Position paper on taxes to nonessential energy-dense foods and sugar-sweetened beverages*

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Abstract
In 2014, the Mexican government implemented taxes to reduce the consumption of sugar-sweetened beverages and nonessential energy-dense foods. In this manuscript, we analyze the scientific evidence linking the consumption of these products to chronic diseases and summarize the studies that have evaluated the observed and expected impact of food taxes in Mexico. The implementation of taxes to unhealthy foods has reduced purchases of sugar-sweetened beverages by 7.6% and nonessential energy-dense foods by 7.4%. A reduction in consumption could decrease obesity prevalence by 2.5% and prevent 189,000 cases of diabetes, 20,000 myocardial infarctions and strokes, and 20,000 cardiovascular disease deaths. Furthermore, it could save nearly $1.173 million dollars of healthcare expenses. Taxes to unhealthy foods should be strengthened and remain a crucial part of the national strategy to reduce obesity and chronic diseases in Mexico.

Keywords: Sugar-sweetened beverages; food; tax; obesity; diabetes mellitus

Resumen
En 2014, el gobierno mexicano implementó una política fiscal para disminuir el consumo de bebidas azucaradas y alimentos no básicos con alta densidad energética. En este manuscrito, se analiza la evidencia científica sobre el consumo de estos productos y sus efectos sobre enfermedades crónicas. Se resumen los estudios que han evaluado los impactos observados y esperados de los impuestos a alimentos y bebidas no saludables en México. La implementación de impuestos ha logrado reducir las compras de bebidas azucaradas en 7.6% y alimentos no básicos en 7.4%. Una reducción en el consumo podría disminuir la prevalencia de obesidad en 2.5%, prevenir 189,000 casos de diabetes, 20,000 infartos de miocardio e ictus, y 20,000 muertes por enfermedad cardiovascular. Además, se espera que estos impuestos ayuden a reducir 1,173 millones de dólares en gastos de atención a la salud. Los impuestos a alimentos no saludables deben fortalecerse y permanecer como parte integral de la estrategia nacional dirigida a reducir la obesidad y las enfermedades crónicas en México.

Palabras clave: refrescos; jugos; alimentos; impuestos; obesidad; diabetes

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In Mexico, overweight and obesity affect more than two thirds of the population, increasing the risk of diseases such as diabetes, cardiovascular disease, and cancer. Of the country’s adult population, 14% have diabetes, causing an increase of years lived with disability, demand of health services, and costs faced by the health care system. Projections are alarming: If the same trend continues, for the year 2050, 50% of the population will have diabetes and there will be 12 million new cases, threatening the financial sustainability of the health system.

The consumption of sugar sweetened beverages (SSBs) and nonessential energy-dense foods, colloquially known as “junk food,” is an important cause of obesity and diabetes. In Mexico, 26% of total energy consumed by the population comes from SSBs and junk food. The consumption of these products, along with low intake of foods that reduce the risk of obesity (vegetables, fruits, legumes), contributes to the high prevalence of obesity.

For these reasons, on January 1st 2014, the Mexican government—as part of the National Strategy for the Prevention and Control of Overweight, Obesity, and Diabetes—implemented a tax of one peso per liter to non-alcoholic beverages with added sugar and an ad-valorem tax of 8% to nonessential energy-dense foods. The latter refers to nonessential foods (snacks, confections, chocolate, puddings, candies made of fruit and milk, peanut butter and hazelnut butter, ice cream, popsicles, and cereal-based sugary products) that have an energy density greater than 275 kcal/100g.

Four years after its implementation, the National Institute of Public Health in Mexico (INSP, Spanish acronym) considers it necessary to revisit the scientific evidence that supports these taxes and make recommendations on the steps that should be taken related to these fiscal measures.

**Scientific evidence that supports the tax**

The evidence that links consumption of SSBs and nonessential energy-dense foods with health problems has increased considerably in the last years. In Mexican women, consuming one SSB a day increases weight by an average of 1kg. Evidence from meta-analyses demonstrates that daily SSB consumption of 355 ml (one serving) or more is associated with a 37% increased risk of obesity, 83% of diabetes, and 22% of dyslipidemia or hypertension. In Mexico, the consumption of SSBs is responsible for 12.1% of deaths related to diabetes, cardiovascular disease, and obesity-related cancers.

Diverse studies published by authors linked to the sugar and SSB industry have attempted to antagonize scientific findings from studies not financed by the industry. However, studies without conflict of interest arrive at the same conclusion: the consumption of SSBs is harmful to health.

