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## Commentary

# Taxing Sugar-Sweetened Beverages: Not a “Holy Grail” but a Cup at Least Half

Comment on “Food Taxes: A New Holy Grail?”

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### Abstract

In this commentary, we argue for the implementation of a sugar-sweetened beverage (SSB) tax as a tool to help address the global obesity and diabetes epidemics. Consumption of SSBs has increased exponentially over the last several decades, a trend that has been an important contributor to the obesity and diabetes epidemics. Prior evidence demonstrates that a SSB tax will likely decrease SSB consumption without significantly increasing consumption of other unhealthy food or beverages. Further, this tax is unlikely to have effects on income inequality and should not contribute to weight-based discrimination. A SSB tax also should raise revenue for government entities that already pay, through health care expenditures and health programs, for the consequences of excess SSB consumption.

### Keywords

Sugar-Sweetened Beverages, Tax, Economics, Obesity, Overweight

In his perspective, “Food taxes: a new holy grail?”, Professor Ignaas Devisch critiques the use of taxes on unhealthy foods to address the rising global burden of obesity and overweight (1). He argues against such taxes because of 1) purportedly limited data showing dietary improvement from food taxes, 2) concerns for unintended consequences such as increasing consumption of other unhealthy products, 3) promotion of further income inequality, 4) the tendency of such taxation to “[scapegoat] those groups who are expected to benefit the most from government intervention” (i.e., the overweight and obese), and 5) limited documented public support for these taxes.

However, must we condemn all possible food tax remedies because of unsubstantiated concerns about something as imprecise as a “food tax”? Not all food taxes are created equal, and we believe that a tax on sugar-sweetened beverages (SSBs) is not only justified but is an important tool to address the global epidemics of obesity and diabetes. SSBs are clearly fuelling these joint epidemics. Over the last several decades, consumption of SSBs has at least doubled for both children and adults in the United States (2–5). In one nationally-representative survey from 1999 to 2004, US adolescents (12 to 19 years of age)

consumed on average 301 kcal/day in SSBs, representing 13% of total daily calorie intake. Among those adolescents consuming at least one SSB on the day they were surveyed, average intake was 356 kcal/day, 16% of total daily calorie intake. Intake was lower for younger children but still averaged 124 kcal/day for 2-to-5-year olds and 184 kcal/day for 6-to-11-year olds (4). U.S. adults 20+ years of age consumed 203 kcal/day, 9% of total daily calorie intake, with higher consumption among those with lower income (2); 10% of U.S. Supplemental Nutrition Assistance Program recipients consumed more than 5 servings of soda per day (6). In fact, SSBs are the single largest contributor to calorie consumption of all food and beverage types (7). These trends are by no means unique to the US. Evidence demonstrates high SSB consumption across the world with exponential increases over the last several decades (8–11).

These numbers are especially impressive when considering the calorie consumption that was necessary to create the obesity epidemic. Wang *et al.*, estimated that a reduction of 131 kcal/day over the approximately 10-year period from 1988–1994 to 1999–2002 would have reversed the 0.43 kg/year weight gain that was observed among 2-to-7 year olds. Substantial other data has documented the negative impact of SSB consumption on body weight and risk for diabetes (12–15), and new randomized trial data has demonstrated the potential for weight loss by reducing SSB consumption (16,17). SSBs are a logical and important target for obesity prevention policies, especially when considering the utter lack of nutritional value found in most SSBs and the lack of appropriate satiety signals and calorie compensation when consuming SSBs (18–21).

To address Professor Devisch’s critiques, when applied to a SSB tax, we begin by addressing the state of the data that he laments. Much evidence demonstrates the effect, or likely effect, of taxes on SSB consumption (3,22–29). Several studies, most focused on soda/soft drinks, have documented associations between higher SSB prices and lower consumption. Authors have utilized various methods, including observational data on food prices and consumption (22,26), household survey data on food purchases (23,27–29), and experimental studies

