

Policy

[Three interventions that reduce childhood obesity are projected to save more than they cost to implement](#)

Gortmaker et al. *Am J Prev Med.* 2015;49(1):102–111.

Advocates need data and evidence to choose among several strategies for reducing childhood obesity. Gortmaker and colleagues review the cost-effectiveness of seven childhood obesity prevention interventions when applied to the US population. They find that a sugary drink tax is one of three cost-effective interventions.

The authors conducted an evidence review and microsimulation (a computer model that uses the best available data to estimate intervention effects) to calculate the costs and effectiveness of seven interventions based on their impact on body mass index (BMI) changes, obesity prevalence, and obesity-related health care costs over 10 years (2015–2025). Three policy actions reduced health care costs by more than the cost of the intervention: (1) placing a national excise tax on sugary drinks, (2) eliminating the tax subsidy for advertising unhealthy food to children, and (3) implementing nutrition standards for foods and beverages sold in schools outside of the National School Lunch Program. These interventions were found to reduce childhood obesity by 576,000, 129,000, and 345,000 cases respectively. Improving nutrition standards for school meals would have the largest impact on reducing the prevalence of childhood obesity, a reduction of 2.6% (1,186,000 cases), but is not cost saving because of the cost of the intervention.

A national sugary drink tax would reduce the prevalence of childhood obesity by 0.8%, a

significant population-level impact for a single intervention. It would also save \$14.2 billion in net costs, and raise \$12.5 billion in tax revenue.

Limitations: Simulation models are sensitive to the assumptions and quality of included data. There is limited evidence linking the included interventions to population-level obesity prevalence. The authors did not account for the cumulative effects of all seven interventions or incorporate health improvements outside of reductions in obesity.

Implications: The findings provide advocates with useful information on how to choose among competing policy options based on relative impact. Policies like a sugary drink tax that reach adults and children have the dual benefit of reducing near-term health care costs from adult obesity and laying the ground work for long-term savings through reductions in childhood obesity.

[Higher retail prices of sugar-sweetened beverages 3 months after implementation of an excise tax in Berkeley, California](#)

Falbe et al. *Am J Public Health.* 2015;105:2194–2201.

In March 2015, Berkeley, CA became the first locality in the nation to implement a 1-cent-per-ounce excise tax on sugary drinks. In order for such a tax to reduce consumption, a substantial portion of the tax must be passed on to the consumer. Falbe and colleagues present evidence that Berkeley's sugary drink tax is passed through to the customer via higher shelf prices for sugary drinks.

To assess whether the tax is leading to higher shelf prices for sugary drinks, the authors collected price data on drinks with and without sugar both before and after the tax was imposed, from a variety of retailers in Berkeley and in two comparison cities, Oakland and San Francisco. The retailers represent

a mix of centrally located chains and stores in lower-income, minority neighborhoods. The authors assessed the prices of the same beverages in the same stores pre- and post-tax and compared changes in Berkeley with changes that occurred in the comparison cities. The authors assessed relative price changes by several variables, including by beverage category, type of sugary drink and non-sugary drink, brand, sugary drink relative to non-sugary drink, and by retailer.

Overall, prices increased roughly a half cent more per ounce in Berkeley than in the comparison cities, a pass through rate of 47%. Pass through varied by type of sugary drink. The tax was passed through at 69% for soda, 47% for fruit-flavored beverages, and 32% for sweetened teas. The prices of sugary drinks overall increased relative to non-sugary drinks by 0.46 cents per ounce more in Berkeley. Pass through also varied by retailer, ranging from 42% in small grocery stores to 97% in liquor stores.

Limitations: The authors were not able to assess all beverage types and sizes. The results may not represent pass through in neighborhoods not included in the study. Price data were collected 3 months after implementation of the tax although before all distributors were required to be compliant with the law; additional pass through may occur in the future.