Nonessential energy-dense foods have not been studied to the extent of SSBs. For this reason, there are no specific meta-analyses for these foods. Nonetheless, these foods are high in added sugar, fats, and energy density; they promote excessive energy intake and have low nutritional quality. Furthermore, they represent an integral part of unhealthy dietary patterns, which recent meta-analytic data have linked with a higher risk of obesity, metabolic syndrome, and diabetes.

In 2015, the World Health Organization (WHO) recommended that the consumption of added sugars should not exceed 10% of total energy intake. Likewise, the Pan American Health Organization (PAHO) and WHO recommend reducing consumption of SSBs and nonessential energy-dense foods and support the implementation of taxes to these beverages and foods as an effective mechanism for reducing their consumption at the population level.

**What has the tax to unhealthy beverages and foods achieved in Mexico?**

Taxes are a fiscal tool that can facilitate healthy decision-making: if prices of taxed products increase, we can expect a reduction in the purchase of these products. Taxes have been used to reduce the consumption of non-essential products that can generate harmful effects, such as alcohol or tobacco. Acknowledging SSBs and nonessential energy-dense foods as risk factors for chronic diseases has allowed for the implementation of taxes to reduce consumption. Mexico is an example, but other countries such as France, Hungary, and cities in the United States like Berkeley and Philadelphia have implemented similar taxes. Due to its recent implementation, there is little evidence on its effectiveness. However, evaluations of the fiscal policies implemented in Berkeley, Philadelphia (United States), Norway, Australia, Finland, and Denmark have demonstrated reductions in taxed goods.

**Effect of the SSB tax on prices and purchases**

In urban areas in Mexico, the tax to SSBs was passed completely on to consumers, meaning that prices increased an average of one peso per liter in 2014. The increase in prices was lower for non-carbonated beverages (juices and flavored water) than for carbonated beverages (soda). Prices of small size packages increased more and there was a lower increase in the south of the...
Two years after the implementation of the tax, purchases of taxed beverages declined by 7.6% on average compared to what would have happened without the tax (based on previous trends 2012-2013), with a greater decrease in the second year (-9.7%). Various studies found that reductions were greater in households with a lower socioeconomic status (SES), in urban areas and among households with children and adolescents. The evidence also shows an increase in the consumption of bottled water.

Effect of the tax to nonessential energy-dense foods on purchases

After the implementation of the tax to nonessential energy-dense foods, a 5.1% reduction was observed in the purchase of these foods in 2014 beyond what would have been expected if previous patterns had continued. The decrease was higher in households with low socioeconomic status (SES) (-10.2%), while in households with a high SES the decrease was not statistically significant (-2.3%). Moreover, the decrease was greater in the first semester of 2014 (-6.7%) compared to the second semester (-3.4%). Among taxed foods, the decrease was only observed for salty snacks and cereal-based foods (i.e. sweet bread and cookies); there was no decrease in ready-to-eat cereals or non-cereal based foods (i.e. chocolate powder, jam, and ice cream). In 2015, the reduction in the percentage of purchases of nonessential energy-dense foods was 7.4% (average reduction of 6% in 2014 and 2015). The decrease was more pronounced (-12.3%) in households that, before the tax, showed unhealthy eating patterns, with high purchases of taxed foods and low purchases of untaxed foods. On the other hand, households with healthy eating patterns (low purchases of taxed foods and high purchases of untaxed foods) did not show any changes. In rural and semi-rural areas, the tax was partially passed through prices; for this reason, the tax’s effect on purchases in these areas could increase with strategies that ensure the prices; for this reason, the tax’s effect on purchases in semi-rural areas, the tax was partially passed through

Expected impact on health

Changes in the consumption of nonessential energy-dense foods and SSBs associated with the taxes will have a positive impact on the Mexican population’s health, but it will be gradual. Until now, two studies have estimated the future impact of the SSB tax on obesity, diabetes, cardiovascular disease, and mortality. Using a population simulation model, Sánchez-Romero and collaborators estimated that maintaining the SSB tax for nine years (2013-2022) could prevent 189,000 cases of diabetes, 20,000 myocardial infarctions and strokes, and 20,000 cardiovascular disease deaths. Doubling the tax to 20% would produce more health gains, preventing 368,000 cases of diabetes and 40,000 heart attacks and cerebrovascular events. Just preventing these diabetes cases will save between $769 and $1,173 millions of dollars on direct health expenses. In addition, Barrientos-Gutiérrez and collaborators projected the long-term impact of the SSB tax on body weight and diabetes. It is expected that the SSB tax will reduce the prevalence of obesity by 2.5% for the year 2024; this reduction will be concentrated among young people. The impact of the tax on diabetes includes between 86,000 to 134,000 prevented cases for 2030 and between 225,000 to 324,000 cases for 2050. It is estimated that increasing the tax to 20% would have double the calculated effect.

