

Chapter Four

The Obesity Crisis



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“The rise of childhood obesity has placed the health of an entire generation at risk.”

Tom Vilsack, United States Secretary of Agriculture

Key messages

- The current increase in obesity in the global population is unprecedented.
- Worldwide, approximately 1.4 billion adults are overweight, and 500 million are obese.
- As the most common cause of death, infectious diseases have now been overtaken by non-communicable diseases (NCDs).
- In many low-income countries wealthy and well-educated people are more likely to be overweight than the poor.
- In higher-income countries lower-income populations tend to be more at risk of obesity and its long-term consequences. policy-makers in developing countries need to pay greater attention to the obesity crisis and its linkages to undernutrition.



The problem of obesity has assumed epidemic proportions in recent years
Source: Sight and Life

The world continues to experience malnutrition and undernutrition on an unprecedented scale. So huge and complex is this problem that it sometimes diverts attention from another rapidly growing issue which has vast ramifications and will have severe long-term consequences: the rise of obesity.

According to the United Nations World Health Organization (WHO), 1.4 billion adults worldwide are overweight, and of these, approximately 300 million women and 200 million men are obese. Worldwide obesity has doubled since 1980, in fact, and 65% of the world's population now lives in countries where overweight and obesity related diseases kill more people than undernutrition.

This is a dramatic reversal of the traditional paradigm whereby poor diet is associated exclusively with undernutrition. What makes it especially concerning is the fact that overweight and obesity can lead to health problems such as diabetes, hypertension, heart disease and cancer. The significant increase in the prevalence of these non-communicable diseases (NCDs) in recent years is directly attributable to the rise in obesity in the world's population. The traditional focus of governments and NGOs on eliminating starvation and hunger, however, tends to divert attention from this growing public health problem. It is hard to imagine that a person can overeat their way to malnutrition. But this is precisely what is happening.

The nutrition transition

In poorer regions of the world and poorer sections of society in general, the staple diet has traditionally been low in fat, generally taking the form of cereals and pulses and being supplemented as and when possible by nutrient-rich animal protein. The past few decades have witnessed a ‘nutrition transition’ to a more Western-influenced diet in many parts of the globe, however. This diet offers more diversity, but contains considerably more saturated fats, total fats, sugars, starches and animal proteins.

A striking example of this phenomenon is to be found in Micronesia in the Pacific Ocean. According to the Bulletin of the World Health Organization (Volume 88, Number 7, July 2010, 481–560), “Replacing traditional foods with imported, processed food has contributed to the high prevalence of obesity and related health problems in the Pacific Islands ... Beyond the image of white sandy beaches and carefree lifestyles, the Pacific Islands are facing serious health problems, the prime culprit being imported foods. In at least 10 Pacific Islands more than 50% (and in some, up to 90%) of the population is overweight ... Obesity prevalence ranges from more than 30% in Fiji to a staggering 80% among women in American Samoa, a



The double burden of malnutrition: parental obesity and child malnutrition often exist side by side

Source: *Sight and Life*

territory of the United States of America (USA). WHO defines overweight as having a body mass index (BMI) equal to or more than 25, and obesity as a BMI equal to or more than 30. Diabetes prevalence among adults in the Pacific region is among the highest in the world; 47% in American Samoa compared with 13% in mainland USA, and it ranges from 14% to 44% elsewhere in the region.”

Stranger than paradise

Micronutrient deficiencies are common in the Pacific Islands. In 15 of 16 countries surveyed, more than one fifth of children and pregnant women were anemic. In Fiji, Papua New Guinea and Vanuatu, iodine deficiency and related goiter are endemic. Vitamin A deficiency is also a significant public health risk in Kiribati, the Marshall Islands, the Federated States of Micronesia and Papua New Guinea.

About 40% of the Pacific Island region’s population of 9.7 million has been diagnosed with a NCD, notably cardiovascular disease, diabetes and hypertension. These diseases account for three quarters of all deaths across the Pacific archipelago and 40–60% of total healthcare expenditure, according to a meeting on obesity prevention and control strategies in the Pacific held in Samoa in September 2000.

Dr Temo K Waqanivalu, technical officer for nutrition and physical activity at the Office of the WHO Representative for the South Pacific in Suva, Fiji, partly blames poor diet for the region’s health problems. “Promotion of traditional foods has fallen by the wayside. They are unable to compete with the glamour and flashiness of imported foods,” he says.

