









BRIEF REPORT



## Is it possible to modify the obesogenic environment? - Brazil case

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### ABSTRACT

In recent decades, the prevalence of obesity has reached increasingly high rates among children and adolescents worldwide as the result of interactions between obesogenic environments and genetics. In Brazil, a middle-income country, the rates of overweight and obesity reached 18.9% and 8.7%, respectively, in 2015, corresponding to a prevalence of excess weight of 27.6%. Concomitant with these worrying data, the prevalence of insufficient physical activity in adolescents is 66.2% based on objective accelerometer measurements. The Brazilian government has taken concrete actions to contain the advance of obesity and physical inactivity and is taking part in political efforts combined with scientific evidence to develop laws, programs, and guidelines. While access to food outside the home, with the unstoppable intake of sweet beverages, sodium, and fat, is contributing to increased obesity, a lack of physical activity in leisure time or transportation must also be considered. However, while Brazil has been taking actions to address the obesogenic environment, with a view to reduce the prevalence and incidence of obesity and physical inactivity, more efforts are needed to implement these actions and approve measures that are still in progress.

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### Brief report

Global scientific evidence has shown the increasing prevalence and high rates of obesity among children and adolescents in recent decades (Swinburn et al.

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2011; GBD 2015 Obesity Collaborators 2017). This pan-epidemic is the result of an interaction between the obesogenic environment – an environment with particular physical, social and economic characteristics that contribute toward a propensity for obese/fat status – and genetics, stated as follows: “the genetic background loads the gun, but the environment pulls the trigger” (Swinburn et al. 2011; Colls and Evans 2014; Vandevijvere et al. 2015).

In light of this evidence, the World Health Organization (WHO) considers inadequate energy intake profile and physical inactivity to be the main drivers of obesity (World Health Organization 2004).

The highest incidence of obesity and physical inactivity occurs in individuals between 20 and 35 years of age (young adults); therefore, public policies for prevention should focus on strategies that promote the modification of these determinants in younger age groups (Conde and Borges 2011; Freitas et al. 2014).

Like reports from other middle-income countries, recent data from the Brazilian Study of Nutrition and Health (EBANS), part of the Latin American Study of Nutrition and Health (ELANS study), a 2015 multi-center cross-sectional nutrition and health surveillance study of a nationally representative sample of urban populations from eight Latin American countries (Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Peru and Venezuela) (Fisberg et al. 2015), indicated that overweight and obese adolescents comprised 18.9% and 8.7%, respectively, of the Brazilian population, corresponding to a prevalence of excess weight of 27.6%. Brazilian data from telephone surveys (Vigitel 2017) (Brasil. Ministério da Saúde. Secretaria de Vigilância em Saúde. Departamento de Vigilância de Doenças e Agravos não Transmissíveis e Promoção da Saúde, 2018) showed that more than 60% of the adult population has excess weight. Concomitant with this worrying data, the prevalence of insufficiently active adolescents (mean  $\leq 60$  min/day – WHO 2010 reference data (World Health Organization (WHO) 2010)) is 66.2%, based on objective measurements such as accelerometers (EBANS, data not published).

In recent decades, the Brazilian government has taken concrete actions to curb the advancement of obesity and physical inactivity and it is participating in political efforts combined with scientific evidence. Table 1 shows a comparative summary of the WHO suggestions for coping with childhood obesity and physical inactivity in the obesogenic environment (Flodmark 2018), as well as measures already adopted or underway in Brazil.

A general assumption is that there are many different interests regarding obesity- as the Orange September- a campaign to raise awareness of childhood obesity, with the participation of pediatricians (Brazilian Society of Pediatrics) annually in September. Another idea, proposed by the Nutrition Department of the Sao Paulo Pediatric Society, is the phrase, “It is not enough to weigh, it is not enough to measure: you must interpret data...”



