of undernutrition or overnutrition. As Scrimshaw has recently pointed out, while almost any indicator of function, including adult morbidity, mortality, work productivity and birth weight, is worse in individuals with low body mass index (BMI), high BMI (indicating overweight or frank obesity) also increases death and disability from a variety of chronic diseases[21]. Populations of many countries, particularly those of minorities, are suffering the worst of both worlds: the effect of undernutrition with its greatest impact on infants, children and women of child-bearing age; and excessive nutrition creating a variety of chronic health conditions in middle-aged and older adults[16,19,22–24].

There appear to be three main, but overlapping, patterns: (a) industrialized countries; (b) countries in late transition; and (c) countries in early transition.

Industrialized countries

The countries of Europe, North America, Oceania and Japan, have seen a continuing increase in life expectancy throughout the century[25], with the NCDs, mostly nutrition-related, now being the main causes of death. These diseases are associated with diets high in saturated fats and energy, low in fibre and mono-saturated fats, as well as with smoking and decreased energy expenditure. In Japan, for example, total fat intake has increased from 15% of dietary energy in 1965 to 25% 20 years later[24]. One estimate is that approximately one-third of all cancers and one-quarter of cardiovascular diseases are attributable to potentially remedial aspects of the 'affluent' diet[26]. In recent years, deaths in such countries as Australia, Singapore and the USA from cardiovascular diseases have declined[19,25], probably due to changes in life-styles, but more so in the more affluent strata of their societies.

The differential impact, according to socioeconomic status and probably ethnicity, in prevalence of cardiovascular diseases, and some cancers, is true in the USA of both the native American and African-American populations who have far higher levels of obesity and diabetes, and obesity and hypertension, respectively, that the majority population[14]. At each year of age from 5 to 18 years, American-Indian males and females have BMIs consistently and considerably greater than in the general American population. Rates of hypertension among African-American females below the poverty level are 40% compared with 30% of those at or above the poverty level, whereas white American females above the poverty level have rates of 22%[14]. This NCD pattern is also seen in the Maori and Aboriginal populations of New Zealand and Australia[20,25,27].

Countries in late transition

These are countries, many in the Pacific, south-east and east Asia and eastern Europe, increasingly characterized by a similar epidemiological picture to the industrialized countries above but with the increasing prevalence of NCDs being more frequent in urban settings and where the decline in cardiovascular diseases has not been seen. In many of the countries of the former USSR, there has actually been an increase in deaths from NCDs in recent years[28].

Many of the countries in Asia are in transition, both epidemiologically and demographically and are showing both the welcome and less welcome aspects of this transition[19]. In China, as the diets have become more Westernized (including increased consumption of foods of animal origin), fat levels in the diet have risen from 26% of dietary energy in 1981 to 30% in 1988[29]. While heights and longevity have increased dramatically in the last 45 years, obesity is also increasingly seen, mainly in urban areas (although prevalence is still only 10% for women and 5% for men), and disease patterns are changing[29]. Before 1950, the first three causes of death were measles, tuberculosis and senility, whereas now they are malignancies, cerebrovascular disease and ischaemic heart disease[30]. The prevalence rate of diabetes in China has risen every year by 0.1% from a level of only 0.67% in 1980[31].

In many of the Pacific Island countries, especially Micronesia, NCDs are now the major health problem[22]. In the Federated States of Micronesia, for example, over 50% of women 40–49 years are obese and 80% are overweight[20]. High prevalences of obesity have been described in many transitional populations throughout the Pacific and Indian Oceans[32].

Countries in early transition

These countries are generally those defined as least developed. While undernutrition continues to be a

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major problem for the poor and rural populations, the epidemic of NCDs impact mainly the affluent, often urban, minority. High levels of malnutrition in young children are still found, for example in south Asia, the Indochinese countries, and much of Africa. At the same time, hyperinsulinaemia, hypertriglyceridaemia, hypertension and central adiposity are becoming more common in these increasingly urbanized countries and it has been suggested that this may pose 'a special risk for peoples and populations previously undernourished'[33]. With nutritional deficiency diseases and malnutrition coexisting with the emerging chronic diseases in these countries, they will now have to start addressing this double burden, with considerable implications for health planning and the allocation of scarce health resources.