People in the Pacific Islands may know what constitutes healthy eating but, as in many parts of the world, governments struggle to change people’s behavior. In eight countries, less than 20% of people surveyed reported eating the recommended five or more portions of fruit and vegetables a day. The often calorie-rich and nutrient-poor imported foods have a stronger appeal.

Life expectancy data make clear the urgent need for action. The average age at which people develop diabetes and cardiovascular disease is getting lower. In Fiji, only 16% of the population is aged more than 55 years due to premature deaths primarily caused by non-communicable diseases.

Source: *Bulletin of the World Health Organization (Volume 88, Number 7, July 2010, 481–560)*

The extremes witnessed among the populations of the Pacific Islands are part of a trend that is leaving no corner of the globe unaffected. Certain populations – inhabitants of the Indian subcontinent, for instance, or the Pima Indians in the United States – are especially susceptible to weight gain in the face of exposure to a Western diet rich in fats, sugars and starches. But the whole world is affected by the general trend towards a more sedentary lifestyle. Whereas before World War II, the majority of the world's population worked in agriculture, manufacturing or some other area requiring physical effort, the proliferation of labor-saving devices, automotive transportation and computerization has vastly and rapidly reduced the need to expend physical effort during the course of a normal day. People are burning off fewer calories during their day-to-day lives and at the same time consuming more calories. This inevitably results in weight gain. The combination of a change in dietary patterns plus a change in lifestyle has brought about the simple formula for obesity: 'energy in' exceeds 'energy out'.

According to the Morbidity and Mortality Report published in 2004 by the Centers for Disease Control and Prevention, in 1971, women in the US consumed an average of 1,542 calories per day compared with 1,877 in 2004. Men consumed an average of 2,450 calories in 1971, but consumed an average of 2,616 calories in 2004. So in a time frame of just over 30 years, average calorie intake increased by 22% for women, and 10% for men. It is not surprising then, that obesity has become a major problem in the US.

Unless people compensate for increased calorie intake by means of increased energy expenditure, they will put on unnecessary weight.

The United States and Western Europe were the first regions of the world to go through the nutrition transition. In the 1920s and 1930s, during the Great Depression, these regions contained many food-insecure people and households. By the 1950s and 1960s, greater affluence led to richer diets, with an evening meal usually comprising meat, potatoes and vegetables for even the poorer sections of society. This did not lead to obesity on a wide scale, however, for the fast-food culture of today was still in its infancy and lifestyles were still comparatively active for most people. The situation has changed radically in recent years in the US, however, with a knock-on effect that extends beyond the shores of the United States and to the furthest corners of the globe.

The poorest countries of the world are now going through the nutrition transition first charted by America, and they too have seen an increase in the proportion of the population that is overweight and obese. This increase has been followed by a dramatic increase in non-communicable diseases, particularly type 2 diabetes. Recent statistics from the World Health Organization show that 44% of the world diabetes burden, 23% of the ischemic heart disease burden and between 7% and 41% of certain cancer burdens are attributable to overweight and obesity.

Definitions of key terms

Overweight for adults is a BMI between 25 and 29.99

Obesity for adults is a BMI 30 to 39.99

Morbidly obese for adults is BMI 40 or greater

Note: BMI is weight (kg)/height squared (meters)

For children, overweight is 85th to 95th percentile on child growth chart, and obesity is more than the 95%

Type 1 diabetes, also sometimes called juvenile-onset diabetes or insulin-dependent diabetes is a chronic condition in which the pancreas produces little or no insulin.

Type 2 diabetes, also sometimes called adult-onset or non-insulin-dependent diabetes, is a chronic condition that affects the way the body metabolizes sugars. With type 2 diabetes, the body either resists the effects of insulin or else

does not produce enough insulin.

“Diabesity” is a term coined by Dr Francine Kaufman to indicate a combination of diabetes and obesity.

Non-communicable diseases (NCDs) – also known as chronic diseases – are not transmitted from person to person. NCDs can progress slowly and persist in the body for decades. The main types of NCDs include cardiovascular disease, cancers, respiratory diseases and diabetes.

“Hidden hunger” is another name for micronutrient malnutrition. This term is used since the specific deficiency is typically not visible.

The “double burden of malnutrition” is defined as the coexistence of undernutrition and overweight in the same community or even the same household.

