



CHAPTER 9

Malnutrition's New Frontier

The Challenge of Obesity

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OVERWEIGHT AND OBESITY prevalence has increased substantially over the past decades, affecting 2.1 billion people worldwide and causing 3.4 million deaths globally.¹ Currently, 42 million children are overweight or obese—the result of a staggering 47.1 percent rise in prevalence between 1980 and 2013.² No longer exclusive to affluent societies, obesity has reached alarmingly high levels in many low- and middle-income countries (LMICs).³ In fact, the number of individuals who are overweight or obese has now surpassed the 794 million people who do not get enough calories.⁴ Nearly half of all overweight children under 5 years of age now live in Asia, and a further 25 percent are found in Africa.⁵

Unhealthy body weight carries significant health risks for lifestyle-related noncommunicable diseases (NCDs), including type 2 diabetes, hypertension, dyslipidemia (defined as abnormal levels of lipids, such as triglycerides or cholesterol, in the blood), and various cancers. This unhealthy body weight is of particular concern in children, as it exacerbates risk factors for developing NCDs in

adulthood,⁶ especially in those who have poor linear growth.⁷

Although the rate of increase in overweight prevalence has apparently slowed in some high-income countries (HICs), it is expected to continue increasing in LMICs.⁸ Obesity and diabetes are complex, multifactorial problems with genetic, lifestyle, cultural, medical, and social causes.⁹ Their rise in LMICs has been fueled by rapid economic, societal, and cultural changes, including such factors as urbanization, altered food patterns, physical inactivity, and sedentary behaviors, previously described as a global “nutrition transition.”¹⁰ Furthermore, the complexity of the problem is reflected in its increase in both urban *and* rural settings and across all levels of socioeconomic groups, including the poorest.¹¹

No country to date has reversed its obesity epidemic; therefore few, if any, success stories exist, and none has succeeded on a large scale. Isolated pockets of “progress” have stemmed mainly from the plateauing of childhood obesity levels in some cities and countries where prevalence was high.¹²

Even so, preventing obesity in LMICs is a challenging but not impossible problem. Analysis of population-based strategies employed in LMICs with a high burden of obesity and diabetes shows that multi-intervention packages (which include fiscal and regulatory measures and health information and communication strategies) can deliver large and cost-effective health gains.¹³ Consensus is beginning to emerge about which actions can best promote healthy diets.¹⁴ Promising interventions,

such as targeted food taxes and subsidies, nutrition labeling, regulation of food nutritional quality and availability in schools, and mass media campaigns, are already being successfully implemented in some countries (see [Box 9.1](#) on interventions and case studies).¹⁵ However, despite official commitments to global action,¹⁶ Lachat et al. reported that currently only 82 of 140 LMICs have policies in place to tackle at least one risk factor for NCDs¹⁷ (see [Box 9.2](#)). LMICs could dramatically reduce illness

TABLE 9.1 World Cancer Research Fund International NOURISHING framework

Domain		Policy area	Examples of potential policy actions
Food environment	N	Nutrition label standards and regulations on the use of claims and implied claims on foods	Nutrient lists on food packages; clearly visible “interpretive” and calorie labels; menu, shelf labels; rules on nutrient and health claims
	O	Offer healthy foods and set standards in public institutions and other specific settings	Fruit and vegetable programs; standards in education, work, health facilities; award schemes; choice architecture
	U	Use economic tools to address food affordability and purchase incentives	Targeted subsidies; price promotions at point of sale; unit pricing; health-related food taxes
	R	Restrict food advertising and other forms of commercial promotion	Restrict advertising to children that promotes unhealthy diets in all forms of media; sales promotions; packaging; sponsorship
	I	Improve the nutritional quality of the whole food supply chain	Reformulation to reduce salt and fats; elimination of trans fats; reduce energy density of processed foods; portion size limits
	S	Set incentives and rules to create a healthy retail and food service environment	Incentives for shops to locate in underserved areas; planning restrictions on food outlets; in-store promotions
Food system	H	Harness the food supply chain and actions across sectors to ensure coherence with health	Supply-chain incentives for production; public procurement through “short” chains; health-in-all policies; governance structures for multisectoral engagement
Behavior-change communication	I	Inform people about food and nutrition through public awareness	Education about food-based dietary guidelines, mass media, social marketing; community and public information campaigns
	N	Nutrition advice and counseling in health-care settings	Nutrition advice for at-risk individuals; telephone advice and support; clinical guidelines for health professionals on effective interventions for nutrition
	G	Give nutrition education and skills	Nutrition, cooking/food production skills in education curricula; workplace health schemes; health literacy programs

Source: World Cancer Research Fund International. Reproduced with permission.