The widening gap: impact of health and nutrition differentials

The increasing gap being observed between the richer and poorer nations is also being seen within most developed countries. There is persuasive evidence that the ratio between the richest and the poorest strata is an important determinant in differing rates of diseases within societies, and even in the differences seen in life expectancies between societies[4,34,35]. This inequity has implications for: (a) health and nutrition, (b) for intergenerational poor health outcomes, as well as, (c) broad global and ecological implications.

Effects on health

There should now be no argument that social class is a risk factor in health outcomes – the lower people are in socioeconomic status (however defined), the higher the rates of virtually all diseases and conditions[36–39]. Wilkinson found '...a very close association between the degree of income inequality and the overall life-expectancy or mortality rates of developed countries...overall population mortality increases with income inequality'[4]. Looking at both industrial and developing countries he found that around three-quarters of the international cross-sectional variation in life expectancy can be explained in terms of average incomes and income distribution alone[4]. There are also reported associations between socioeconomic status and life expectancy, and infant mortality, as well as dietary and other behaviours such as the consumption of fruits and vegetables[40], energy expenditure patterns and smoking.

Mortality differentials between the higher and lower levels of socioeconomic status have been seen in virtually all of the industrialized countries in which they have been sought, and while their magnitude differs between countries, in countries such as Australia[26], France[41] and the USA, they have increased over the last three decades[37]. Inequalities in prevalence have generally increased for most of the NCDs, and have paralleled widening inequalities in income[36–38], i.e. trends in mortality differences have not been related to trends in class differences in *average* earnings, but have been fairly clearly related to trends in *relative* poverty[3].

This is also true of countries such as Brazil in which mortality has been shown to be approximately three times greater comparing the least to the most socially favoured occupational category. The authors conclusion was that: 'mortality for Brazilian adults, even more so than for adults of the world's most economically developed nations, is inextricably bound to the issue of social equity'[6]. This is probably also becoming true of China where, in the face of increasing average weight, rural poor, especially men, are becoming less well nourished[42], while urban people become heavier and taller.

Lower socioeconomic stratum may lead to poorer outcomes once a disease develops because of such factors as reduced access to health-care services, lower quality of medical care, and later diagnosis and greater severity of illness. In industrialized countries, socioeconomic stratum plays a much greater role in explaining racial and ethnic differences in the ability to function once a person has a chronic illness than in explaining who has chronic illnesses[43], but this is probably not true of societies in transition. Whatever the actual mechanisms, the more equally wealth is distributed, the better the health of that society[44].

Intergenerational effects

Intergenerational aspects demonstrate another link between over- and undernutrition, and their resulting morbidity, and socioeconomic factors. The effects of childhood malnutrition may last a lifetime, and even into succeeding generations[45]. There appear to be two aspects of this: (a) malnutrition of the young child permanently affecting growth and development; and (b) higher levels of NCDs in those previously malnourished.

Effects of early malnutrition on growth and development

Damage to genetic potential begins with fetal malnutrition that reflects the nutritional status and health of the mother[21], and there is a large body of literature on this[46]. Most stunted children become stunted adults who are physically less productive. Being underweight – even mildly – increases the risk of death, and inhibits cognitive development in children leading to less fit and productive adults. The problem is perpetuated from one generation to the next, through malnourished women having low birth weight babies[47]. Conversely, another potential problem is that of cephalopelvic disproportion of previously malnourished and hence

stunted mothers and fetal size, leading to increased maternal mortality. The effect of early micronutrient malnutrition on growth and development is receiving increasing attention, e.g. the iodine deficiency disorders, and cognitive development impairment resulting from early iron deficiency anaemia.

Behavioural aspects are part of this intergenerational cycle. For example, mortality during ages 1–4 years is particularly sensitive to socioeconomic factors, probably due to the impact on choices regarding nutrition and use of health services. Child mortality for example, is more than three times higher among children of women who have no education than among those whose mothers have secondary or higher education[48].

Effects of early fetal malnutrition on NCDs

Barker and his group identified men in the UK who suffered fetal growth retardation at birth and found them subsequently to have higher mortality from cardiovascular diseases associated with higher levels of cholesterol and fibrinogen, as well as more hypertension and diabetes[49]. Infants of diabetic mothers are fatter, as well as larger, and even those with normal birth weights have an increased risk of childhood obesity. High glucose during fetal development leads to increased risk of insulin resistance, onset of diabetes before the child-bearing years, and so the cycle continues into the next generation[50].