Case study

The Pima Indians: A case study of the relationship between obesity and diabetes

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

Research conducted on the Pima Indians for the past 30 years has helped scientists prove that obesity is a major risk factor in the development of diabetes. One half of adult Pima Indians have diabetes and 95% of those with diabetes are overweight.

These studies, carried out with the help of the Pima Indians, have shown that before gaining weight, overweight people have a slower metabolic rate compared to people of the same weight. This slower metabolic rate, combined with a high-fat diet and a genetic tendency to retain fat may cause the epidemic overweight seen in the Pima Indians, scientists believe.

Along with genetic make-up, diet is a key factor to healthy lifestyle. The influence of traditional desert crops on the metabolism of the Pima Indians is being studied to determine how to prevent the onset of diabetes and obesity.

Scientists use the “thrifty gene” theory proposed in 1962 by geneticist James Neel to help explain why many Pima Indians are overweight. Neel’s theory is based on the fact that for thousands of years populations who relied on farming, hunting and fishing for food, such as the Pima Indians, experienced alternating periods of feast and famine. Neel said that to adapt to these extreme changes in caloric needs, these people developed a thrifty gene that allowed them to store fat during times of plenty so that they would not starve during times of famine.

This gene was helpful as long as there were periods of famine. But once these populations adopted the typical Western lifestyle, with less physical activity, a high-fat diet, and access to a constant supply of calories, this gene began to work against them, continuing to store calories in preparation for famine. Scientists think that the thrifty gene that once protected people from starvation might also contribute to their retaining unhealthy amounts of fat.

There are approximately 100,000 genes packed into 23 pairs of chromosomes in every cell of a person’s body. Within a gene, chemicals form individual codes, like words, which tell the cells of the body what to do. It is the code within a gene that directs the body to grow skin, and determines whether the skin is brown, yellow, black or

white; to form hair and bone; to circulate blood and hormones such as adrenalin and insulin; and to perform every other biological process in the body.

Some diseases are caused by bacteria or viruses that infect the body and make it sick. Others, such as diabetes, occur because a gene’s code causes it to function differently under some circumstances. For instance, if a person has a gene that makes that person likely to get diabetes, eating a lot of high-fat food over time may increase that person’s chance of getting sick. On the other hand, eating lower fat foods such as fruits and vegetables and exercising each day may help to prevent the disease. A person can’t choose his or her genes, but can choose what to eat and whether or not to exercise.

Finding the gene or genes that may increase a person’s risk for getting diabetes and obesity is the most effective way scientists have to learn what’s wrong in a diabetic person.

With the help of the Pima Indians, National Institutes of Health (NIH) scientists have already learned that diabetes develops when a person’s body doesn’t use insulin effectively. They know that other genes probably influence some people’s bodies to burn energy at a slow rate, and/or to want to eat more, making it more likely that they will become overweight. Being overweight, in turn, puts a person at even higher risk for diabetes. Because they have learned this over 30 years of working with the Pima Indians, NIH scientists now are able to test ways to prevent the disease with low-fat diets and regular exercise.

Source: <http://diabetes.niddk.nih.gov/dm1/pubs/pima/obesity/obesity.htm>, March 2013





An inhabitant of Pohnpei in Micronesia, where diet-related obesity is a problem of epidemic proportions
 Source: *Sight and Life*

The critical first one thousand days

The Scaling Up Nutrition (SUN) Movement was launched in September 2010. The SUN Movement stresses direct nutrition interventions of known efficacy targeted to pregnant women and children up to age two. The direct nutrition interventions are complemented by nutrition-sensitive policies and programs. SUN addresses undernutrition; ironically, by improving nutritional status in the first 1,000 days, health and nutrition in adulthood can be enhanced. The developmental origins of health and disease (DOHaD), also called the Barker Hypothesis, uncovered a relationship between birth weight and chronic disease. Infants born small have a higher risk of obesity, hypertension, coronary heart disease and diabetes. Environmental stresses, primarily in utero, alter structures of organs and change regulatory gene expression, resulting in an increased risk of chronic disease later in life. Thus, poor maternal diet has a double, negative effect of contributing to a lower birth weight, an increased risk of developmental disorders and higher risk of chronic disease later in life. Effective nutrition interventions aimed at the 1,000 days have immediate as well as long-term health consequences.

