

Obesity prevention strategies: could food or soda taxes improve health?

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ABSTRACT Evidence shows that one of the main causes for rising obesity rates is excessive consumption of sugar, which is due in large part to the high sugar content of most soda and juice drinks and junk foods. Worryingly, UK and global populations are consuming increasing amounts of sugary drinks and junk foods (high in salt, sugar and saturated fats). However, there is raised public awareness, and parents in particular want something to be done to curb the alarming rise in childhood obesity.

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Population-wide policies (i.e. taxation, regulation, legislation, reformulation) consistently achieve greater public health gains than interventions and strategies targeted at individuals. Junk food and soda taxes are supported by increasing evidence from empirical and modelling studies. The strongest evidence base is for a tax on sugar sweetened beverages, but in order to effectively reduce consumption, that taxation needs to be at least 20%.

Empirical data from a number of countries which have implemented a duty on sugar or sugary drinks shows rapid, substantial benefits. In the UK, increasing evidence from recent scientific reports consistently support substantial reductions in sugar consumption through comprehensive strategies which include a tax. Furthermore, there is increasing public support for such measures. A sugar sweetened beverages tax will happen in the UK so the question is not 'If?' but 'When?' this tax will be implemented. And, crucially, which nation will get there first? England, Ireland, Scotland or Wales?

KEYWORDS food industry, obesity, public health advocacy, sugar sweetened beverages, sugar taxation

DECLARATION OF INTERESTS SC is a Trustee of the UK Faculty of Public Health, UK Health Forum and Heart of Mersey

INTRODUCTION

The challenge of obesity

In 2014, non-communicable diseases were responsible for 38 million deaths out of a global total of 56 million. Cardiovascular disease accounted for 40% of premature non-communicable diseases deaths. Overall cardiovascular disease mortality accounted for 17 million deaths in 2012 and is predicted to increase to 22 million by 2030.¹

The current state of childhood (and adult) obesity is reaching crisis point in the UK. The 2013 Scottish Health Survey found 16% of children aged 2–15 years were obese and 29% were overweight (including obese).² In England these figures were 1 in 10 children in reception being obese (boys 9.7%, girls 8.8%), and 1 in 5 children in year 6 being obese (boys 20.4%, girls 17.4%).³ The Health Survey for England (2011–2013) showed that more than 6 out of 10 men are overweight or obese (66.2%) and more than 5 out of 10 women are overweight or obese

(57.6%).⁴ Staggeringly these statistics indicate that 1 in 3 children and 2 in 3 adults are obese or overweight.

Children in particular are more vulnerable to this obesity epidemic, having naturally fewer defence mechanisms to deal with an ever increasing obesogenic environment. In addition to this group being more vulnerable, behavioural changes in adult life are more difficult and harder to achieve. Childhood obesity may therefore rightly be described as an issue of child protection.^{5,6} Obese children face much higher future risks of depression, disability, diabetes, cancers and cardiovascular disease.⁷ Furthermore, child obesity prevalence is closely associated with socioeconomic status. More deprived populations tend to have higher obesity prevalence. Obesity prevalence in the most deprived 10% of the population is approximately twice that in the least deprived 10%.⁸

Alongside these individual risks, obesity causes even greater challenges to human societies. Obesity generates unaffordable costs in terms of disease burden, disability,

reduced life expectancy, reduced economic productivity and escalation of NHS costs. Obesity is predicted to cost society £50 billion by 2050.⁹ Poor diet is more powerful than tobacco, alcohol and smoking combined in causing non-communicable diseases such as heart diseases, stroke, cancers and diabetes,⁶ and is the leading risk factor for non-communicable diseases in the UK and worldwide. Mozaffarian and Capewell estimated that a healthier diet could halve global cardiovascular disease, annually preventing more than 5 million premature deaths from cardiovascular disease (and 10 million deaths from cardiovascular disease overall), while simultaneously reducing obesity, diabetes, and common cancers.¹⁰ The key solution is structural change to create healthy environments so that children (and adults) do not become overweight in the first place.