Implications: At 69% pass through, the price of a 20-ounce soda increased by an average of 8%, from \$1.75 to \$1.89. Most experts agree that the price of a sugary drink should increase by at least 20% to meaningfully affect consumption patterns and health outcomes. These findings from Berkeley suggest a tax rate of 2 cents per ounce may be needed to raise prices sufficiently.

[The influence of sugar-sweetened beverage warning labels on parents' choices](#)

Roberto et al. *Pediatrics*. 2016;137(2):e20153185.

Consumption of sugary drinks among children remains high, with two thirds of children aged 2 to 11 years old drinking them at least once a day. One untested strategy to reduce consumption is to place a warning label on sugary drink containers, soda fountains, or vending machines to provide parents with information about the health effects of sugary drinks. Roberto and colleagues find that such warning labels may reduce parents' intent to purchase sugary drinks.

The researchers conducted an online, randomized controlled trial with 2,381 parents to assess the effects of beverage warning labels on their purchasing behavior and perceptions of different drinks. Parents were randomly assigned into either a control group (no information), a group presented with labels displaying calorie content but no health warning, or a group that saw health warning labels. Parents in each group were shown 20 beverages (12 of which were sugary drinks) and asked to choose one for their youngest child. Those assigned to a warning label group were told that "drinks with a lot of added sugar have a safety warning label on them" and then were shown a magnified label above an image of the product. The labels stated: "SAFETY WARNING: Drinking beverages with added sugar(s) contributes to obesity, diabetes, and tooth decay" or variants on this wording.

The parents who saw warning labels were significantly less likely to choose a sugary drink (40.4% in the warning label group vs. 59.9% in the no information control group, $p < .001$, and 53.3% in the calorie label group, $p < .001$). Providing

calorie information did not reduce parents' choice of sugary drinks relative to the control condition.

Limitations: The study design did not permit the assessment of actual purchases or consumption. Real world effects are likely to be smaller given the study provided a priming statement displayed before the actual warning label and magnified the label; the absence of pressure from children asking for sugary drinks, and the artificial testing context. Most sugary drinks are purchased in grocery stores while the hypothetical setting of this study was a vending machine. Online study participants are likely not representative of the general population, somewhat limiting the generalizability of the findings.

Implications: Policy makers should consider implementing and rigorously evaluating warning labels.

[Beverage purchases from stores in Mexico under the excise tax on sugar sweetened beverages: An observational study](#)

Colchero et al. *BMJ*. 2016;352:h6704.

Models suggest that placing an excise tax on sugary drinks would reduce consumption, prevent incident cases of obesity, and generate a positive return on investment. On January 1, 2014, Mexico became one of the first countries in the world to implement a significant excise tax (1 peso per liter, or about 10% of the purchase price). Colchero and colleagues found that the tax is associated with a substantial decrease in purchases, and that the magnitude of the tax effect increased over time.

This study, the first to assess a tax implemented in the real world, uses an observational pre-post time-series analysis (a study design that looks at changes

before and after an intervention is implemented) to compare actual to predicted purchases of both taxed and untaxed beverages in Mexico between 2012 and 2014. Predicted purchases were derived from pre-tax trends in 2012 and 2013. Data on purchases and demographic variables were obtained from 6,286 households by data collectors who visited homes every 2 weeks to collect diaries, product containers, and receipts, and to conduct pantry surveys.

The tax was fully passed on to beverage purchasers. Purchases of sugary beverages decreased an average of 6% compared with predicted values over the course of 2014, the first year of tax implementation. Comparing predicted to observed purchases by month, the absolute decrease in purchases grew from 1.2% in February to 11.9% in December (22 ml/capita/day less). The effects were greater among low-income households, among whom purchases declined an average of 9.1% over the post-tax year, compared to 5.5%–5.6% among middle- and high-income households. Purchases of untaxed beverages (mainly bottled water) increased.