The time bomb of obesity

In the past few years, non-communicable diseases such as heart disease, diabetes and cancer have overtaken infectious diseases as the major cause of death globally. However, health policy in developing countries still tends to focus on combating undernutrition and infectious diseases only, rather than tackling the obesity epidemic and its consequences at the same time. There is a general perception that if people are overweight, then they have more than enough food and are not in need of help. The time bomb of NCDs linked to obesity is all too frequently overlooked. The Millennium Development Goals, for example, do not include a goal related to NCDs.

According to WHO, many low- and middle-income countries are now facing a “double burden” of disease. While they continue to deal with the problems of infectious disease and undernutrition, they are experiencing a rapid upsurge in non-communicable disease risk factors such as obesity and overweight, particularly in urban settings. It is not uncommon to find undernutrition and obesity existing side by side within the same country, the same community and even the same household.

The double burden of malnutrition

Many developing countries now face the double burden of malnutrition, defined as the coexistence of undernutrition and overweight in the same community or even in the same household.

This study sought to estimate the prevalence of the double burden of malnutrition and to identify associated maternal, child, and household characteristics in rural Indonesia and Bangladesh.

A total of 247,126 rural households that participated in the Indonesia Nutrition Surveillance System (2000–2003) and 168,317 rural households in the Bangladesh Nutritional Surveillance Project (2003–2006) were included in the analysis. Maternal and child double burden (MCDB) and its association with individual and household characteristics were determined by using logistic regression models.

MCDB was observed in 11% and 4% of the households in rural Indonesia and Bangladesh, respectively. Maternal short stature, and older age of mothers were strong predictors of MCDB. Child characteristics such as older age and being female were associated with an increased risk of MCDB, whereas currently being breastfed was protective against MCDB. A large family size and higher weekly per capita household expenditure was a strong predictor of MCDB.

This study showed for the first time that even in Bangladesh the double burden is not exclusive to urban areas. Therefore, future policies and interventions should address under- and overweight simultaneously in both rural and urban developing country settings.

Source: Ododo VM, Rah JH, Semba RD, Sun K, Akhter N, Sari M, de Pee S, Moench-Pfamer R, Bloem M, Kraemer K. Predictors of maternal and child double burden of malnutrition in rural Indonesia and Bangladesh. Am J Clin Nutr. 2012; 95(4):951–8.



A healthy, balanced diet, accompanied by regular exercise, is the best way to avoid the risk of obesity

Source: Sight and Life

Double Burden of Malnutrition: Time to Drop “Double”?

One of the things that is apparent from the recent Lancet Nutrition Series is that it is becoming more and more difficult to keep the under- and overnutrition agendas separate.

It is really tempting to keep them separate.

First, dealing with undernutrition is difficult enough without having to deal with overnutrition ... And of course, dealing with undernutrition is one great way to help prevent overnutrition later in life. In addition, dealing with overnutrition means having to grapple with the food industry and a whole range of factors outside of nutrition’s comfort zone: urban development, education, trade, taxes and agriculture for example. Also, there aren’t exactly a range of interventions and policies that have been shown to be effective to inspire us to ramp up action on the overnutrition front. Finally, it is not easy to get research funding to address the two in an integrated fashion.

But I think the separation ... is no longer sustainable.

First, overnutrition does not operate in a different space: it is not just a later in life phenomenon – it is happening to under fives; it is not just in urban areas and it is not just in middle- and upper- income countries – it is everywhere. Second, the undernutrition community can’t avoid engaging with the private sector – not having to deal with the private sector is no longer a reason for not getting involved in overnutrition. Third, we now know that the fight against undernutrition has to go way beyond health, and into the wider development space. This is something even more obvious in dealing with overnutrition.

All the reasons for separating the two are dissolving.

So, seemingly, something that is difficult (undernutrition reduction) just got much harder (dealing with under- and overnutrition). But is that really so? Can an integrated approach help us address both issues better? I think that may be the case.

Making development more nutrition-sensitive and making nutrition more politically aware surely brings the worlds of over- and undernutrition together, indeed, shows they were never that far apart in the first place. They should no longer be separated at birth.

In this context, a new review of Global Evidence on the Double Burden of Malnutrition from the World Bank (by Roger Shrimpton and Claudia Rokx) is comprehensive and well done, but depressing ... It is depressing because it shows how divided the two camps are and how that is to either’s advantage. Beyond the physiological linkages there

has not been much thinking in the past 10 years on how to bring them together in the policy, program, training, communication and advocacy spaces.