and death from NCDs by investing just US\$1–3 per person per year—a global cost of \$11.2 billion per year. Conversely, cumulative costs due to NCDs are estimated to reach \$7 trillion between 2011 and 2025 if countries take no action.¹⁸

A “Systems Approach” to Preventing Obesity

It can be a challenge for programs and policies to address food insecurity and hunger without adding to the burdens of obesity and NCDs. In Egypt, for example, subsidies for bread, wheat flour, sugar, and cooking oil are thought to have contributed to excessive energy intake and to have been partly responsible for the country’s high prevalence of

overweight and obesity.¹⁹ In contrast, a “systems approach” to tackling obesity requires the creation of wide-ranging and enabling environments—social, economic, and policy as well as physical environments.²⁰ The World Cancer Research Fund’s NOURISHING framework draws together core policy actions to promote healthy diets using the consensus on “what works” based on both research and practice (see [Table 9.1](#)).²¹ (See [Box 9.1](#) for examples of interventions in LMICs and case studies.) Furthermore, controlling nutrition policy and the food supply is important for preventing both stunting *and* obesity, in light of their coexistence within the same population or even in the same individual.²² This type of control requires a coherent nutrition policy to address malnutrition

BOX 9.1 Some NOURISHING interventions in low- and middle-income countries

Monitoring and evaluation of these types of interventions in low- and middle-income countries (LMICs) are urgently needed to show evidence of impact.

Nutrition labeling: In 2014, Ecuador’s Ministry of Public Health implemented “traffic-light” labeling on packaged foods to indicate levels of fats, sugar, and salt (red for high, orange for medium, and green for low).

Offer healthy foods in specific settings (for example, schools): Schools in Costa Rica are permitted to sell only food and drink that meet specific nutritional criteria (policy implemented in 2012 and upheld following a challenge from the Costa Rican Food Industry Association).²³

Use economic tools: See the discussion of Mexico’s soda tax in this chapter.

Restrict food advertising: Since 2003, 20 countries globally (including Malaysia and Thailand) have developed or are developing policies to restrict TV advertising of unhealthy foods to children.²⁴

Improve nutritional quality of whole-food supply chain: Forty percent of manufacturers in Hungary changed their product formulas to reduce taxable ingredients, following a 2011 law taxing food and drink components that pose a high risk to health, such as sugar, salt, and caffeine. A year later, sales had fallen 27 percent and people consumed 25–35 percent fewer such products.²⁵

Harness food supply chains across sectors (agriculture and food systems): Brazil’s “home-grown” school feeding program legally stipulates that 30 percent of the national school meals budget be spent on healthy foods from family farms. Strong government leadership, an intersectoral decision-making process, and political pressure from civil society organizations were key factors in achieving this integrated approach. However, there is currently little evidence available on the specific impacts of school feeding on schoolchildren’s diet and nutrition.²⁶

Give nutrition education and skills: See the discussion of Ecuador’s ACTIVITAL program in this chapter.

in all its forms, without too much emphasis on overweight but with a focus in the early years on healthy growth so that children do not become either stunted (low height-for-age) or overweight²⁷ (see Chapter 3 on infant and young child feeding).

Sweet Success for Mexico's Soda Tax

With one of the highest rates of diabetes, overweight, and obesity in the world, Mexico is in urgent need of strategies to tackle the obesity epidemic. Nearly 70 percent of the population is overweight (body mass index [BMI] ≥ 25 kg/m²), 9 percent of children are overweight, and approximately 1 in 3 adults are obese (BMI ≥ 30 kg/m²).²⁸ Each year, approximately 70,000 deaths in Mexico are attributed to diabetes (now the third leading cause of death), for which obesity is a significant risk factor.²⁹ One policy action is to use economic tools such as taxation to improve food environments.

Taxing sugary drinks in Mexico is an obvious policy choice, since the country's population drinks more than 160 liters per person per year (among the top global consumption levels), and 80 percent of teenagers and 71 percent of adults drink at least one full-calorie soda each day.³⁰ In 2013, the Mexican government passed an excise duty of 1 peso (\$0.080) per liter on sugary drinks and a tax of 8 percent on foods with high caloric density. The sugar-sweetened beverage tax applies to any beverages with added sugar, such as sugar-sweetened carbonated drinks (soda or soft drinks), energy drinks, and bottled teas and coffees.

Raising Taxes Equals Lowering Consumption

The World Health Organization (WHO) claims that soda taxes are the most effective strategy for improving diet, along with subsidizing fruit and vegetables.³¹ Evidence that taxing sugar-sweetened beverages can reduce obesity and chronic disease comes primarily from theoretical models, because

it is difficult to isolate the taxes' effects since most countries tax a large number of foods. It is also difficult to determine the taxes' impact on obesity and disease, partly because so few sugar-sweetened-beverage taxes have been implemented.

