

What steps should be recommended and implemented to prevent and control the obesity epidemic?

Simón Barquera and Jacob C. Seidell

Obesity as a major public health problem

Worldwide, currently an estimated 2.1 billion people are overweight or obese, and 3.4 million adult deaths per year are attributable to overweight and obesity [1, 2]. Obesity is a major public health problem, and no countries in the world have achieved significant decreases in the prevalence of obesity during the past 33 years [1]. Obesity is the most important risk factor for non-communicable diseases (NCDs), which dominate the global burden of disease [3]. Most of the obese individuals live in developing countries, where nearly 80% of the deaths due to NCDs occur [4]. Obesity and NCDs occur disproportionately in low-income populations, creating a vicious cycle and contributing to social and economic inequalities [5]. Obesity and other malnutrition problems, such as micronutrient

deficiencies and child stunting, tend to coexist in vulnerable subgroups in developing countries, making this health challenge even more complex [1, 4, 6–8].

Among the main causes of the alarming increase in the prevalence of obesity, researchers around the world have recognized important changes in food systems (including changes in supply, prices, distribution, energy density, and preparation of food) and a reduction in physical activity levels; these changes have not been adequately characterized and monitored [9–11]. The ecological model of obesity has been used to develop a conceptual framework for understanding the complexity of obesity, by identifying immediate, subjacent, and basic causes. This framework is useful to identify opportunities for action (Fig. 13.1) [12].

Given the rapid rise in the prevalence of obesity in most countries, health systems have not been able

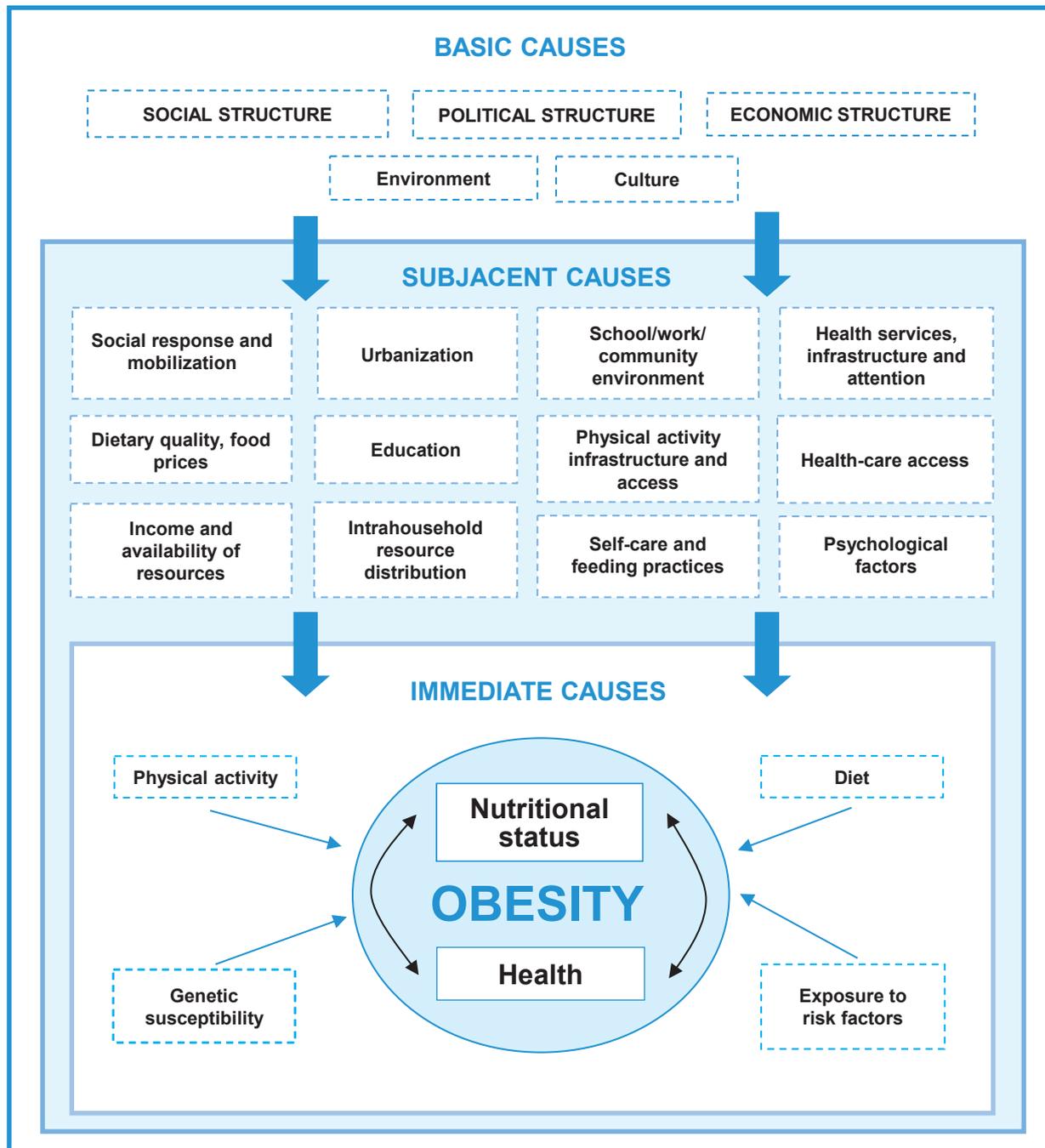
to adjust to the new epidemiological transition; therefore, in some cases resources have not been invested optimally to combat this epidemic, generating important deficiencies in prevention, early diagnosis, interdisciplinary treatment, adherence to treatment, and control and prevention of complications [13].