Perhaps the time is only now right to do this.

A paper in the Lancet from December 2012 by Moodle et al. (“Profits and Pandemics”) draws the parallels between the practices of the tobacco, alcohol and “ultra-processed food and drink” industries. They conclude that “despite the common reliance on industry self-regulation and public-private partnerships, there is no evidence of their effectiveness or safety”. I think the evidence base upon which they draw is weak (not their fault), but their conclusions are in accord with my own sense of the situation and indeed I made the same parallels in a Development Policy Review paper from 2003 where I go through the various triggers for successful government regulation of tobacco and see how they apply to obesity.

I think policy-makers are about to get a wakeup call from advocacy groups, consumers, the health community, and even some industry leaders, to do something.

The Double Burden is here to stay. Perhaps it is time to drop the Double (on the double).

Source: Lawrence Haddad, Institute of Development Studies (http://www.developmenthorizons.com/2013/06/double-burden-of-malnutrition-time-to.html?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+DevelopmentHorizons+%28Development+Horizons%29) 23 June 2013



Snack bar in Micronesia with overweight manager

Source: Sight and Life

Childhood obesity

Once considered a high-income country problem, overweight and obesity are now on the rise in low- and middle-income countries, particularly in urban settings. More than 30 million overweight children are living in developing countries and 10 million in developed countries.

Children in low- and middle-income countries are more vulnerable to inadequate prenatal, infant and young child nutrition. At the same time, they are exposed to high-fat, high-sugar, high-salt, energy-dense, micronutrient-poor foods, which tend to be lower in cost but also lower in nutrient quantity and quality. These dietary patterns in

conjunction with lower levels of physical activity, result in sharp increases in childhood obesity while undernutrition issues remain unsolved.

Childhood obesity is associated with a higher chance of obesity, premature death and disability in adulthood. But in addition to increased future risks, obese children experience breathing difficulties, increased risk of fractures, hypertension, early markers of cardiovascular disease, insulin resistance and psychological effects.

Source: WHO Fact Sheet 311, March 2013

Protecting children from the negative impact of marketing on dietary behavior

The marketing of food and beverage products high in fat, sugar and salt to children is recognized in Europe as an important element in the etiology of child obesity and in the development of diet-related non-communicable diseases. Overweight is one of the biggest public health challenges of the 21st century: all countries are affected to varying extents, particularly in the lower socioeconomic groups.

The picture is not improving in most countries of the WHO European Region. The figures for children from the WHO Childhood Obesity Surveillance Initiative show that, on average, one child in every three aged 6–9 years is overweight or obese.

The WHO Regional Office for Europe has been working in recent years with Member States to devise policy options that could protect children better from the negative impact of marketing on dietary behavior. This process has been developed by working together in the implementation of the set of recommendations endorsed at the Sixty-third World Health Assembly in 2010 on the marketing of food and non-alcoholic beverages to children, as well as within the context of the WHO European Network on reducing food marketing pressure on children.

The bases of policies to address unacceptable marketing practices to children depend on appropriate intersectoral action and dialogue, sound governance and accountability mechanisms, as well as a focus on equity and a child's rights approach. These are all elements at the heart of the new health policy framework for the WHO European

Region, Health 2020, which supports action across government and society for health.

I strongly believe that the trends in childhood obesity can be reversed. This report [Marketing of foods high in fat, salt and sugar to children: update 2012–2013], although a small step in providing evidence on the trends and policy processes in tackling one of the determinants of childhood obesity, illustrates the enormous progress that has been made in recent years. At the same time, it highlights how collaboration among Member States can trigger decisive action.

To be effective, the initiative to reduce the exposure of children to the marketing of foods and non-alcoholic beverages should be part of a broader package that needs to include: scaling up and adopting the WHO Childhood Obesity Surveillance Initiative; introducing appropriate governance mechanisms with an intersectoral perspective to streamline action and implement a best buys approach to tackling childhood obesity; and ensuring that childhood obesity strategies and non-communicable disease policies are connected and interact appropriately with strategies to reduce inequality.

