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Title: How successful will the sugar levy be in improving diet and reducing inequalities in health?

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In March 2016 George Osborne MP, the Chancellor of the Exchequer, announced that a sugar levy on the soft drinks industry would be introduced as part of an overarching strategy to reduce free (non-milk extrinsic (NME)) sugars consumption and obesity in the UK. From April 2018 manufacturers will be taxed at the lower rate of 18p/L for production or import of sugary drinks containing 5g or more per 100ml and at the higher rate of 24p/L for drinks with 8g or more per 100ml[1]. Artificially sweetened drinks and pure fruit juice are not included. This article discusses the likely impact on dietary behaviour and health, taking into consideration the scientific evidence and likely action of relevant stakeholders. Inequalities in childhood obesity have widened over the previous decade and therefore a reflection on whether this policy has the potential to narrow or further widen inequalities is also included.

The current scientific evidence focusses on increased risk of type 2 diabetes (t2dm) and obesity with higher intakes of sugary drinks. The most recent review of randomised controlled trials (the strongest type of study design) investigating sugary drinks and weight gain indicates that reduced intakes of SSB in children reduce BMI and higher intakes in adults increase weight gain by 0.85kg over approximately 4 weeks (median length of trials included in the review)[2]. Although no reviews of trials are published on the risk of t2dm there are two reviews of prospective cohorts which indicate an increase in risk of 18-20% for each additional sugary drink consumed per day[3 4].

The UK is a high consumer of soft drinks with sales equivalent to 204L per year per capita (including bottled water and low calorie options)[5]. Intakes vary by age and socio-economic group, with adolescents and lower income households having the highest intakes[6 7]. Sugary drinks make a significant contribution to energy intake in groups with high consumption. Data from the National Diet and Nutrition Survey (NDNS) report that NME sugar consumption is approximately 12%, 13% and 15% of energy for adults, children (aged 4 to 10 years) and adolescents respectively[6], greatly exceeding the current 5% of energy recommended in the UK by Public

Health England (PHE) for free sugars[8]. Sugary drinks are the second highest contributor of NME Sugars for all age groups[6].

Evidence that the levy is likely to change behaviour and health comes from three main sources; existing policies in other countries and on other foods, economic modelling data and action taken on reformulation. A sugar tax is now legislated in a number of different countries and Mexico has published an evaluation of the tax in terms of sales but not diet related health outcomes. They report that a 10% excise tax on sugary drinks has reduced purchasing of sugary drinks by an average of 6% and increased purchase of non-taxed drinks such as water by 4%[9]. Reviews of observational and modelling studies measuring the impact of taxes and subsidies on a range of foods including sugary drinks concluded that effects are generally consistent across studies and a 20% increase in the price of drinks is likely to result in a useful reduction in consumption[10 11]. Furthermore, modelling of UK data concludes that a 20% tax is predicted to reduce obesity prevalence by 1.3% overall with higher reductions predicted in younger age groups[12]. It should be noted that modelling to predict behaviour and health outcomes requires many assumptions to be made and therefore has wide margins of error.

Although the announcement on the levy had a mixed response; broadly welcomed by health campaigners but unpopular with soft drink manufacturers[13], the long lead in time has encouraged many drinks companies to reformulate to reduce sugar content to below 5g resulting in only about a third of soft drinks eligible for the tax[5]. It is still unclear to what extent companies will spread the cost of the levy across all categories of drinks including low calorie versions, thereby reducing the size of the price increase on individual drinks.; although cheaper drinks will maintain the highest proportional price increases.

Lastly, this sugar levy is unlikely to widen inequalities. Even if the price rise on drinks high in sugar is partly absorbed by soft drinks companies, lower income consumers are price sensitive and therefore may be more likely to switch to an alternative[12]. Taxed drinks that are in the cheaper price brackets will be proportionally more expensive when taxed than more expensive versions. Indeed, in Mexico the reduction in consumption of taxed soft drinks was more pronounced in lower income consumers[9]. However consumers might substitute higher energy alternative such as fruit juice or a milk based drink (which are not included in the levy) rather than a low

calorie soft drink[12]. Consumers that do not switch to an alternative will pay more making the tax regressive, although the health benefits are potentially progressive as obesity prevalence is higher in areas of higher deprivation.

In conclusion, high intakes of sugary drinks are likely to increase risk of type 2 diabetes and excess body fatness. Reducing intakes of sugary drinks is difficult[14] and many steps are needed to improve intakes[15]. Nevertheless, a levy on drinks high in sugars is likely to reduce free sugars consumption, particularly in vulnerable groups. Not all the evidence is high quality and therefore there are uncertainties regarding the precise benefits to diet quality and diet related health outcomes, particularly the latter. Importantly, there is little existing evidence that a levy on sugary drinks on its own will solve the obesity crisis, a view shared by WHO[11]. It will require a holistic approach including improvements in the food environment such as reductions in marketing of unhealthy foods and smaller portion sizes.

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