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(25). A 2009 systematic review of food price elasticities found a price elasticity of demand of -0.79 (95% CI 0.33, 1.24) for soft drinks, estimated from 14 different studies. This elasticity suggests that for every 10% increase in the price of soft drinks, sales would decline by 7.9%. Additional studies have found very similar elasticities (22,25) or even higher responsiveness to price (i.e., less inelastic demand) (3,23,27–29). Two recent studies conservatively projected calorie reductions per capita from SSB taxes, accounting for potential substitutions to other beverages and foods. Finkelstein *et al.* estimated a 24.3 kcal/day per capita calorie deficit from a 20% tax, leading to a 0.7 kg average weight loss in one year and 1.32 kg weight loss in 10 years (27). Lin *et al.* estimated a 34 kcal/day reduction from a 20% tax, leading to a 0.97 kg average weight loss in one year and 1.8 kg weight loss in 10 years (3). These results, when considered on a population level, are important changes over time and would alter the prevalence of obesity and overweight. SSB taxes will likely “work”. Further, these data address Professor Devisch’s second concern regarding the likely substitution to unhealthy products after a food tax, thereby leading to a cancellation of any positive effects from a tax. At least for SSBs, the substitutions appear to be small, are not necessarily to unhealthy options, and do not reverse the overall reduction in calories from a tax (3,25,27). Finkelstein *et al.* even found a reduction in calories from foods coinciding with a SSB tax.

On to the arguments regarding income inequality and scapegoating the obese and overweight. In their projections of the effect of a 20% SSB tax, Lin *et al.* found that the typical burden of such a tax on low-income individuals (those making less than 185% of the US federal poverty guideline) would be 19.97 US dollars annually, equivalent to 1% of the average annual food budget. Higher-income individuals would pay \$18.84. Another similar study found a SSB tax to be similarly regressive but, again, of small magnitude (28). Because low income individuals are projected to lose slightly more weight from a SSB tax than higher income individuals, this income burden may be more than abated by health improvements. Scapegoating of the obese and overweight is a concern. However, with the intense global attention to SSBs as a major contributor to the obesity epidemic, it seems unlikely that a targeted SSB tax would worsen the typical bias facing many overweight and obese individuals. Leading organizations advocating against weight-based discrimination also tend to support SSB taxation (30,31). Foregoing important population-based obesity prevention strategies, such as targeted taxation, because of the miniscule risk of worsening bias seems counterproductive.

Finally, consideration of public opinion regarding policy change is critical when projecting the likelihood of adopting SSB taxes. In the US, hardly the bastion of pro-tax policy, 34 states and the District of Columbia have taxes on SSBs, with 22 states and the District of Columbia having higher taxes on soda than on regular food. These states include some of the most politically conservative states in the US, including Texas, Kentucky, and North Dakota. National public opinion data regarding support for soda taxes in the United States is mixed (32–35). When a general question regarding soda taxes is posed to poll respondents, 36% or fewer support a soda tax (33–35); however, when revenue from a soda tax is connected to a social good, such as providing health insurance or funding obesity prevention programs, approximately one-half of respondents support such a tax (32).

Of course, existing SSB taxes are quite small presently and likely ineffective in decreasing consumption, which has never been the intended purpose of these taxes. In 2011, the mean US state sales tax on soda was 5.2% (36). For those states that have a dedicated soda tax, the mean dedicated tax, not including sales taxes generally applied to all food items, was between 1.5% to 2.3% from 1989 to 2006 (37). These small tax rates have been associated with little to no difference in SSB consumption or BMI, when comparing states with to those without taxes (37–41). If a tax was seen as more effective in improving health, such as what could likely be achieved with a larger tax, public opinion may shift. Further, many public policies that have become widely popular and viewed as important for public health (e.g., tobacco taxes, public insurance programs like the United States’ Medicare and Social Security programs) were initially met with skepticism (42,43). SSB taxes also conform to a long tradition of influencing food choices and prices through governmental policy; however, these taxes differ from other such policies because they should explicitly improve public health. Other widely used food economic policies, such as agricultural subsidies, have no such intention, and in fact can detract from public health. A SSB tax also should raise revenue for government entities that already pay, through health care expenditures and health programs, for the consequences of excess SSB consumption.

Ultimately, a SSB tax should never be viewed as a “holy grail”. Nor can a firm conclusion be made that a SSB tax will have a specific effect. However, calling this “riddled with uncertainty” would be extreme. In fact, no policy, in public health, health care, or beyond, has perfectly predictable effects, and expecting such would doom any policy change. Also, no policy should be viewed in isolation but rather as part of a comprehensive effort. Addressing a crisis such as the obesity and diabetes epidemics requires a comprehensive approach toward all contributing factors, including encouraging healthy dietary choices and increasing physical activity. A dedicated food tax on SSBs is a reasonable approach backed by strong evidence that can help stem this tide.

#### Ethical issues

Not applicable.

#### Competing interests

The author declares that he has no competing interests.

#### Authors’ contributions

Both JPB and WCW developed the themes for the commentary. JPB wrote the first draft, and WCW revised it critically. Both authors approved the final version.

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