

# Implementation of a “food tax” to prevent obesity: A critical appraisal

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## Article points

1. Fiscal interventions have been suggested as one potential solution to the obesity epidemic; more specifically, increased tax rates on foods deemed unhealthy.
2. There have been mixed results from currently implemented food taxes in other European countries.
3. Although evidence demonstrates that food taxes can be effective in reducing consumption, the longer-term effect on tackling obesity and improving public health needs further evaluation.

## Key words

- Ethics
- Food tax
- Public health

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**Worldwide obesity has nearly doubled since the 1980s, contributing to significant mortality and morbidity due to the associated risks of type 2 diabetes, ischaemic heart disease and cancer. The obesity epidemic is seen in both adults and children, and is being held responsible for a troublesome economic burden in public health. It can be argued that one of the main contributing factors to the obesity epidemic is the over-consumption of unhealthy food and beverages. This has led to the implementation of fiscal interventions in several countries, particularly on foods with high levels of sugars and fat. In this article, we discuss evidence in favour of and against the implementation of food taxes, reviewing the current outcomes in the three countries where such taxation was first implemented.**

**O**verweight and obesity is defined by the World Health Organization (WHO) as an excess of body fat that has the potential to have detrimental effects on health. In adults, BMI is used as a measure for obesity, while in children, BMI is used in conjunction with a BMI-for-age growth chart, which takes into account the age and sex of the child. WHO has adopted global cut-off points for overweight (a BMI  $\geq 25$  kg/m<sup>2</sup>) and obesity (a BMI  $\geq 30$  kg/m<sup>2</sup>), which allows for standardisation. However, WHO cautions that at an individual level, the degrees of fatness may vary for the same BMI (WHO, 2015).

In 2014, WHO estimated that more than 1.9 billion of the global adult population were overweight, 600 million of whom were in the obese category (see *Table 1* for the distribution between the sexes; WHO, 2015). Among children it was estimated that in 2013, 42 million under 5 year olds were obese or overweight. Overweight and obesity rates in children are now considerably higher in lower- and middle-income countries in comparison to higher-income countries (WHO, 2015). These figures demonstrate a two-fold increase when compared to statistics from the 1980s (WHO, 2015).

It is of global importance that countries develop an approach to combat obesity, as it has reached epidemic proportions and is associated with a rise in non-communicable diseases. The 2004/2005

National Australian Health Survey demonstrated that obesity is associated with 23.8% of type 2 diabetes cases, 21.3% of cardiovascular diseases (CVDs) and 20.5% of certain types of cancer in Australia (Obesity Working Group, 2009). Such reports are especially disconcerting for lower- and middle-income countries as this situation results in a double-burden of disease, which impacts negatively on the health costs and economies of these countries (Ellulu et al, 2014).

The yearly costs for the treatment of obesity and its complications by the NHS are estimated at £5.1 billion (Tedstone et al, 2015). The annual indirect costs (i.e. costs related to the impact of obesity on a country's economy, such as work absences and loss of productivity) have been estimated to cost between £2.6 billion and £15.8 billion according to different studies (National Obesity Observatory, 2010).

## Changing tastes

It is well-established that obesity is caused by an amalgamation of genetic, environmental and behavioural factors. A significant relationship between the intake of sugar-sweetened beverages and obesity has been established for over 15 years (Ludwig et al, 2001). Several studies have demonstrated a dramatic increase in the consumption of sugar-sweetened beverages in the last 10 years, particularly among younger populations (Lasater, 2011). Calories consumed

from soft drinks between 1989 and 2008 have increased by 60% in children. Moreover, the proportion of children consuming these beverages has also increased from 79% to 91% (Ludwig et al, 2001), and it has been established that an additional daily consumption of 12 ounce (355 mL) of fizzy drink, increases the risk of becoming obese by 60%. Furthermore, people who regularly consumed sugar-sweetened drinks had a 26% greater risk for developing type 2 diabetes in comparison to those with a lower consumption (Malik et al, 2010).

### Fiscal interventions

Fiscal interventions have been suggested as a potential solution to the obesity epidemic including, more specifically, increased tax rates on foods deemed "unhealthy" (Nguyen and El-Serag, 2010; Mytton et al, 2012).

A handful of countries have proposed or implemented a retributive 20% tax on high-sugar foods. In 2011, Finland introduced a sugar tax, followed by France and Hungary in 2012 and Mexico in 2014. Thirty-three of America's 50 states have an additional tax on the purchase of soft drinks, but research suggests that the taxes are too small to affect consumption and the revenues are not earmarked for programmes related to health (Brownell et al, 2009).

A 50% tax has been proposed in the Gulf states (Popkin, 2012) and, in the UK, a sugar tax on soft drinks is planned for introduction in 2018 following this year's Government budget (Her Majesty's Treasury, 2016). In the UK, it has been suggested that drinks manufacturers will be taxed according to the volume of sugar-sweetened beverages they produce or import. The total level of the tax has yet to be announced, but it is estimated that the tax will generate an additional £520 million in the first year alone. We now consider the advantages and disadvantages of a sugar tax based on the currently published evidence.