**Table 1.** Summary of WHO suggestions and Brazilian measures for obesogenic environments.

WHO suggestions	Brazilian measures	Implementation
Establish standards for meals provided in schools or foods and beverages sold in schools that meet healthy nutrition guidelines	<p>The “<i>Programa Nacional de Alimentação Escolar (PNAE)</i>” provides school meals and food and nutrition education; <b>Law n° 11.947/2009</b>: 30% of the funds approved for school meals should be used for the direct purchase of food from family agriculture.</p>	<p>The PNAE reported increased access to healthier foods such as fruits and vegetables from 2003–2011 (Sidaner et al. 2013).</p>
Eliminate the provision or sale of unhealthy foods such as sugar-sweetened beverages and energy-dense, nutrient-poor foods, in the school environment	<p><b>Bill n°: 1.755/2007</b>: Prohibits the sale of soft drinks in primary schools;  <b>Bill n°: 1.637/2007</b>: Establishes rules for advertising of obesogenic foods and restricts their viewing time.</p>	<p>A study conducted in 2011 in more than 90% of Brazilian cities found that 78.5% of these cities were buying products from family agriculture, indicating the effectiveness of this measure in Brazil (Machado PMDO, Schmitz BDAS, González-Chica DA, Corso ACT, Vasconcelos FDAGD et al 2018).</p> <p>These actions aimed not only to develop agriculture but also to mainly encourage healthy food habits by addressing the production and consumption chains (Machado PMDO, Schmitz BDAS, González-Chica DA, Corso ACT, Vasconcelos FDAGD et al 2018).</p> <p>Foods available in the school environment are associated with the consumption of unhealthy food among adolescents in Brazil. Soda contains around 36 g of sugar (more than the WHO recommendation of 25 g) (Azeredo et al. 2016).</p>
Forecast actions:		<ul style="list-style-type: none"> <li>- Time range for television advertising: from 9 PM to 6 AM and during children’s programming;</li> <li>- Prohibited to deceitfully inform or suggest in all media the nutritional qualities or health benefits of these foods; provide gifts or awards containing these food products; to use figures, drawings, characters, or public figures promoting these foods.</li> </ul>

(Continued)

Table 1. (Continued).

WHO suggestions	Brazilian measures	Implementation
Ensure access to potable water in schools and sports facilities	<p><b>There is no specific law.</b> However, according to <b>Article 227 of the Federal Constitution</b>, it is the duty of the State, the family, and the Society to guarantee, with absolute priority, the rights to life and health of children and adolescents.</p> <p><b>Law nº 13.666/2018:</b> Amends <b>Law nº 9.394/1996</b> (Law on Guidelines and Bases of National Education) to include the cross-cutting theme of food and nutritional education in school curriculum.</p>	<p>Although there is no specific law, the reduction of incentives to drinking sweet beverages has been suggested to increase water intake. Brazil has prohibited the purchase of drinks low in nutritional quality using resources from the National Education Development Fund, which finances the PNAE (Bergallo et al. 2018). Recently included as a transversal theme in elementary education. This framework was developed following discussion with several sectors of society and in consideration of different areas of practice, including health, education, social assistance, and food and nutritional security (Nobre et al. 2018).</p>
Require the inclusion of nutrition and health education within the core curriculum of schools.	<p><b>Law nº 13.666/2018:</b> Amends <b>Law nº 9.394/1996</b> (Law on Guidelines and Bases of National Education) to include the cross-cutting theme of food and nutritional education in school curriculum.</p>	<p>The DGBP comprises important tools to guide programs and practices for food and nutrition education focused on healthy eating practices. This guideline represented an important step forward in policies and feeding/nutrition programs in the country, given the shift in the health scenarios of Brazilians faced with the political, social, economic, cultural and environmental changes in recent years (Silva Oliveira and Silva-Amparo 2018).</p>
<p>Improve the nutrition literacy and skills of parents and caregivers</p> <p>Make food preparation classes available to children, their parents, and caregivers</p>	<p>Publication of the <b>Dietary Guidelines for the Brazilian Population (DGBP)</b> by the Ministry of Health (2014): Encourages eating in company, involvement in the purchase and preparation of meals, and cooking.</p>	<p>The program highlights the continuous monitoring of indicators of physical activity and induction of actions to promote health; communication with the celebration of World Physical Activity and Health Day on the first week of April every year; the financing of physical activity projects; and assessment of existing physical activity practice programs in the municipalities of Brazil (Instituto Brasileiro de Geografia e Estatística 2016).</p>
<p>Include quality physical education in the school curriculum and provide adequate and appropriate staffing and facilities to support this</p> <p>Accumulate at least 60 minutes of moderate to vigorous-intensity physical activity daily.</p>	<p><b>Law nº 10.793/2003:</b> §3º Physical education, integrated with the pedagogical proposal of the school, is a compulsory curricular component of basic education. The “<i>Política Nacional de Promoção da Saúde</i>” (PNPS) entitled “<i>Política Nacional de Saúde do Escolar</i>” – National School Health Policy – recognizes the importance of the social determinants of health and the adoption of an intersectoral approach to health promotion based on shared responsibility networks aimed at improving the quality of life.</p>	<p>Physical education, integrated with the pedagogical proposal of the school, is a compulsory curricular component of education.</p>