Zsuzsanna Jakab

WHO Regional Director for Europe

Source: Marketing of foods high in fat, salt and sugar to children: update 2012–2013, <http://www.euro.who.int/en/what-we-publish/abstracts/marketing-of-foods-high-in-fat,-salt-and-sugar-to-children-update-20122013>

	Men	Women
Brazil		
Urban	49%	45%
Rural	25%	43%
India		
Urban		19.9%
Bangladesh		
Urban	5.4%	5.4%
Rural	3.7%	3.6%
Russia	30.3%	50.3%
USA	61%*	

Rates of overweight and obesity in selected network countries in men and women 30–59 years old
Source: *Asia Pacific J Clin Nutr* 2002;11:S738-S739



The world is getting wider

It is lunchtime at Eastside Elementary School in Clinton, Mississippi, the fattest state in the fattest country in the Western world. Uniformed lunch ladies stand at the ready. Nine-year-olds line up dutifully, trays in hand. Yes to chocolate milk, yes to breaded chicken sandwiches, yes to baked beans, yes to orange jelly, no to salad. Bowls of iceberg lettuce and tomatoes sit rim to rim, rejected. Regina Ducksworth, in charge of Clinton's lunch menu, sighs. "Broccoli is very popular," she says, reassuringly. Persuading children to eat vegetables is hardly a new struggle, nor would it seem to rank high on the list of global priorities. In an age of plenty, individuals have the luxury of eating what they like. Yet America, for all its libertarian ethos, is now worrying about how its citizens eat and how much exercise they take. It has become an issue of national concern.

Two thirds of American adults are overweight. This is defined as having a body mass index (BMI, a common measure of obesity) of 25 or more, which for a man standing 175 cm (5 feet 9 inches) tall means a weight of 77 kg (170 pounds) or more. Alarming, 36% of adults and 17% of children are not just overweight but obese, with a BMI of at least 30, meaning they weigh 92 kg or more at the same height. If current trends continue, by 2030 nearly half of American adults could be obese.

Americans may be shocked by these numbers, but for the rest of the world they fit a stereotype. Hamburgers, sodas

and sundaes are considered as American as the Stars and Stripes. Food at state fairs is American cuisine at its most exuberantly sickening. At the Mississippi fair, a deep-fried Oreo biscuit's crispy exterior gives way to soft dough, sweet cream and chocolate goo. It is irresistible.

The rest of the world should not scoff at Americans, because belts in many other places are stretched too, as shown by new data from Majid Ezzati of Imperial College, London, and Gretchen Stevens of the World Health Organization (WHO). Some continental Europeans remain relatively slender. Swiss women are the slimmest, and most French women don't get fat, as they like to brag (though nearly 15% do). But in Britain 25% of all women are obese, with men following close behind at 24%. Czech men take the European biscuit: 30% are obese.

And it is not just the rich world that is too big for its own good. The world's two main hubs for blub are the Pacific Islands and the Gulf region. Mexican adults are as fat as their northern neighbors. In Brazil the tall and slender are being superseded by the pudgy, with 53% of adults overweight in 2008. Even in China, which has seen devastating famine within living memory, one adult in four is overweight or obese, with higher rates among city-dwellers. In all, according to Dr Ezzati, in 2008 about 1.5 billion adults, or roughly one third of the world's adult population, were overweight or obese. Obesity rates were nearly double those in 1980.

Fat of the land

Not long ago the world's main worry was that people had too little to eat. Malnourishment remains a serious concern in some regions: some 16% of the world's children, mainly in sub-Saharan Africa and South Asia, were underweight in 2010. But 20 years earlier the figure was 24%. In a study of 36 developing countries, based on data from 1992 to 2000, Barry Popkin of the University of North Carolina found that most of them had more overweight than underweight women.

The clearest explanation of this extraordinary modern phenomenon comes from a doctor who lived in the 5th century BCE. "As a general rule," Hippocrates wrote, "the constitutions and the habits of a people follow the nature of the land where they live." Men and women of all ages and many cultures did not choose gluttony and sloth over abstemiousness and hard work in the space of just a few decades. Rather, their surroundings changed dramatically, and with them their behavior.

Much of the shift is due to economic growth. BMI rises in line with GDP up to \$5,000 per person per year, then the correlation ends. Greater wealth means that bicycles are abandoned for motorbikes and cars, and work in the fields is swapped for sitting at a desk. In rich countries the share of the population that gets insufficient exercise is more than twice as high as in poor ones.