Obesity and sugar consumption

One of the main causes for increasing obesity rates is excessive consumption of sugar, due in particular, to the increase in the sugar content of most soda and juice drinks and junk foods.¹¹ UK and global populations are consuming increasing amounts of sugary drinks and junk foods (high in salt, sugar and saturated fats).¹²

The UK Scientific Advisory Committee on Nutrition (SACN) concluded that drinking high-sugar beverages resulted in weight gain and increased body mass index in teenagers and children, and increases the risk of developing type 2 diabetes independently of obesity. In addition, high levels of sugar consumption are associated with a greater risk of tooth decay.¹³

There is clear scientific evidence that reducing the consumption of sugary drinks and junk food is far more effective in obesity prevention than other measures, such as increasing physical activity levels.¹⁴ Increasing consumption of healthier food brings large benefits; they have occurred surprisingly rapidly in diverse populations, as in the cases of Finland, France, Hungary, Latvia, USA and Mexico.^{10,15} Currently, cheap junk food and sugar sweetened beverages are available to excess and they are marketed aggressively. Companies are able to employ the best marketing agencies and buy multiple and advantageous advertising spots. In contrast, healthy foods can be more expensive, and less ubiquitous. Furthermore, healthy foods lack the financial capacity to compete with junk food and sugar sweetened beverages companies marketing strategies.^{16,17}

HOW CAN WE CHANGE THIS IMBALANCE IN FAVOUR OF A HEALTHIER DIET AND A LESS OBESOGENIC ENVIRONMENT?

Evidence suggests that instead of new miraculous formulas, we should use existing tools with proof of

achievements in the past. Valuable lessons have come from two centuries of public health regulation and legislation successes, such as safe tap water, sanitation, compulsory use of seatbelts and smoke-free public spaces and alcohol. Comprehensive approaches to tobacco control work because they lower initiation, increase cessation and reduce consumption. The tobacco control scale score across countries has been shown to be positively correlated with attempts to quit smoking.¹⁸ There is much to be learned from the success with tobacco control and the '3As' framework used: representing Affordability, Acceptability and Availability.¹⁸ The '3As' may therefore offer a useful framework when focusing on interventions to reduce the consumption of other commodities, such as sugar. By applying the 'three As' framework there is a predictable and effective 'SUPPORT' pathway (the Capewell SUPPORT framework) from the initial scientific evidence via winning political support to finally implementing effective policies:

1. SCIENTIFIC evidence emerges
2. UNDERSTANDING spreads
3. PROFESSIONALS accept paradigm
4. PUBLIC and POLITICIANS become aware, then supportive
5. OPPOSITION from vested interests is slowly overcome
6. REGULATION is introduced, often strengthened by
7. TAXATION to reinforce regulations (e.g. tobacco and alcohol control)

The UK is currently in the fourth stage, where politicians and the public are becoming aware and supportive.

Furthermore, preventive interventions demonstrate an Effectiveness Hierarchy (Figure 1). Population-wide policies (i.e. taxation, regulation, legislation, reformulation) consistently achieve greater public health gains than interventions and campaigns targeted at individuals and communities.¹⁹ Very few obese children will turn into adults of normal weight. Systematic reviews have demonstrated that, even in adults, weight loss programmes are frustratingly weak and ineffective.²⁰ There is evidence that prevention, in the form of structural change, can create a healthy environment, preventing children from becoming obese in the first place. This is not only more effective but also results in major cost savings.²¹

WHY WAS THE RESPONSIBILITY DEAL NOT EFFECTIVE?

The 'Responsibility Deal' was launched by the UK Government in March 2011. The aim was for the food industry, including food manufacturers, to improve public health by pledging to change products by reducing fat,

