

Future diets: Under- and over-nutrition in developing countries

Steve Wiggins and Sharada Keats

Under-nutrition has long been the main concern in developing countries. The numbers suffering have been and remain large: the Food and Agriculture Organization of the United Nations (FAO) estimates that 842 million people, 12 per cent of the world's population, were under-nourished in 2011/13 (FAO 2013). The consequences are serious: children who are stunted are less likely to achieve their physical and mental potential. They carry a life-long handicap, reflected in lower future earnings than those infants who were better nourished.

Progress, however slow, is being made on reducing under-nutrition. Both prevalence and absolute numbers have fallen: in 1990/92 an estimated 1,015 million, or 19 per cent of the world population, were under-nourished (ibid.). Proven policies to remedy the problems are well-known: many of them are straightforward to implement, given the political will and funding (SUN, 2010). Moreover, we can expect the rising incomes being seen across much of the developing world to reduce the deep poverty that both accompanies and causes hunger.

Indeed, increasingly the main challenges of under-nutrition are less those of insufficient macro-nutrition – too little consumption of calories and protein – but rather the widespread deficiencies in micro-nutrients, particularly iron, iodine, vitamin A and zinc, that may affect as many as two billion people (Micronutrient Initiative, 2009). Remedies for these include medical treatment such as supplementation, fortification of processed staple foods and bio-fortification of staples: but the simplest solution would be if diets were sufficiently nutritious and diverse to eliminate the deficits. So the quality of diet matters for under-nutrition.

The rising problem of over-nutrition in the developing world

Diet becomes all the more important, however, to combat over-nutrition. Across the developing world, and especially in the emerging economies now middle income but low income a generation ago, body weights are increasing with corresponding rises in the numbers of adults classified as overweight (BMI of 25 or more) or obese (BMI of 30 or more). In 1980, 250 million adults were overweight or obese in the developing world: by 2008 this number had risen more than three times to 904 million (Stevens et al., 2012; see Figure 1). Prevalence in developing countries rose from 15 per cent to 27 per cent of adults. By 2013 it is probable that more than one billion adults in the developing world were overweight and obese, almost twice as many as in the high-income countries. Their numbers exceed those who are

under-nourished in the developing world, if not the numbers with deficits in micro-nutrients.

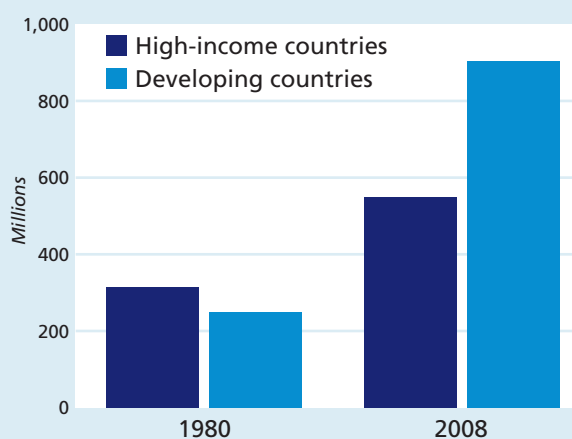
While increasing numbers and prevalence of overweight and obesity can be seen across the developing world, the levels differ markedly by country and region. Within the developing world, rates are high in parts of Latin America, Near East and North Africa, and the Pacific, but notably low in other parts of Africa and much of Asia. For example, in 1980, 36 per cent of Mexican adults were overweight: that had increased to 68 per cent by 2008. In the Republic of Korea, the corresponding rates were 14 per cent and 32 per cent.

The health implications are alarming. As body mass indices rise so too do the risks of non-communicable diseases (NCDs), including cardio-vascular, type-two diabetes and some cancers (WHO, 2013). This shows in the changing ranks of health risk factors across the world. In 1990 the leading risk was childhood underweight; by 2010 this had fallen to the eighth highest. In contrast, raised BMI rose from tenth to sixth most important risk factor between these years (Lim et al., 2012).¹ Developing countries are increasingly facing a double burden of disease: they still see high rates of infectious disease and under-nutrition but are also seeing a rapid rise in NCDs.

Both the prevalence of people overweight and obese and their numbers have been rising for decades across the world. Even if

Figure 1 Weight gain

Overweight and obese adults, 1980 and 2008



Source: From estimated data in Stevens et al., 2012

there are variations in rates of increase and the levels seen, no country yet seems to have bucked the trend. Hence, unless countervailing action is taken, it is almost certain that both rates and numbers will rise considerably in the developing world in the foreseeable future. This will take a high toll in illness, disability and early death; costs to the economy in lost production; and health systems in rising costs of care.

Causes of rising body mass

No single cause explains the rising levels of people overweight and obese: it responds to many factors. While the precise importance of different factors remains in debate, there is little disagreement about which is the more important: many people are simply eating more food than they need to meet their energy expenditure.