The apparent increased susceptibility of adults born small-for-date to degenerative diseases suggests that the increase in meat, fat and energy consumption with rising affluence is particularly hazardous for formerly poorly nourished populations[21]. If fetal malnutrition is a risk factor for later NCD incidence, this will have a devastating impact on most developing countries and transitional cultures. The impact on the health-care systems of those countries in treating the emerging NCDs will be enormous.

Global effects

There is a wider perspective to these increasing inequalities. It is now well recognized that, per head, an individual in the affluent world consumes many times the resources compared to someone in the developing world. To maintain these levels of consumption (the cause of the increasing obesity among other things), the world is being over-exploited, and it is increasingly the developing world which is at a disadvantage.

There is currently debate about how quickly the world is reaching some sort of global limit. Nevertheless, as populations of countries such as China become greater consumers, increased pressure is placed on global resources, especially if they wish to be as profligate with food and other resources as the Western world. Asians now eat more livestock products and diets are showing a shift from rice to wheat. Sub-Saharan Africans are moving from eating coarse grains and roots and tubers to wheat and rice[1]. Diets change significantly as income rises. With increasing relative affluence, more food is consumed; then animal protein replaces vegetable protein. Production of animal products requires several times more biomass than vegetarian food. As a result, an affluent diet requires three times more biomass per capita[51].

Globally, grain output per person has fallen 8% from the historical high reached in 1984, dropping roughly 1% per year[52]. Although the world grain harvest is still growing at a reduced level of 1%, there are no new technologies currently apparent that suggest that farmers will be able to restore the 3% annual rate of growth that prevailed from 1950 through to 1984, and which helped at that time to reduce hunger and malnutrition[52]. Meat production per person peaked in 1990 and then dropped nearly 1% over the next 2 years.

Marine fisheries are collapsing in many parts of the world[1]. It appears that the oceans may not be able to sustain a catch of more than 100 million tons, the level reached in 1989[52]. Aquaculture is now the fastest growing segment of north American agriculture, reflecting a global trend and about 25% of all fish consumed by humans worldwide are now farmed[53]. But even this has a price in terms of pollution from fish farming methods, potential net loss of fish through feeding fish protein, and the importation of foreign species displacing local species.

In early 1992, the US National Academy of Sciences and the Royal Society of London together issued a report in which they said: 'If current predictions of population growth prove accurate and patterns of human activity on the planet remain unchanged, science and technology may not be able to prevent either irreversible degradation of the environment or continued poverty for much of the world'[54].

Trends

It is worth remembering that this is the first generation to witness the doubling of world population during a lifetime. Indeed, everyone born before 1950 has seen the world population double[52]. One of the immediate consequences of continuing rapid population growth is the decline in the per capita grain harvest and fish catch reported above. For these two basic food sources, the needs of the 91 million people being added to the world population each year can be satisfied only by reducing the consumption levels of those currently alive. To also distribute these existing resources more equitably amongst those already here (of whom over 700 million currently do not have enough food[8]), let

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alone future generations, is a question that urgently needs considering.

The news is not all bad: virtually all countries have increased the average life expectancy of their citizens so that since 1960, globally, life expectancy has increased by more than a third. Infant mortality and child mortality rates generally continue to improve: in little more than a generation, child death rates in developing countries have been more than halved[55]. Under-5 mortality rate for the median country has in fact declined from about 200 in 1960 to a little over 50 in 1990. Malnutrition rates have declined by almost a third[55] and declines in proportions (not necessarily actual numbers) have occurred for all regions of the developing worlds with the smallest declines in sub-Saharan Africa and then south Asia. In the Middle East, the north African countries, and in Latin America, it seems likely that the prevalences of malnourished children will be more typical of the industrialized countries by the end of the century[12]. Vitamin A deficiency is decreasing in many countries as are the iodine deficiency disorders.

Many countries, particularly in south-east Asia have shown that with increasing affluence, undernutrition looks after itself. Poverty rates halved in China in 20 years. Health promotion, medical advances and changing life-styles in affluent countries have been shown dramatically to reduce the incidence of cardiovascular diseases, cerebrovascular disease and hypertension (although less so in lower socioeconomic strata).

There continues to be some divergence of opinion on the limits of global capacity[56]. Studies by international organizations such as the World Bank and the Consultative Group on International Agricultural Research (CGIAR), which are typically limited to the next 20–30 years, generally support the Food and Agricultural Organization (FAO) forecast that 'production [of food] increases can accommodate effective demand and rising world population, although they may not reduce malnutrition'[57].