raising awareness of the need to plot anthropometric measurements graphically or as applications and to understand the meaning of changes in these graphics.

The number of areas reserved for riding bicycles (“ciclovias”) is increasing in many cities; however, a culture of respect for bicycles must be created in a country where cars have traditionally been the priority. Although there are numerous benefits of bicycle paths, physical activity represents the greatest benefit in terms of public health (Sarmiento et al. 2017). The designs of bicycle paths in Brazilian cities have varied according to urban design and political considerations. The heterogeneity and flexibility of these paths make them a uniquely promising example of a strategy to promote physical activity and address inequality (Sarmiento et al. 2017). However, bicycling policies have met resistance from transport companies that have been affected by road closures (World Health Organization (WHO) 2010). These challenges have been overcome with the involvement of civil society, highlighting new opportunities for economic development for small business owners and emphasizing evidence-based best practices (Sarmiento et al. 2010).

Various ideological beliefs are being discussed regarding the importance of industrialized food. The concept that ultra-processed foods are harmful is not unanimously accepted. Nonetheless, it is clear that the universal access to food outside the home, with the unstoppable intake of sweet beverages, sodium, and fat, is contributing to increased obesity. The lack of physical activity in leisure time or transportation must also be considered. Offering more opportunities for safe and accessible activity in order to increase overall levels of activity will help to achieve the 2025 global physical activity target of a 10% reduction in physical inactivity (Mielke et al. 2018). Furthermore, cultural norms, traditional roles, or lack of social and community support might lead to reduced adolescent participation in physical activity. Understanding and addressing these barriers is needed to plan and deliver culturally sensitive actions to support behavior change.

It is not enough to place apparels in public areas without orientation. School physical education classes must be adequate and with adequate local conditions (most public schools do not have even an open space for physical activities), sports equipment, and timing and preparation of skilled and trained instructors.

Instead of a positive trend, some experiences with restricting access to foods in schools revealed the development of a black market for these products in schools and the surrounding neighborhoods. It is clear that the role of the central government in establishing restrictive and punitive measurements against specific foods must be discussed. Regulation must be evaluated and discussed before implementation.

A healthy diet and physical activity are important for a healthy lifestyle. However, while programs can focus on these factors together or separately, it should be emphasized that better dietary quality is associated with increased physical activity and *vice versa*. Thus, the effects of diet and physical activity on health are often intertwined.

These initiatives demonstrate Brazil's interest in creating mechanisms based on laws, programs, and guidelines, to address the obesogenic environment, with a view to reduce the prevalence and incidence of obesity and physical inactivity. It is not clear if these efforts are reaching those affected by these problems, including those in lower socio-economic classes. Numerous and varied efforts are needed to implement these actions and to approve measures that are still in progress.

### Disclosure statement

No potential conflict of interest was reported by the authors.

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