On the demand side, then, many people in the developing world are following the pattern of more sedentary lives that is already seen in high-income countries. Work is increasingly seated and indoors, rather than manual and outdoors. Improved transport means many people spend less time walking or cycling and more time in cars or public transport. These changes have only been partly offset by people taking up sports and active leisure pursuits.

On the supply side, many people are eating more. For example, people in Samoa in 1961 consumed on average 1,960 kcal a day: by 2007 that had increased to no less than 2,886 kcal a day (Seiden et al., 2012). This was an average across the population: it is hard to imagine that the average energy expenditure was anything like as high. It's not just that Samoans were eating more, they were eating foods with higher energy density as the diet changed from one based on starchy roots, coconut oil, fish and pig meat to one with the increasing consumption of imported processed cereals, such as wheat flour and rice, vegetable oils and poultry. Hence, for example, available fat rose from '81 grams per capita per day in 1961 to 139 grams per capita per day in 2007' (ibid.). This was associated with alarming increases in the bodyweights of adults: 'male mean BMI ... increased by 17.8 per cent, from 26.5 kg/m² in 1980 to 31.21 kg/m² in 2010, while female BMI increased by 17.6 per cent, from 29.7 kg/m² in 1980 to 34.93 kg/m² in 2010'. By 2008 an astonishing 66 per cent of women and 44 per cent of men in Samoa were obese: the country holds one of the highest levels in the world for obesity (data from Stevens et al., 2011).

The change in diets, or 'dietary transition', can be seen in almost all countries when incomes rise and populations urbanise (Popkin et al., 2001; Popkin, 2003; Popkin and Ng, 2006). Diets tend to move away from those based on grains, roots and tubers with only modest livestock consumption, to ones with higher consumption of oils, fats, sugar and livestock products – and with correspondingly less eating of cereals and other starchy staples. Reasons for these changes lie partly with rising incomes that allow people to choose food by taste rather than seeking the most economical way to satisfy appetite. That usually means people eating more animal produce, fat and oil, sugar, vegetables and fruit.

But there are other factors that accentuate some of these changes. Costs of many foods have fallen in the developing world over the last forty years in real terms, largely as a result of the green revolution. Food processors have become highly effective in producing foods, including snacks, and are able to market them at low cost, making

them widely available in cities and increasingly in rural areas as well. In their struggle to get market share and recoup investments in product development, these foods are advertised heavily. Food retailers contribute to the availability and low cost of these foods, since there are profits to be made in selling them in high volume – knowing that processer advertising should ensure demand. Processed foods can often be prepared quickly and fit in well with urban lives where increasingly adults are out of the house earning and have less time to cook. Dishes popular in high-income countries, such as pizza and hamburgers, feature in films, television and other media, leading people in the developing world to aspire to consume them. Rising incomes and less time for cooking lead to more food being consumed out of the household: fast food outlets have proliferated to meet this demand. They have developed tasty foods at low cost, but often these are dense in energy and high in fat, salt and sugar.

Behind each of these causes lie other changes. The liberalisation of trade and investment seen in recent times, for example, allows international companies to set up processed food factories or open fast food franchises across the world, backed by advertising to stimulate demand (Hawkes, 2006).

Box 1 Diet snapshots

In 2010–12, most (156 of 175) countries had average per capita food energy availability of 100 per cent or more of the estimated amount required. Of the remaining (with lower than 100 per cent), 14 were in Sub-Saharan Africa, including Commonwealth members Zambia, Namibia, Swaziland, Botswana, Kenya and Tanzania. Kilocalories from animal source foods remain very low across most of the African continent. Of the 11 countries in 2009 where average protein intake was below 50g per capita per day (required for average and moderately active adults), two were Commonwealth African member countries: Zambia and Uganda.

In countries with higher average incomes, more attention is being paid to the quality of diets and, in particular, whether it contains enough micronutrients and whether there is a good balance between the major food groups. In South Africa, for example, a 'healthy diet' would cost 69 per cent more than a typical South African diet. For those households among the lowest third in terms of average incomes, the extra expense of a healthy diet would equate to fully 30 per cent of their total income.

In Australia, researchers found that the cost of having a healthy diet based on public health recommendations would take some 40 per cent of the disposable income of families that were dependent on welfare, while families earning an average income would have to spend 20 per cent of their disposable income to achieve the same healthy diets.

In Southern Asia, India's consumption of animal products is approaching that of China's in terms of its contribution to the average plate, but here the increase is almost entirely in milk consumption, with only limited increases for meat. Many Indians are vegetarian, avoiding beef or pork for cultural and religious reasons.

Source: Wiggins and Keats, 2014.