Regressivity and employment

Various reports from industry have suggested that the implementation of the taxes has generated significant economic losses for the country and reductions in the job sector for food and beverages. According to an unpublished report, the soda industry would have lost more than 10,000 jobs due to the implementation of the tax. However, a recent study on employment trends before and after the tax implementation (adjusted for relevant economic variables) demonstrated the taxes have not generated losses in the beverage industry or in commercial establishments. These results are expected, considering that the SSB industry also produces bottled water, which experienced an increase in consumption. In addition, the country’s unemployment rate did not increase after implementation of the tax.

Another concern regarding the implementation of the taxes is that they might have generated economic losses for people with low income; that is, that the tax would be regressive. Nonetheless, studies that analyzed changes in purchases show that people with low income have reduced their volume of purchases of unhealthy foods and beverages, which attenuates the potential regressivity. Even if the taxes were regressive, there are at least three arguments for keeping them: 1) In the long run, the decrease in consumption of unhealthy foods and beverages will result in a better health status, reducing people’s out-of-pocket health spending in the medium term; 2) Revenues from the taxes to unhealthy foods and beverages should be used in a progressive man-
ner, investing in projects that improve the low income population’s health status; and 3) Public policies can reduce health inequities or they can have an undesired effect and increase them. Usually, policies that aim to modify the individual’s decisions (i.e., educational campaigns) are more effective among high income groups. In contrast, policies that aim to change the environment (taxes to SSBs) are effective at all socioeconomic levels, helping to reduce health gaps.

**Position**

With a basis in the best available evidence, the National Institute of Public Health supports the efforts taken by the government and health institutions related to the implementation and continuation of the taxes to SSBs and nonessential energy-dense foods as a fundamental strategy to combat chronic diseases.

The positive effects of fiscal policies are enough to propose the taxes be continued and even raised. The treatment and prevention of obesity and overweight require a comprehensive approach and a set of measures that consider the complexity of this phenomenon; nevertheless, we consider that the level of current evidence is sufficient to support increasing taxes to SSBs and nonessential energy-dense foods to 20%. Raising the SSB tax could counteract the capacity that the industry had to absorb the increase of prices in rural areas, where obesity and diabetes trends are still growing. For this reason, the tax increase not only represents an opportunity for health gains, but also an opportunity to reduce the health disparities between rural and urban areas.

In addition to increasing taxes, it is important to update its conditions: 1) Adjust taxes to economic growth so products become less affordable; 2) For SSBs, the adjustment for inflation should be annual; currently, adjustments are only made when cumulative inflation reaches 10%.

**The need for multiple policies to prevent obesity**

Aside from increasing taxes to SSBs and nonessential energy-dense foods, other actions should be pursued to reduce the consumption of these products including: A front-of-pack label that warns about the health risks associated with the consumption of these products; restricting the sale of these food and beverages in schools and public institutions; and restricting the marketing of these products to children. Furthermore, the consumption of healthy foods should be encouraged (vegetables, fruits, whole grain cereals, and water), as should physical activity in transportation, at work, and during leisure time. To achieve this, regulatory actions that modify the environment must be implemented, so that healthy foods and beverages become available and affordable options. Moreover, educational communication actions should be implemented.

**Conclusion**

Obesity, diabetes, and chronic diseases have reached urgent and alarming rates in Mexico. In this context, the Mexican government must take effective measures. A first step is to recognize that the diabetes and obesity epidemics have population causes and not individual causes, so actions should focus on eliminating conditions that facilitate exposures to risk factors. Consumption of SSBs and nonessential energy-dense foods have been facilitated by a food environment with little regulation that permits harmful, low quality products at low prices. Taxes to SSBs and nonessential energy-dense food are a first step to correcting this failure, thereby sending a clear message to our population: consumption of these foods and beverages is not desirable. The solution to the obesity and diabetes epidemic in our country is complex and will require many efforts, but the evidence indicates that a tax to unhealthy foods and beverages must be an essential part of it.

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