Very importantly, argues Boyd Swinburn of Deakin University in Melbourne, diets change. Families can afford to eat more food of all kinds, and particularly those high in fat and sugar. Mothers spend more time at work and less time cooking. Food companies push their products harder. Richard Wrangham of Harvard University says that heavily processed food may have helped increase obesity rates. Softer foods take less energy to break down and finely milled grains can be digested more completely, so the body absorbs more calories.

These global changes react with local factors to create different problems in different regions. Counter-intuitively, in some countries malnutrition is leading to higher obesity rates. Undernourished mothers produce babies who are predisposed to gaining weight easily, which makes children in fast-developing countries particularly prone to getting fat.

In Mexico unreliable tap water and savvy marketing have helped make the country the world's leading guzzler of Coca-Cola: the average adult consumed 728 servings last year. In America junk-food calories are often cheaper than healthy ones. Suburban sprawl and the universal

availability of food have made the car the new dining room. In the Middle East, Bedouin traditions of hosting and feasting have combined with wealth to make overeating a nightly habit. Any inclination to exercise is discouraged by heat and cultural restrictions. In Beijing teenagers and office workers cram the fast-food restaurants along Wangfujing. Even home-cooked Chinese meals contain more meat and oil than they used to. Doting grandparents shower edible treats on scarce grandchildren.

Together, these disparate changes have caused more and more people to become fat. Many cultures used to view a large girth with approval, as a sign of prosperity. But obesity has costs. It lowers workers' productivity and in the longer term raises the risk of myriad ailments, including diabetes, heart disease, strokes and some cancers; it also affects mental health. In America, obesity-related illness accounted for one fifth of total healthcare spending in 2005, according to one paper.

A new global health study, led by Christopher Murray of the University of Washington, shows that since 1990 obesity has grown faster than any other cause of disease. For women a high BMI is now the third-largest driver of illness. At the same time childhood mortality has dropped and the average age of the world's population has risen rapidly. In combination these trends may mark a shift in public-health priorities. Increasingly, early death is less of a worry than decades spent alive and sick.

It is plain that obesity has become a huge problem, that the factors influencing it are fiendishly hard to untangle and that reversing it will involve difficult choices. Radical moves such as banning junk food would infringe individuals' freedom to eat what they like. Instead, some governments are cautiously prodding their citizens to eat less and exercise more, and food companies are offering at least some healthier foods.

In a few places obesity rates seem to be leveling, but for now waistlines in most countries continue to widen unabated. Jiang He and his colleagues at Tulane University have estimated that by 2030 the global number of overweight and obese people may double to 3.3 billion. That would have huge implications for individuals, governments, employers, food companies and makers of pharmaceuticals.

Source: Charlotte Howard, Special Report: The world is getting wider, www.theeconomist.com, December 2012

Why lower-income households suffer the most

In many low-income countries, the populations affected most by the problem of obesity and NCDs are the wealthy and well-educated people that have changed their traditional dietary patterns. One reason for this shift is the increased capability that comes with rising incomes to purchase a more diverse diet, including more protein and fat, combined with changing tastes. In developed countries, however another reason for the change in diet is that poor households lack access to more nutritious foods, either because they are not readily available (cf. the section on food deserts in Chapter Three) or they cannot afford them. The more inexpensive foods tend to be high in fats and sugars, so they may be energy-dense but are typically nutrient-sparse.

The long road to behavior change

In the United States and Europe, much attention was given to the topic of nutrition at the end of World War II. This was partly on account of the lessons learned about the relationship between nutrition and health in the extreme conditions of wartime, and partly on account of a general concern about how to feed a rapidly growing global population during a time of general peace. In the United States, as elsewhere in the West, the people who had experienced the war wanted a better life – less work, more food, more leisure, more consumer goods. The creation and satisfaction of consumer desire became a key driver of the economy in the boom years of post-war peace and plenty. While cheap food was made readily available, however, the long-term consequences of the new fast-food culture were not understood. We now have a situation whereby the United States feeds itself too well – and at the same time not well enough. In the United States, around two thirds of adults are either overweight or obese. Non-Hispanic, African-Americans and Mexican-Americans in the US tend to have higher rates of obesity linked to low incomes. And

It is not unusual to find households containing overweight people who are also anemic, or who have significant deficiencies in zinc, vitamin A, and other micronutrients. It can be difficult to acknowledge such dietary inadequacies, as anemia is not immediately apparent to the eye. Calorie-rich but nutrient-poor fast food is one obvious culprit, but there are other factors too. Snacking, for instance, is another major problem and it has become, in developed countries, the ‘fourth full meal’ of the day – a meal that is surplus to requirements.

the rest of the world is following the American model, with alarming consequences: the UN reports a worldwide figure of \$190 billion (US) worth of workdays lost and healthcare costs as a direct result of obesity and its related non-communicable diseases.