### Sugar tax: Pros and cons

#### Advantages of a sugar tax

In theory, increasing the price of unhealthy food in comparison to healthy foods should encourage healthier food consumption (Cornelsen and

**Table 1. The percentage of the world's adult population by sex affected by overweight and obesity (World Health Organization, 2015).**

Categories	Adults affected globally (%)	Men affected globally (%)	Women affected globally (%)
Overweight (BMI $\geq 25$ kg/m <sup>2</sup> )	39	38	40
Obese (BMI $\geq 30$ kg/m <sup>2</sup> )	13	11	26

Carriedo, 2015). A systematic review conducted by Powell et al (2013) demonstrated that the implementation of a 20% tax on sugar-sweetened drinks could reduce consumption by 24% among young people.

Applying taxes on unhealthy food and sugar-sweetened beverages, thus making fresh fruits and vegetables cheaper in comparison, may increase the demand for fresh alternatives and have a positive effect on health.

Another benefit of a tax is the generation of income (Chouinard et al, 2005; Kuchler et al, 2005). The generated revenue ideally should be used for health programmes and initiatives to support nutrition and prevent obesity; to subsidise fresh fruits and vegetables; to improve the quality of the food provided at work places and schools; and to stimulate the practice of physical activities (Powell et al, 2013).

Polls conducted in New York, USA, show that the acceptance of food taxes is increasing (33% in 2001 to 54% in 2004; Brownell, 2005). In further polls with more specific questions, 52% supported a soda tax, while 72% supported a tax when they were told that the generated revenue would be applied in the prevention of obesity among children and adults (Brownell et al, 2009).

However, as demonstrated in recent studies, taxes on sugar, sugar-sweetened beverages or fat on their own are not likely to have a robust impact on population eating behaviours. Fiscal interventions are now considered to be part of a more extensive strategy in public health nutrition rather than the sole solution. To be effective, a food tax should be implemented together with subsidies on fresh fruits and vegetables to encourage healthier eating habits (Caraher and Cowburn, 2015). This is especially true in lower

### Page points

1. Fiscal interventions have been suggested as a potential solution to the obesity epidemic including, more specifically, increased tax rates on foods deemed "unhealthy".
2. In theory, increasing the price of unhealthy food in comparison to healthy foods should encourage a behaviour for healthier food consumption.
3. Taxes on sugar, sugar-sweetened beverages or fat on their own are not likely to have a robust impact on population eating behaviours.

### Page points

1. Even though excessive sugar intake is a contributing factor for obesity, it is not clear whether its influence has been overestimated when considering the implementation of a sugar tax.
2. Opponents of food taxes argue that food taxes are unfair and regressive in that they affect those in lower socio-economic groups more than higher groups.
3. A coordinated and organised administrative-financial team becomes pivotal to implementing a fiscal intervention.

socio-economic groups who are at the highest risk of obesity, in part, because they are the largest group of consumers of unhealthy foods (Cornelsen and Carriedo, 2015).

Groups who are in favour of food taxation state that reducing the consumption of unhealthy food will also reduce health disparities between lower- and higher-income populations, causing a more positive impact on the quality of life of the former (Barnhill and King, 2013).

### Disadvantages of a sugar tax

Obesity should be understood as a multifactorial condition – its aetiopathogenesis is diverse and includes genetics and environmental factors. Even though excessive sugar intake is a contributing factor for obesity, it is not clear whether its influence has been overestimated when considering the implementation of a sugar tax.

### Ethical issues

The ethical concerns of implementing food taxes have been raised by social scientists and public health experts, especially with regard to autonomy and equality (Barnhill and King, 2013). Food autonomy involves people having access to a daily quantity of food at a reasonable cost, as well as the choice to decide what kind of food they want to consume (healthy or pleasurable, or both), according to their cultural and personal values. A question that arises when autonomy is taken into account is whether it is ethically acceptable to restrict consumers’ options by food taxation that are aimed at further benefits, such as reducing obesity prevalence and improving health in the medium- and long-terms.

Opponents of food taxes argue that food taxes are unfair and regressive in that they affect those in lower socio-economic groups more than higher groups. A sugar tax may constitute an additional burden on lower-income households where the consumption of high-sugar foods is higher (Pettinger, 2012).

### Administrative issues

Administrative issues, such as how the generated revenue is collected and whether the consumer or the manufacturer is taxed, need to be considered

before a food tax is implemented. Objective parameters for sugar thresholds need to be set and decisions regarding the variability of sugar content and added sugar need to be made – should all foods be taxed the same amount or should the rate be variable? What about foods with “hidden” added sugars that are not traditionally considered for taxation – should these be taxed too? To answer these questions and to overcome bureaucratic barriers, a coordinated and organised administrative-financial team becomes pivotal.