During the last three decades, the developing world as a whole has seen a continuous decline in child mortality in every 5-year period between 1960 and 1990[47]. The bad news, however, is that after 1980 there has been a slowing in absolute decline in every subsequent 5-year period[47,58]. In south Asia and sub-Saharan Africa, the actual number of undernourished children has increased, as, at the same time, available food supplies have decreased[1,12]. The gap between demand and production is likely to widen in these regions. If trends persist, the number of children with protein-energy malnutrition will increase by the year 2000; it is projected to remain at 200 million by year 2020 despite the projected decline in fertility rates[10].

Actions

There are at least four underlying needs to counter malnutrition: (a) adequate household food security allowing a 'balanced' diet; (b) adequate caring capacity; (c) sufficient health services; and (d) a healthy environment[47]. Other factors that need to be addressed include female education, expenditures in health and education, total fertility rate, national income (gross national product), poverty levels, excessive disparities in income levels, and dietary energy supply, poor housing and unemployment[39,59]. Poverty, however, remains the main cause of malnutrition. The resulting lack of purchasing power and access to resources, and perceived lack of control over one's life and health seem to be a major factor for the disadvantaged in both rich and poor countries[26,39,45]. Women and children are particularly affected by poverty[11].

There is a need for a new solution, one reflecting the complexity of the problem, including addressing the political and social causes. The IFPRI[1], among others, has noted the need to enhance the productivity, health and nutrition of low-income people while also noting that rapid economic growth alone, although necessary, is not sufficient to guarantee good nutrition. However, the strong declines in child mortality achieved during the 1980s – a period of slow economic growth in many parts of the developing world – support the view that cost-effective health interventions have contributed to the decline in child mortality.

So what might be done – at the individual, national and global level?

Individual

McMichael[26] describes the 'behaviouralist' view of the 1970s and 1980s when education and encouragement to eat healthy diets led to national and international recommendations for healthy diets and dietary guidelines. However, providing information is often not enough to change behaviour. When diet and health information has been provided, it has been heard and acted upon preferentially by the well educated and those with opportunity and has indeed led to healthier diets in the upper socioeconomic strata[34]. Such lifestyle changes are presumed to be one of the factors in the decline of cardiovascular disease mortality among those better off in many Western countries since the mid-1960s. Health education should consequently now shift the focus preferentially to those population groups on the lower socioeconomic strata[60].

However, 'healthy choices' are not usually easy choices for the socially disadvantaged. Consequently, there is strong support for the 'structuralist' view which seeks to reduce social disadvantage in the long term while emphasizing a need for affirmative action strategies in the short term[26]. However, it is not as

easy to recognize, or intervene, in the often subtle or indirect relevance of social, economic, organizational or political forces[39]. Other reasons to tackle structural forces include the following, all beyond the individual's ability to change: growing poverty, national debt, economic decline, poor terms of trade, rapid population growth, unfavourable weather, war and governmental ineptitude. All of these factors contribute to national and global food problems[45].

There is also increasing evidence that the control of income within the household matters: incomes controlled by women are associated with improved food security and nutrition. Furthermore, non-food factors such as education, health care, child care, clean water and sanitation are of critical importance in determining nutritional status and need to be improved along with incomes and empowerment of women[1,8]. Walker concluded that 'inadequate nutritional status of women in developing countries is symptomatic of underlying social and economic issues such as poverty, gender discrimination, lack of ability to limit fertility', and goes on to suggest that interventions to improve the nutrition of women are unlikely to be successful unless these underlying and basic conditions are also addressed[61]. Women of every age have disproportionately higher rates of malnutrition than men and are over-represented among the poor, illiterate and displaced people[45].

National

Nutritional considerations should be included in national agricultural, social and macroeconomic policies, as well as be provided in direct nutrition interventions for specific targetted groups[9]. At the same time, increasing the purchasing power of the poor while improving related social conditions that affect nutritional status, is needed to raise food intake and reducing nutritional deficits in vulnerable groups[9].

Price supports can encourage the production and consumption of some foods in preference to others, but price support systems can also cause inefficiencies in 'free' markets. At the very least governments should aim to avoid hidden subsidies that disadvantage rural producers, or in some countries, encourage high-fat diets. Macroeconomic and trade policies can inadvertently encourage import substitution which tends to reduce efficiency and growth. Structural adjustment has been directed at this but, while there may be long-term benefits, such measures have had a documented negative impact on the nutritional status of poor households[62].