When Mexico's sugar-sweetened-beverage tax went into effect on January 1, 2014, it increased the average price of a liter of soda by about 10 percent. During the first year, the average volume of taxed beverages purchased monthly was 6 percent lower than would have been expected without the tax.³² The decline started slowly but accelerated; by December 2014 soda sales were down 12 percent from December 2013 levels. Moreover, the reduction was greatest among households of low socioeconomic status, which by December were buying 17 percent fewer sugary drinks. Purchases of untaxed beverages (mainly bottled water) rose by 4 percent, with households

BOX 9.2 Barriers to progress

Why has progress been so slow toward developing large-scale preventive policies and regulations to address global obesity and related NCDs? One of the greatest barriers is the increased access in LMICs to cheaper processed, energy-dense foods and beverages—also known as “junk food” or ultra-processed food.³³ Participants in a recent international symposium on obesity argued that this access is reinforced by concerted efforts by the large transnational food and drink manufacturers of these products (collectively known as “Big Food”) to undermine and defeat many public policies to prevent obesity.³⁴ Other barriers include the restricted ability or unwillingness of governments to implement policies, lack of pressure from civil society for political action (particularly in LMICs), and too few evidence-based evaluations of the effects of many programs and policies that have been implemented.³⁵



Reuters/E. Garrido

When Mexico, which has high rates of obesity and diabetes, initiated a soda tax in 2014, consumption of sweetened beverages started to fall.

of middle socioeconomic status increasing their purchases the most.³⁶

The Road to Success

The release of the country's 2006 National Survey of Health and Nutrition was a wake-up call. Between 1999 and 2006, obesity in children aged 5–11 years rose by 40 percent—no other country in the world had experienced a rise in obesity of that magnitude within a similar time frame.³⁷ The health secretary at the time called on Juan Rivera, founding director of the Center for Research in Nutrition and Health at Mexico's Institute of Public Health, to come up with some urgent recommendations. Rivera responded with a comprehensive program to which the politician's pragmatic reply was, "It's too complicated; choose one thing!" Rivera chose reduction of soda consumption, but

modest health promotion efforts (to put a poster in every health center of a jug illustrating the ideal balance for daily beverage intake) came to nothing in the face of overwhelming industry opposition.³⁸ With such formidable—and well-financed—opponents, how did the soda tax come into force less than 10 years later?

Passage of the sugar-sweetened beverage tax occurred quickly after President Enrique Peña included it within his September 2013 economic package, but the broad-based coalition proposing the bill had already developed a well-planned and coordinated strategy many years before the tax discussions. Each part of this alliance has played its role: researchers provided objective scientific evidence, lobbyists analyzed the political context and identified legislative allies, and consumer advocates fielded a strong media campaign.³⁹

Twelve Spoonfuls of Sugar

One influential nutrition champion was Alejandro Calvillo (formerly of Greenpeace Mexico), who started the organization El Poder del Consumidor (Consumer Power), an informal network of groups working on health and environment issues (the Nutritional Alliance). The alliance succeeded in influencing government recommendations to keep junk food out of schools and to limit advertising on children's television. The soda tax (part of a broader policy agenda) was chosen as a high-priority goal, and a \$10 million three-year fund from Bloomberg Philanthropies leveled the playing field against the food industry, enabling the alliance to create a high-impact media campaign and engage lobbyists.⁴⁰ The advertisement that came to symbolize the campaign was titled "12 spoonfuls of sugar" and drew attention to the amount in a bottle of soda, linking its consumption to diabetes. When television stations refused to carry the advertisements (citing concerns about loss of industry advertising revenue), advocates used social media, such as YouTube and Twitter, to highlight the censorship.⁴¹

Timing It Right

Political changes in 2013 (a newly elected president and legislature) presented the alliance with a window of opportunity, and its members knew that the government's priority of raising revenue had focused its interest on new taxes.⁴² Initially, a 20 percent tax—the minimum recommended to theoretically have an effect on health outcomes—had been proposed,⁴³ with the expectation that this would be watered down. Efforts to tie some of the new revenue raised by the soda tax to installing water fountains in schools and public spaces garnered crucial public support; thanks to further advocacy, the senate passed a resolution to use part of the taxes to provide potable water to public schools, particularly in low-income areas.⁴⁴

Key Lessons from Mexico

Although success depends on the social and political context of different countries, some features of Mexico's sugar-sweetened-beverage advocacy campaign could be adapted to other settings⁴⁵:

1. engage organizations that have a strong background in media advocacy and strategic campaign development and that are recognized as legitimate defenders of the public's interest;
2. develop an understanding of the scientific literature and focus on how evidence can be used to defend policy measures and craft messages for media advocacy and lobbying;
3. understand and use the political context to effectively influence policy at opportune moments (seize the right window of opportunity).