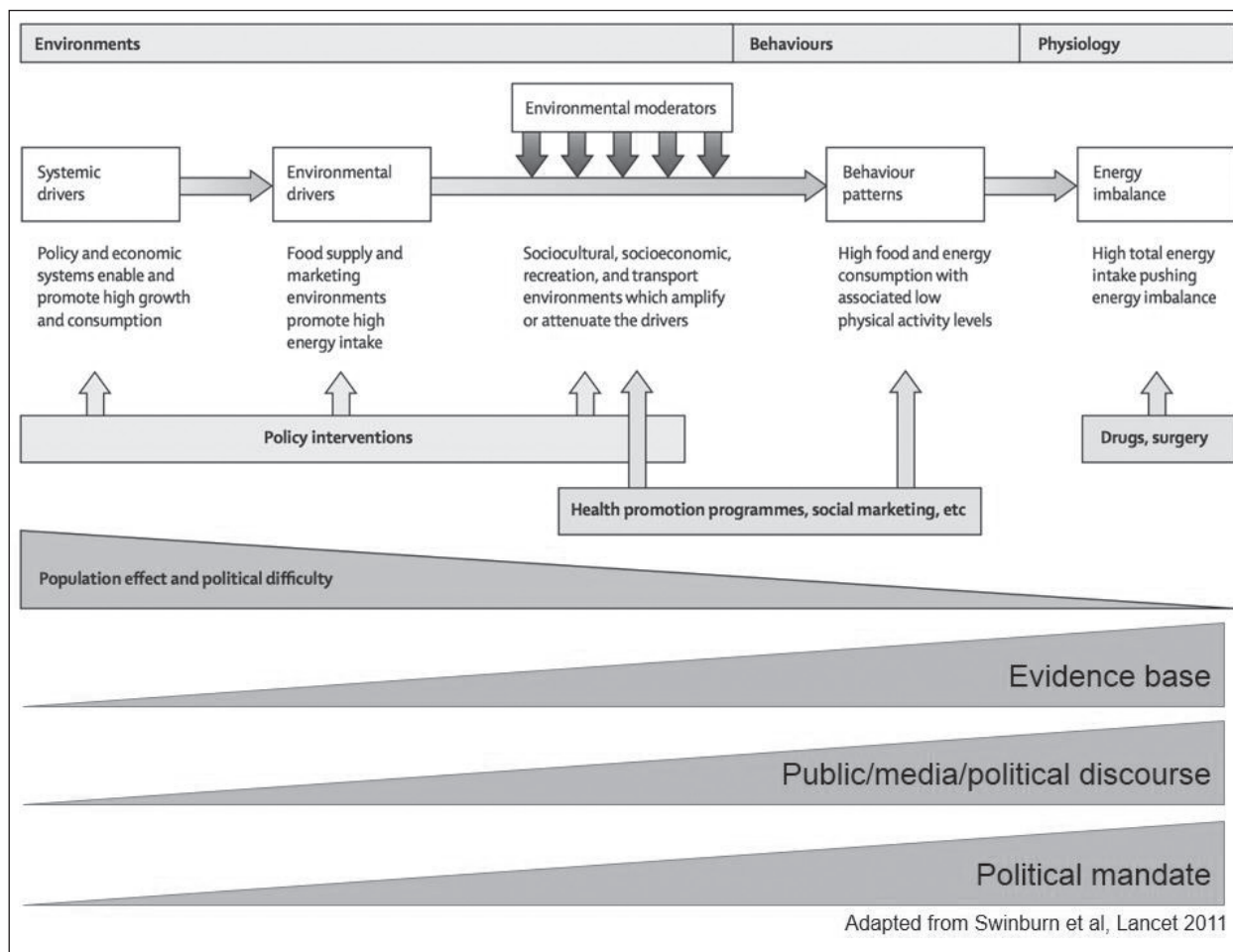


FIGURE 1 A framework to categorise obesity determinants and solutions

salt and sugar content.²² However, evidence shows that it has achieved little, failed to improve eating habits and excludes most of the measures that would make a real impact.^{23,24} The industry vetoed discussion of the most effective interventions – price and advertising – and reformulation was discussed but did not result in effective changes to food products. Voluntary agreements with industry are weak or ineffective, as proven by the recent Department of Health commissioned independent evaluation of the Responsibility Deal.^{23,24} The Responsibility Deal’s vaunted pledges from industry were mostly already happening (in the case of salt reduction because of tough action and targets from the Food Standards Agency, enforced by the responsible Minister) or due to happen, and the evaluation and reporting was poor with no evidence of health gain. To date, little progress has been made. The Responsibility Deal has failed to deliver progress more quickly or effectively than legislative and regulatory measures would have done. This reaffirms that population-wide prevention approaches are generally more powerful, rapid, equitable and cost saving.¹⁹

Voluntary approaches with industry highlight the major conflict of interest: any ‘successful’ reductions in intake

would threaten decreases in sales and profits. The single statutory obligation for a company is to maximise profit for shareholders, and they will not pursue any activity that reduces that profit. Furthermore, many companies chose not to participate in the Responsibility Deal, potentially gaining commercial advantage by avoiding any pledges.

WHY TAXATION?

Junk food and soda taxes are supported by mounting evidence from empirical and modelling studies. Empirical data from a number of countries which have implemented a sugar duty shows rapid, substantial benefits for legislative action.²⁵ In France, for example, a soda tax was implemented in January 2012, which saw a price increase on drinks with added sugar or sweetener, and consequently sales dropped.²⁶ A systematic review and meta-analysis of the impact of food pricing on dietary consumption indicates significant and positive outcomes. Elasticities are reassuringly consistent: if price is increased by 10% for sugar sweetened beverages there is a fall in purchasing and consumption by 7% (3%–10%). Furthermore, for each 10% decrease in price (subsidy)

for healthier food such as fruit or vegetables, consumption is increased by some 14% (11%–17%).²⁷ Thus price interventions targeting food and sugary drinks, as proven in other countries, can be powerfully effective.