The purpose of this chapter is to review the main opportunities that have been identified in the literature for action to prevent and control the obesity epidemic *from the public health perspective* and to describe the steps needed to tackle the problem.

Main areas of opportunity to prevent and control obesity

Several reports from the World Health Organization (WHO) have recognized the importance of developing policies and actions to prevent NCDs. The reports have focused on

Fig. 13.1. Conceptual framework of obesity determinants based on the ecological model. Adapted with permission from Barquera et al. (2013) [12].



diet and physical activity through different preventive strategies, such as improving the knowledge and skills of the community, reducing the exposure of the population to obesogenic environments, and improving management strategies for

at-risk individuals and groups, including early detection and screening systems, comprehensive health assessment, setting of appropriate targets, and monitoring of results [5, 13, 14]. A major recommendation in the 2008–2013 WHO action plan is

“to raise the priority accorded to non-communicable diseases in development work at global and national levels, and to integrate prevention and control of such diseases into policies across all government departments” [13]. However, a basic condition and

a major challenge for action is the availability of evidence-based research on the health effects and the cost-effectiveness of policy options [13, 15].

There are several policy options to prevent obesity that have been explored and for which enough evidence has been generated to conclude that they are cost-effective. Among these are (i) school-based interventions, (ii) worksite interventions, (iii) mass media campaigns, (iv) physician counselling, (v) physical activity interventions, (vi) fiscal measures, (vii) regulation of food advertising, and (viii) food labelling [16–44] (Table 13.1). Hawkes et al. have developed a framework to organize policy options, which comprises three domains: the food environment, the food system, and behaviour change communication. In addition, they have mapped interventions around the world in this

framework by domain, policy area, and policy options/actions [26].

Given the multifactorial nature of obesity, as in other complex public health problems, a combination of interventions is more likely to generate good results than focusing on only a single measure [33].

Monitoring and benchmarking of obesity prevention efforts

The international Bellagio Conference on Program and Policy Options for Preventing Obesity in the Low- and Middle-Income Countries was held in 2013. The Bellagio Conference group identified the food and beverage industries (the Big Food and Big Beverage sectors) as a major impediment to the implementation of obesity prevention policies, and showed evidence of strong actions taken by Big Food to oppose food policies that benefit public health. In

addition, the group documented the limitations of governments to protect public policy from such vested interests. The Bellagio Conference group developed the Bellagio Declaration, which identifies specific actions for sectors of society to counter the undermining influence of Big Food on healthy food policies [45, 46].