ACTIVITAL: Evidence for Success in Promoting Child Health in Ecuador

An estimated 25 percent (51.8 million) of Latin American children and adolescents are overweight or obese, with adverse consequences for their health and their lives.⁴⁶ The rapid increase in unhealthy body weight has been fueled by poor diets (such as diets low in fruits and vegetables) and low levels of physical activity.⁴⁷ Ecuador—where 26 percent of adolescents aged 12–19 years are overweight or obese and have other equally worrisome risk factors⁴⁸—is no exception to this general trend in Latin America.⁴⁹ Despite the high burden of childhood obesity in Ecuador, it remains mostly underappreciated as a public health issue, as shown by the absence of adequate intervention strategies and multisectoral public health policies. Preventive school-based interventions promoting a healthy diet and an active lifestyle are a promising means of improving child and adolescent health and curbing

the rise of the obesity burden.⁵⁰ Most of the evidence on effective, well-documented, and properly evaluated interventions, however, originates from HICs.⁵¹ Strong evaluation designs, documented pathways through which such interventions have their effect, and process evaluations are urgently needed to strengthen the evidence base in LMICs.⁵²

A School-Based Health Promotion Program

This case study describes the participatory theory- and evidence-based ACTIVITAL program (Health Promotion Intervention in Ecuadorian Adolescents to Promote Healthy Dietary and Physical Activity Patterns), a school-based health

promotion program aimed at improving dietary and physical activity behaviors among Ecuadorian adolescents aged 11–15 years. The intervention was implemented among 1,430 school-going adolescents in 20 schools in the urban area of Cuenca over three years from 2009 to 2012.

The intervention consisted of two components: one directed toward changing individual behavior and the other aimed at changing the environment. The individual strategy consisted of an interactive toolkit taught by schoolteachers on healthy eating and physical activity. The environmental strategy comprised participatory workshops with parents and food service staff (on topics such



ACTIVITAL

Ecuador's ACTIVITAL program included education on healthy eating and physical activity for adolescents in 20 schools in the Cuenca metropolitan area.

as healthy eating, physical activity, portion sizes, and food safety), social events such as preparing healthy breakfasts, motivational talks by famous local athletes, and the creation of walking trails in the schools. These strategies were implemented in 10 intervention schools, while the normal curriculum was maintained in the remaining 10 schools. The primary indicators used to measure program performance were the nutritional value of dietary intake, physical activity, physical fitness, and screen time. Body mass index (BMI), waist circumference, and blood pressure were among the secondary indicators. An in-depth process evaluation was also carried out.

The program effectively decreased added sugar and processed food intake during snacks, waist circumference, and blood pressure among members of the intervention group. The intervention also weakened the trends toward lower fruit and vegetable intake, less physical activity, and more sedentary behavior.⁵³ Furthermore, the intervention had no adverse effects, did not result in stigmatization, did not increase undernourishment, and benefited socioeconomic groups equally.

Lessons Learned

The results of ACTIVITAL add to the available evidence on the effectiveness of school-based health promotion interventions in the wider context of obesity prevention in LMICs. One key lesson of ACTIVITAL was the importance of integrating this health promotion intervention within a broader structural platform to amplify its success. Recommendations for future studies include:

1. incorporating these types of programs into the standard educational curriculum (no support from government was obtained for ACTIVITAL);
2. integrating health education activities with environmental changes (for example, changing food offerings at school needs to go hand in hand with regulating food vendors in the immediate area of the school; see the NOURISHING framework); and
3. contextualizing intervention strategies.

On a positive note, political processes prioritizing chronic diseases and the obesity crisis in Ecuador are beginning to emerge, resulting in changes in nutrition labeling (see [Box 9.1](#)). Discussions have been initiated with the government to scale up the ACTIVITAL intervention to the national level.

Looking Ahead

Obesity and related NCDs are complex, multifaceted problems facing all countries. Although individual behavioral changes are important, individuals have little influence over factors such as globalization that have profoundly altered food systems. Success in addressing the “obesogenic environment” created by these changes requires a whole-society approach and the involvement of multiple actors. These include different government departments (not just health, but agriculture, education, food production, trade, taxation, and urban development), civil society organizations, the media, the food industry, healthcare providers, transport providers, and urban planners.⁵⁴ Much can be learnt from the well-documented story of the battle against the tobacco industry, such as the need to use the power of the media and to make data politically relevant, as well as the importance of community action in galvanizing the political will to intervene in market practices.⁵⁵

Part III: Transforming National Policy and Programming