Research investigating the potential benefits of voluntary versus mandatory measures has found mandatory approaches to be consistently more powerful by a factor of five, 10 or 20-fold.⁵ They are also more equitable as they target the whole population, and therefore particularly benefit disadvantaged groups that have the greater burden of disease.⁶ The vast majority of the UK public health community would argue strongly for mandatory approaches to address the fat, salt and especially sugar content of food, in particular sugar sweetened beverages.

The key to a successful health-related food tax is how this tax is implemented. The strongest evidence base is for a tax on sugar sweetened beverages, but in order to be effective taxation needs to be at least 20% to have a significant effect on obesity and cardiovascular diseases. Taxes on unhealthy foods should ideally be combined with subsidies on healthy foods such as fruit and vegetables. This in turn would result in medium-long term savings related to lower health expenses and higher productivity. Subsequently, those savings could be spent on health and prevention programmes. These strategies combined could create a cycle of a healthier nation.²⁵

In June 2014, Public Health England and the UK Health Forum organised a Sugar Reduction Stakeholder Event. The event determined six essential steps or actions for successful sugar reduction:²⁸

1. To reduce production and imports of sugary drinks;
2. To use less sugar by reducing the sugar content of products, i.e. by engaging with companies to substitute their brands with lower sugar content options;
3. To reduce sales by forcing a reduction in portion sizes and by taxing sugar or products with high sugar content;
4. To impose marketing regulations, similar to those implemented in Chile and France, regulating not only how, but where and when products can be advertised and ensuring proper protection for children;
5. To recommend reduced consumption, with public awareness and social marketing campaigns, promoting education and skills in schools, for example, cooking classes and how to choose healthier meals;
6. To simply eat less sugar. To do this it would be essential to have a universal implementation of UK Front of Packaging labelling and nutritional information on menus.²⁸

However, taxing food can be complex and politically challenging to implement. Furthermore, the consequences can be difficult to predict as consumers may substitute targeted products with something equally harmful.²⁵

The recent Danish 'Fat Tax' offers valuable lessons on how not to do it. In this case, there was a clear lack of coordination between scientific evidence and recommendations of the Commission on Prevention. The Danish food industry and media used the 'usual' tobacco denialism tactics to resist the proposed tax, scaring the public with the possibility of job losses, an administrative burden and cross-border sales. The industry tactics were successful in lowering standard tax rates, and postponing and undermining the tax. There was a small effect on total sale of taxed foods, but the health benefits were too small and difficult to estimate, especially when these health benefits were likely obscured by substitution effects (cross-border sales, cheaper brands, is the substitute healthier?). Accordingly, recent reviews have concluded that food taxes generally need to be substantial, e.g. increase prices by at least 20%, to affect population health.^{25,29} However, both modelling and experimental studies are subject to great uncertainty; the former due to the low accuracy of economic, dietary and health data and the latter due to the uncertain generalisability of behaviours in closed environments. It has therefore been argued that ecological studies produce the most convincing evidence.²⁵ In this context, Denmark's fat tax can offer valuable evidence despite the fact that it was only in place for 15 months. Monitoring is crucial for the success of any programme, and more effective taxation methods are required.

WHY SUGAR?

Taxes on sugar, and in particular on sugary drinks, are simpler and easier than taxes on fat. They are more straightforward to implement because sugary drinks are a specific group of products, (unlike the Danish Fat Tax which targeted a cross-section of products), thus making it more difficult for the industry to raise objections.

Such taxes are also easy to explain to parents and general society and the long-term economic savings and productivity increases should be easily accepted by politicians. At a National Heart Forum meeting (June 2012)³⁰ it was stated that as a proportionate response to the current crisis in diet-related ill health, the application of additional taxes on foods known to be 'unhealthy' should be part of a package of public health policies. Excise duties are the most promising option because they offer maximum flexibility for control and focus. There are empirical data from a number of countries now showing a rapid and substantial benefit in implementing a sugar tax (e.g. USA, Norway, Samoa, Fiji, Finland, Hungary, France).²⁵

In Mexico the recent 10% soda tax offers valuable lessons. The Mexican President, Enrique Peña Nieto presented a soda tax proposal to the Mexican Congress in September 2013. This was achieved by an alliance of non-governmental organisations called Alianza por la Salud Alimentaria. That success was built on three essential campaign steps:

1. 'Expose human drama': reporting the number of deaths caused by sugar, obesity and diabetes.
2. 'Culprit identification': using scientific evidence and official data to demonise sugar, sugary drinks and the companies which made and marketed them.
3. 'Offer solutions': including a funded campaign to promote the consumption of healthier drinks, such as water, milk and tea, instead of sugary drinks.