The challenge that faces developing countries is that with the emergence of obesity and chronic diseases in some proportion of their societies, undernutrition and poor economic development continue to coexist. Populations, where the dietary energy is available and accessible, are likely to continue getting fatter. Most NCDs are chronic and are expensive to treat and contain. Policy makers have also frequently allowed a tertiary care drain on resources. Already both rich and poor countries spend only 30–40% of their health budget on primary health care[63]. Difficult choices must be made to try and achieve a social balance between feast and famine.

Global

One of the encouraging signs is that the international community, including the nutrition community is taking preliminary action to solve these disparities. At the FAO/WHO International Conference, held in Rome in December 1992, 159 nations endorsed a World Declaration and a global plan of action for nutrition[8]. Specific objectives were endorsed and reinforced earlier goals agreed to at the World Summit for Children[61]. Over 120 countries are now developing national plans of action for nutrition[13]. All the international agencies have agreed on the nutrition goals to be achieved by the end of the decade, including the development banks; and bilateral government funding agencies, such as USAID, have been particularly active in the field of micronutrient malnutrition[13].

The FAO held a World Food Summit in 1996 to address issues of world food security, which attempted to assess food security as a strategic political and economic issue, going well beyond agriculture in its strictest sense[65], although the response from the more affluent countries was disappointing for a problem so fundamental to the potential well-being of all peoples. The UN Development Programme (UNDP) is directing its attention to eradicating extreme poverty and seeking to accelerate economic policies in the 100 poorest countries so that they, and donors, implement policies that are pro-poor or targetted to poverty reduction[54].

The international political climate is apparently at its most unsympathetic for decades as national percentages of gross national product going to international assistance become smaller with every budget (with some admirable exceptions). In 1994, total food aid fell to around 14 million tons. The value of food aid fell from over 10% of total overseas development assistance in 1985 to less than 6% in 1994[66]. At the same time, the frequency, scale and complexity in humanitarian crises have all been increasing in recent years. In much of Africa, where despite nations paying out more than US$1300 billion between 1982 and 1990, debtor countries are now 61% more indebted than they were in 1982[67]. In 1991, loan repayments were costing poor countries three times more than they received in official development assistance from abroad[63]. Many countries in Asia, Latin America, and to a lesser extent the Pacific, are also saddled with considerable debt burdens. The servicing of these and structural readjustments have

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lead to a slowing of the positive trends that were seen in the late 1970s and early 1980s, although there are some encouraging signs again in some countries.

Conclusion

This article has attempted to draw together the disparate threads of undernutrition and overnutrition, and show that they are more closely interwoven than often thought, and are likely to become more so. It has also shown that there may be some commonalities of approach, and that the need to act is urgent.

Despite the seriousness of the global situation, there are some hopeful signs. There is greatly enhanced experience with existing effective strategies and programmes that have been shown to work. Recent evaluations by Indonesia and Thailand attributed their success in reducing both protein-energy malnutrition and micronutrient deficiencies to the fact that both were addressed through poverty alleviation programmes[68], with nutrition programmes promoted within this framework[10]. Other countries that have successfully reduced child malnutrition through focused programmes in recent decades include Chile, Costa Rica, Tamil Nadu in India and Zimbabwe[10]. Public policies that support or promote economic growth accompanied by decreasing economic inequality have also been successful, e.g. in South Korea[15].

Even where there is no rapid improvement in income, experience has shown that malnutrition can be reduced by explicit programmes and policies that aim at improving household access to food and health services and improving child practices such as breast-feeding and proper weaning of infants, as in Kerala in India and Sri Lanka[10,45]. The experience of Guatemala is encouraging. Children who received complementary food for up to 2 years of age showed, when followed up 15 years later, that they had completed more years of schooling and still performed better on psychological tests than those who had not received the same supplement[21]. Programmes need to be specifically designed to empower people in lower socioeconomic groups because these are the people who have the largest burden of disease and the fewest resources for dealing with these problems[39] and are hence rendered the most powerless[45].

Virtually all countries, international agencies and non-governmental agencies have agreed on some common goals to address malnutrition. Although none will be easy to achieve, especially universal food security, there are some encouraging signs. The cost of failure will be devastating for the majority of the global population, fatal for millions of infants and children, and perhaps ruinous for the world as we know it.

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