One of the most important recognized challenges to tackle obesity is adequate monitoring of the food environment and of policy efforts [13, 47]. This information is essential to analyse trends and to improve or adjust policies. Recently, the International Network for Food and Obesity/noncommunicable diseases Research, Monitoring and Action Support (INFORMAS) developed 11 different protocols to assess diverse aspects of the food environment. These protocols provide useful and sustainable low-cost tools to contribute to the information

Table 13.1. Policy options to prevent obesity

Domain	Type of intervention	Actions/policy options ^a
Behaviour change communication	School-based	School-based interventions have been demonstrated to be successful in preventing and controlling obesity in various studies, including several in middle-income countries. School healthy eating guidelines that forbid soda and unhealthy foods are in place in most Latin American countries [18, 27].
	Worksite	Worksite interventions are promising alternatives to increase physical activity and decrease energy intake. Governments could generate incentives to promote this policy option [16, 21].
	Mass media campaigns	Various countries, such as Brazil, Colombia, Mexico, and the USA, have published national nutrition guidelines and have developed diverse media campaigns to prevent and control obesity [28–31].
	Physician counselling	Physician counselling is an effective means of controlling obesity in adults. It also has independent benefits, such as improving glucose control and blood pressure. Although it is one of the most expensive interventions, it is cost-effective [20, 32, 33].
	Physical activity	Programmes to increase physical activity have many benefits in addition to the contribution to preventing and controlling excess weight. For example, a recent study in countries including Colombia, Mexico, and the USA concluded that Ciclovía programmes (community-based mass programmes in which streets are temporarily closed to motorized transportation, allowing exclusive access to individuals for recreational activities and physical activity) are cost-beneficial from the public health perspective [21, 34].
Food environment	Fiscal measures	In Mexico, a 10% excise tax on sugar-sweetened beverages and junk food was implemented in 2014. A recent evaluation has demonstrated that the policy decreased purchases of taxed beverages and increased purchases of untaxed beverages [25, 35, 36].
	Regulation of food advertising	Food marketing is recognized as an important driver of the consumption of unhealthy foods, in particular for children. Although it is not a direct driver of obesity, food marketing is associated with unhealthy diets [37–39].
	Food labelling	Food labelling is a powerful tool to help populations to easily make healthier choices. Various studies have modelled estimated potential improvements in diet with this type of intervention. However, these regulatory efforts face strong opposition from the food industry. In addition, the understanding of nutrition information from voluntary labelling of foods by manufacturers has proved to be poor among consumers in both developed and developing countries [40–44].

^a Policy options are based on the NOURISHING framework of Hawkes et al. (2013) [26].

challenge and have the additional advantage of allowing cross-sectional multicountry comparisons, which could facilitate insights into national efforts in the absence of trends [48].

Cost-effectiveness of obesity interventions

Many approaches to policies have been tried, including community-based interventions and policy interventions that target either children only or the general population. The effectiveness and reach of these interventions vary widely, as do the costs of implementing them. Only a few attempts have been made to compare the cost-effectiveness of these interventions.

Gortmaker et al. [49] estimated the cost-effectiveness of seven interventions that are generally considered to be the most promising. They modelled the reach, costs, and returns for the population of the USA in 2015–2025. The seven interventions were: (i) an excise tax on sugar-sweetened beverages, (ii) restaurant menu calorie labelling, (iii) elimination of the tax subsidy for advertising unhealthy food to children, (iv) nutrition standards for school meals, (v) nutrition standards for all other food and beverages sold in schools, (vi) improved early care and education policies and practices, and (vii) increased access to adolescent bariatric surgery. The authors found that most of these interventions not only could prevent many cases of childhood obesity but also would potentially cost less to implement than they would save for society. For example, the estimated health-care cost saved per dollar spent was US\$ 30.78 for the excise tax on sugar-sweetened beverages and US\$ 32.53 for the elimination of the tax subsidy for advertising unhealthy food to children [49].

The McKinsey Global Institute performed an economic analysis of 44 interventions [50]. Its report

concluded that although no single solution creates sufficient impact to reverse obesity, almost all of the interventions are highly cost-effective from the viewpoint of society. This means that the health-care costs and productivity savings that accrue from reducing obesity outweigh the direct investment required to deliver the intervention [50].