The soda tax is hypothecated – it funds water fountains in all schools and public spaces. The campaign was shown in subways, buses, billboards and paid television across Mexico and the short term results are considerable. The Mexican soda tax impact on consumption in the first trimester of 2014 showed a decrease of 12% (19% in poor households), along with a 13% increase in bottled water consumption, a 7% increase in non-caloric sweetened beverages, and an increased consumption of mineral water and unsweetened juices.³¹

The UK Faculty of Public Health recently stated that childhood obesity is now at crisis point and emphasised that prevention is a child protection matter. In order to tackle the obesity crisis, a 'comprehensive strategy' is required, including fiscal, legislative and regulatory measures. The Faculty of Public Health has been campaigning for some time for a duty on sugar sweetened beverages and has identified 10 key evidence-based measures for obesity prevention which include, 'introducing a proportionate and targeted 20% per litre duty on sugar sweetened beverages'.³²

The UK is progressing towards a tax on sugar sweetened beverages. Evidence from recent scientific reports all support substantial reductions in sugar consumption.^{13,15,28,32,33} Based on this evidence, Public Health England, SACN and the WHO originally recommended reducing the intake of free sugars, initially to less than 10% of total energy intake in both adults and children, and then to less than 5% of total energy intake.^{13,15,33}

Action on Sugar was launched in the UK in January 2014 by leading experts uniting to tackle and reverse the obesity and diabetes epidemic. Among Action on Sugar's aims are the following:

1. To achieve a reduction in free sugars intake in the UK and ensure it contributes to less than 5% of total energy intake;
2. To ensure the body of scientific evidence about the

dangers of excessive refined free sugars consumption becomes translated into policy by the Government and relevant professional organisations.

Initially, Action on Sugar highlighted the huge and unnecessary amounts of sugar currently being added to food and soft drinks. For example, 330 ml cans of cola typically contain a staggering nine teaspoons of added sugar. Likewise flavoured water, sports drinks, yogurts, ketchup and ready meals are just a few everyday foods that also contain large amounts of hidden sugars.³⁴

In order to put pressure on policy makers and fight industry efforts to undermine the future success of a sugar tax, public support is vital. In spite of strenuous denial tactics by the food and drink multinational corporations, the general public is becoming more aware of the problem and added sugars have been progressively demonised by public health activists, the media and the general public. Recent media coverage has reported increasing public support for a sugar tax, with a poll of a representative sample of over 2,000 adults in the UK showing that over 70% supported actions, and 53% specifically supported a levy on sugary drinks.^{35,36}

During the recent Health Select Committee (October 2015) on childhood obesity, the necessity of a sugar tax in the UK was made clear.⁶ The support of high-profile media activists, such as Jamie Oliver, is critical, due to the increased media and public attention they add. Their involvement creates even greater public and political support for the scientific evidence and experts' analysis; importantly, the issue reaches a much wider audience.

CONCLUSIONS

A healthier diet could rapidly halve the burden of premature non-communicable diseases and previous public health successes highlight the power of regulations and taxes. Price interventions targeting sugary drinks are impressively effective. There is consistent data showing that for a 10% price increase, there is a 10–12% decrease in purchasing and consumption.³⁷ Additionally, subsidising healthy foods, like fruit and vegetables, leads to an increased consumption of these foods.³⁸

Taxes on sugary drinks are product specific and have already been successfully implemented in diverse populations. Conversely, it is also necessary to keep in mind the complexity and challenges of implementing any food tax, as illustrated by the Danish 'Fat Tax'. Lessons need to be learnt from this experience to ensure future successes.

Recently in the UK, added sugars have been demonised by health activists and scientists alike. The recent scientific reports by WHO, SACN and Public Health

England^{13,15,28,33} have also been very supportive of a sugary drinks duty. A 20p per litre sugary drinks duty could raise around £1bn a year in revenue. This money could and should be used to pay for programmes to improve children's health and the environment in which they grow up. For example, by providing free and high quality school meals, free fruit and vegetable snacks in schools,

installing fresh drinking water fountains in schools and improving food education and skills. Compared with general taxes, ring-fencing of revenue from duties wins greater public support, particularly if the revenue raised is spent on vital public services such as schools or the NHS.

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