Treating people who are already obese is not easy, however. Studies show that only 5–8% of people who go on weight reduction diets keep the weight off long-term (defined as 5–10 years or more). There is a long-running study called the ‘Weight Maintainers Study’ in the United States which sets participants the goal of losing 50lb and keeping this weight off for five years or more. The weight maintainers have succeeded in keeping the weight off by following a combination of closely monitoring their food intake, routinely eating breakfast and having, on average, one hour of exercise per day. This specific set of behaviors is proven to work. Nevertheless, for many people, adoption of these behaviors is difficult due to money and time limitations. Thus gaining weight is easy but alas losing it is a very different matter.

Further reading

World Health Organization. Obesity: Preventing and managing the global epidemic. Report of a WHO consultation. WHO Tech Rep Ser 2000;894:1-252. Geneva: WHO, 2000.

Birch LL, Parker L, Burns A (eds). Early Childhood Obesity Prevention Policies. Washington, DC: Institute of Medicine, 2011.

WHO's recommendations

Overweight and obesity, as well as their related non-communicable diseases, are largely preventable. Supportive environments and communities are fundamental in shaping people's choices, making healthier foods and regular physical activity the easiest choice (accessible, available and affordable), and therefore preventing obesity.

At the individual level, people can: limit energy intake from total fats and sugars; increase consumption of fruit and vegetables, as well as legumes, whole grains and nuts; engage in regular physical activity (60 minutes a day for children and 150 minutes per week for adults).

Individual responsibility can only have its full effect where

people have access to a healthy lifestyle. Therefore, at the societal level it is important to: support individuals in following the recommendations above, through sustained political commitment and the collaboration of many public and private stakeholders; make regular physical activity and healthier dietary choices available, affordable and easily accessible to all - especially the poorest individuals.

The food industry can play a significant role in promoting healthy diets by: reducing the fat, sugar and salt content of processed foods; ensuring that healthy and nutritious choices are available and affordable to all consumers; practicing responsible marketing especially those aimed at children and teenagers; ensuring the availability of healthy food choices and supporting regular physical activity practice in the workplace.

The WHO Global Strategy on Diet, Physical Activity and Health

Adopted by the World Health Assembly in 2004, the WHO Global Strategy on Diet, Physical Activity and Health describes the actions needed to support healthy diets and regular physical activity. The Strategy calls upon all stakeholders to take action at global, regional and local levels to improve diets and physical activity patterns at the population level.

WHO has developed the 2008–2013 Action Plan for the Global Strategy for the Prevention and Control of Noncommunicable Diseases to help the millions who are already affected cope with these lifelong illnesses and prevent secondary complications. This action plan aims to build on the WHO Framework Convention on Tobacco Control and the WHO Global Strategy on Diet, Physical Activity and Health. The action plan provides a roadmap to establish and strengthen initiatives for the surveillance, prevention and management of NCDs.

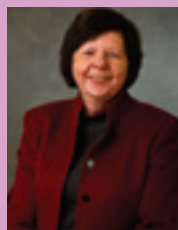
The Political Declaration of the High Level Meeting of the United Nations General Assembly on the Prevention and Control of Non-communicable Diseases of September 2011 recognizes the critical importance of reducing the level of exposure of individuals and populations to unhealthy diet and physical inactivity.

Source: WHO Fact Sheet 311, March 2013

My personal view

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Globally we are facing an obesity epidemic of alarming proportions. Diet-related chronic diseases now account for more deaths than undernutrition. This is seen in some of the poorest countries of the world. In the past few decades traditional grain-based diets have been replaced by diets higher in total fats, saturated fats and sugars. The changing consumption patterns are occurring simultaneously with lifestyles that include less physical activity. Yet, despite the magnitude of the problem, the message has not reached policy-makers in many low-income countries. The challenge is daunting. The international community must aggressively implement multi-pronged strategies to combat overweight and obesity, while at the same time tackling undernutrition.