The Danish fat tax was introduced in 2011 with the aim of reducing premature deaths due to cardiac events. In 2012, it was repealed (Vallgård et al, 2015). The tax had a minor effect on sales of high-saturated fat products (Jensen et al, 2015), and a modelled minor reduction on the mortality rate from non-communicable diseases (Smed et al, 2016), but the reasons for its failure were attributed to industry pressure and lack of political involvement (Caraher and Cowburn, 2015).

### Reviewing the outcomes from countries with food taxes

Finland, Hungary and France have been successful in implementing a tax on high-calorie foods and beverages (Ecorys Study, 2014) and generating income (Cornelsen and Carriedo, 2015; see *Table 2*). Although evidence demonstrates that taxes on food and beverages can be effective in reducing consumption, the longer-term effect on tackling obesity and improving public health needs further evaluation (Cornelsen and Carriedo, 2015)

Finland was one of the first European countries to introduce a sugar tax in 2011. The Ecorys Study (2014) demonstrated that, after its implementation, the consumption of the taxed categories reduced significantly (ice creams by 20%, sweets by 5–6% and soft drinks by 3.8%).

During the same year, Hungary (in collaboration with WHO) introduced a food tax aiming to improve education on nutrition and to use the extra income in health policies (Ecorys Study, 2014). Following the first impact assessment in 2012, the National Institute for Health Development reported that

**Table 2. A summary of the goals and income generating aspects of “sugar taxes” implemented in different European countries (Cornelsen and Carriedo, 2015).**

Country	Year implemented	Taxed products	Goals of the food taxed	Revenue raised
Finland	2011	Sweets, ice cream, soft drinks.	1. Increase revenue 2. Health benefits	2011: £95 million 2012: £129 million 2013: £144 million
Hungary	2011	Foods high in sugar, fat or salt and high-sugar drinks.	1. Restrict the consumption of foods that do not provide benefits to public health 2. Promote healthy nutrition 3. Improve the financing of health services	2011: ~£8 million 2012: ~£47 million 2013: ~£46 million
France	2012	Drinks with added sugar or sweeteners.	1. Fight obesity and its related health costs 2. Increase revenue	£268 million

**Table 3. Behavioural impact of the food tax in Hungary on modifying eating habits (World Health Organization, 2014).**

Behavioural changes	Population percentage (%)
Choosing cheaper, often healthier products.	7-16
Consuming less unhealthy products.	5-16
Changing to another brand or replacing with healthier alternatives.	5-11

manufacturers changed the formulas of 40% of the taxed products to restrict or eliminate ingredients deemed unhealthy. In a following impact assessment, a survey conducted by the National Institute for Food and Nutrition Science reported that Hungarian consumers had made positive behavioural changes towards food following the introduction of the tax (Table 3; WHO, 2014).

In 2012, France introduced a tax specifically for beverages containing added sugar or sweeteners. The implemented tax reduced the consumption of soft drinks by 3–3.5 L/person per year, which represents a reduction in the initial consumption of between 12% and 15% (Ecorys Study, 2014).

In the UK, Tiffin and Arnoult (2011) modelled the impacts of a public health tax of foods high in saturated fats on diet-related conditions. In their model, a fiscal intervention based on saturated fat content is combined with a subsidy on fruit and vegetables. They estimated that a subsidy of 15% on fruit and vegetable would increase the levels of consumption to reach daily recommendations of “5-a-day”. However, the tax would not be sufficient to lower the consumption of high-fat foods.

### Final thoughts

The proposed sugar tax on sweetened beverages in the UK is due to be implemented in 2018 (Her Majesty’s Treasury, 2016). The income raised is intended to be invested in obesity programmes directed at school children – doubling the investments on primary school physical education and sports from £160 million to £320 million per year; spending up to £285 million annually to extend the secondary school day through the implementation of sports facilities and a wider range of physical activities; and providing an annual fund of £10 million to make breakfasts healthier in up to 1600 schools.

From the experience of Denmark, a fat tax should be considered as a small component of the overall intervention for tackling obesity and its cardio-metabolic consequences. Socio-ecological policies that simultaneously target different spheres of risk factors – individuals, families, schools and communities – will have the most positive impact in obesity prevention and control.

Despite some controversies regarding the implementation of taxes on high-sugar foods

*“Socio-ecological policies that simultaneously target different spheres of risk factors – individuals, families, schools and communities – will have the most positive impact in obesity prevention and control.”*

***"There is a belief among many that food taxes themselves may have a modest effect on public health, but that a more significant effect may be achieved by using the generated revenue in preventive campaigns and programmes."***

and beverages, we believe that such tax may be beneficial. There is a belief among many that food taxes themselves may have a modest effect on public health, but that a more significant effect may be achieved by using the generated revenue in preventive campaigns and programmes (Chouinard et al, 2005; Kuchler et al, 2005). ■

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