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Kilocalories from animal source foods remain very low across most of the African continent

The combination of changes to both the demand for energy and the supply of food has led some to characterise new affluent societies as living in an environment which is ‘obesogenic’: that is, their new circumstances make it probable that they will eat too much and increase their bodyweights (Lang and Rayner, 2007; Lang, 2009). There is something of a tension in the literature over how much these changes are primarily economic, the combination of rising incomes with falling real costs of many foods; or, conversely, mainly cultural, as people with sedentary lives take on habits of snacking on tasty, energy-dense foods that are easy to consume, being influenced by media, advertising and peer behaviour.

Whatever the weighting of the reasons, with rising incomes diets usually become (too) rich in fat, salt and sugar, while being undersupplied with fibre, minerals and vitamins. Above all, it is the energy density of some of these foods that means that individuals tend to over-consume, since by the time the stomach feels full, large amounts of energy have been consumed.

Policy implications

So what can be done to stem the rising tide of overweight and obesity? Potential policies may be divided into three sets: information and education designed to affect individual choice of foods; regulations on food processing, advertising and retailing; and use of taxes and subsidies to change the prices of specific

foods and thereby influence the amount people consume.

Not that much is known, however, about how effective and efficient different policies in these sets are.³ That is partly because, although many high-income countries and a few developing countries have policies to prevent obesity, measures taken so far have tended to be piecemeal and modest. Few politicians and their electorates favour strong measures when it comes to policies that may restrict personal choice over food, provoke the opposition of the food and farming industries, or raise taxes on popular foods (González-Zapata, 2010). Partly it is because many of the measures taken so far have not been reviewed or evaluated to produce reliable evidence of their effects (Capacci et al., 2012). To make matters worse, taxes on foods dense in energy (as well as those rich in fat, sugar and salt) that would almost certainly reduce their consumption (Carragher and Cowburn, 2005), are the least popular of all policies (González-Zapata, 2010): the ones most likely to attract intense lobbying against their use.

Because the increase in obesity results from more than one cause, it is likely that an effective public response will have multiple components. Moreover, if the public and leaders are reluctant to take any particular measure strongly, then a package of less potent measures may be acceptable. For both these reasons, progress may lie with ‘nudges’ rather than ‘shoves’. But we have yet to see any country act to decisively halt (let alone reverse) the steady rise in bodyweights. Scandinavian policy-makers have been

trying to do this for decades, but even so the BMIs of their citizens continue to rise.

If these reflections seem pessimistic, then here are three reasons to be more optimistic about what may be done in the future. One: to arrest and reverse the rise in obesity does not necessarily mean that the median consumer has to make great changes to either their diet or lifestyle. Cohort studies in the USA show that the expanding waistlines in that country have resulted from comparatively small imbalances of dietary energy over expenditure: by less than 100 kcal a day (Mozaffarian et al., 2011). It has been estimated that a reduction of 220 kcal a day from the diets of US citizens would help lower their median weight to a healthier level (Hall et al., 2011). Achieving this change in the daily energy balance does not require strict dieting or military fitness regimes. Many sandwiches contain more calories than this and 40 minutes walking, 30 minutes cycling or 20 minutes of slow jogging would burn the same amount. So, for most people, only modest changes to their eating and exercise routines are needed: policies do not need to achieve any more than this.

Two: there are great differences in the diets and levels of obesity seen across countries, to say nothing of the differences seen within countries between people from different social groups. Hence it should be possible for policy to steer people towards the norms of those who are not obese.

Three: in some developing countries, it seems that leaders have finally realised that unpopular policies have to be adopted if mass illness and high health costs are to be avoided. Mexico is perhaps the most prominent example. Faced by a national epidemic of type-two diabetes and after intense debates the legislature voted to tax sugar-sweetened beverages and energy-dense foods in December 2013. Other countries in Latin America, including Chile and Ecuador, are considering similar taxes. Mexico's experience will be closely monitored to see if the taxes do indeed result in lower consumption of sugary drinks and energy-dense foods.

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Endnotes

1 Other diet-related conditions were amongst the top ten risks in 2010: high blood pressure (first), low fruit (third) and high fasting plasma glucose (seventh). Low physical activity was tenth.

2 This makes the problem of obesity less tractable than those of under-nutrition where effective and efficient policies have been proved.

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STEVE WIGGINS is an agricultural economist with more than 35 years' experience of teaching and researching agricultural and rural development. Formerly at the University of Reading, since 2002 he has been a research fellow at the Overseas Development Institute, London. With considerable experience of Africa and Latin America, his interests centre on rural livelihoods, agricultural development, poverty, and food and nutrition security. In recent years he has been particularly concerned with the causes and impacts of the 2007/08 spike in international cereals prices.

SHARADA KEATS is a research officer in the Agricultural Development and Policy Programme at the Overseas Development Institute (ODI), London. With a background in agricultural development economics, she has worked at ODI for over five years on research and analysis around food and nutrition security, food crises and small-scale farm development, especially in Africa. She is a co-author of *Future Diets* (Wiggins and Keats, 2014), an ODI study of the implications of changing diets for agriculture and food prices.