Integrating prevention and management of obesity

Although considerable benefit is to be expected from preventive actions (top-down corporate and government interventions and bottom-up community-based interventions), it is unavoidable that a considerable proportion of the population will become or remain overweight or obese. An integrated approach is necessary using the principles of NCD management. For example, these principles have been translated into an integrated health-care standard [51].

The integrated health-care standard for obesity involves strategies for diagnosis and early detection of high-risk individuals as well as appropriate combined lifestyle interventions for those who are overweight and obese and, when appropriate, additional medical therapies. This standard transcends traditional boundaries of conventional health-care systems and health-care professions; instead, it focuses on competences of groups of health professionals who organize care from a patient-oriented perspective. This approach also implements the elements of matched and stepped care (increasing levels of care are matched to the individual's needs based on weight-related health risk, so that interventions are not more intensive than needed but not less intensive than needed). Integrating and implementing such integrated care will require many steps, including training of health-care professionals [52].

Example of a successful obesity-related policy in Latin America

As an example of a successful obesity-related policy in Latin America, the case of a tax on sugar-sweetened beverages in Mexico is discussed.

During the past decades, various studies suggested that the consumption of sugar-sweetened beverages was associated with the alarming epidemic of obesity and diabetes in Mexico and that there was a pressing need to reduce consumption of these products as part of the policies to prevent and control nutrition-related NCDs [53–58]. At the same time, important intervention studies and meta-analyses conducted around the world confirmed the unhealthy effects of consumption of sugar-sweetened beverages [59–66].

In 2010, the Ministry of Health of Mexico, with support from the National Institute of Public Health, developed the National Agreement for Nutritional Health – Strategy to Control Overweight and Obesity [67] and launched several efforts to reduce consumption of sugar-sweetened beverages and junk food. The recommendations included healthy hydration, taxation, restrictions on the marketing of unhealthy products, labelling, and strategies to improve nutrition in the work and school environments, among others. This document faced strong opposition from the beverage and food industry [68].

In 2012, the National Academy of Medicine of Mexico published a position book on policies to prevent and control obesity, endorsing the previously recommended policy actions, including taxation of sugar-sweetened beverages [69]. During 2013, in the context of a world economic recession and a fall in oil prices, the government approved an initiative for an excise tax on

sugar-sweetened beverages and junk food, with strong support from civil society, including health and consumer associations, academia, and opposition parties. This policy was implemented in 2014 and has been under evaluation since then. Various analyses have observed a reduction in consumption of these products after taxation, after adjusting for seasonality (change in temperature; holidays and festivities) and population growth [35, 70–73], despite major efforts from industry to maintain sales with ag-

gressive marketing campaigns. The results and experience in Mexico are now being used by other Latin American countries as a background to promote similar initiatives.

Conclusions

Obesity and its consequences are among the greatest global health burdens, leading to impairment of health-related quality of life and considerable costs to society. Although there are individual differences in susceptibility, obesity is by and

large a societal problem, resulting from health-related behaviours that are driven largely by upstream environmental factors. Many options for policies to prevent obesity are available, and many of these are effective and cost-effective. Integrated management of the obesity epidemic requires top–down government policies, bottom–up community-based approaches, and the involvement of many sectors of society. Integrating evidence-based prevention and management of obesity is essential.

Key points

- Obesity is mostly a societal problem, resulting from behaviours that are driven largely by upstream environmental factors.
- There are several cost-effective policy options to prevent obesity, including taxation, regulation of marketing of unhealthy foods/beverages, and adequate front-of-package labelling systems.
- Monitoring and benchmarking of the food system and of obesity prevention and control policies are essential to compare national efforts across countries, analyse trends, and achieve better results.

Research needs

- Behavioural and environmental determinants of food choice and physical activity practices should be studied.
- Cost-effective top–down policy interventions and bottom–up community-based approaches are needed to prevent and control obesity.
- Benchmarking of the food policy environment across countries is needed to identify best practices.

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