Limitations: Limitations of the study are lack of a comparison group, unavailability of data on changes in caloric consumption from beverages and in the overall diet, and lack of data for beverages not obtained from stores. The latter may have led to an underestimate of effect. However, the large sample size and detailed data collection make this a robust study that supports the effectiveness of sugary drink taxes. Evaluations of taxes at higher rates and over longer time periods are needed.

Implications: This study provides evidence that excise taxes on sugary drinks can reduce consumption and therefore have an impact on obesity and diabetes.

Health impacts

[No difference in ad libitum energy intake in healthy men and women consuming beverages sweetened with fructose, glucose, or high-fructose corn syrup: a randomized trial](#)

Kuzma et al. *Am J Clin Nutr.* 2015;102:1373–80.

Consuming sugary drinks leads to increased calorie intake in part because these beverages do not stimulate the body's satiety mechanisms. This means people who consume sugary drinks do not feel full from those calories and therefore do not eat fewer calories when consuming a meal. Sugary drinks are sweetened with sucrose or high-fructose corn syrup, both of which include glucose and fructose. The body treats these two sugars differently and it is thought that fructose may be driving the weight gain-promoting quality of sugary drinks. Kuzma and colleagues observed *no* difference in total calories consumed when study participants drank beverages sweetened with different forms of sugar. They also observed that participants did *not* reduce their intake of solid food calories when they took in more than needed calories from sugary drinks.

Kuzma and colleagues assessed whether the type of sugar used to sweeten sugary drinks has an impact on calorie intake in two randomized, controlled, double-blind crossover studies of healthy adults. Participants completed three diet periods lasting 8 days during which they consumed solid food until they were full. In study A ($n = 9$; BMI: 20–25; age 18 to 25 years) participants consumed a mandatory four servings per day of beverages sweetened with fructose, glucose, or aspartame. In study B ($n = 24$; BMI: 25–39.9; age 18 to 65 years) participants

consumed a mandatory four servings per day of beverages sweetened with fructose, glucose, or high-fructose corn syrup. Beverages represented 25% of the estimated daily calorie requirement, except for aspartame-sweetened beverages which represented 4% of the estimated daily calorie requirement. Participants' total caloric intake was calculated for each diet period. There was no difference between groups in amount of solid food calories consumed in either study across participants consuming different types of sugary drinks. Those drinking aspartame-sweetened beverages consumed fewer total calories. All participants consuming sugary drinks took in 16%–20% more calories than their estimated energy needs.

Limitations: Study limitations include a relatively short diet period and small sample size. Participants in study A received different amounts of total energy depending on whether a participant was in the fructose or glucose group (125% solid food energy and 25% beverage energy) versus the aspartame group (125% solid food energy and 4% beverage energy).

Implications: Consumers of calorically sweetened beverages compensated (i.e., reduced the intake of solid food calories to make up for calories consumed from sugary drinks) for only one third of the beverage calories when consuming food calories. In the long term, this excess calorie intake is expected to lead to weight gain. This study provides further evidence that sugar in liquid form is particularly harmful.

[Sugar-sweetened beverage consumption and incident hypertension: a systematic review and meta-analysis of prospective cohorts \(Study 1\)](#)

Jayalath et al. *Am J Clin Nutr.* 2015;102:914–21

[Sugar and artificially sweetened soda consumption linked to hypertension: A systematic review and meta-analysis \(Study 2\)](#)

Cheungpasitporn et al. *Clin Exp Hypertens.* 37(7): 587–593.

Half of US adults and a third of youth report consuming one or more sugary drinks per day. Consumption of added sugars, particularly in the form of sugary drinks, has been associated with an increased risk of cardiovascular disease. One potential mechanism is the development of hypertension. A plausible biological pathway exists: fructose, perhaps through increasing uric acid levels, can impair blood vessel expansion (which increases blood pressure) and interfere with blood pressure regulating hormones. A pair of recent meta-analyses found that those who regularly consume sugary drinks have a 12% increased risk of developing hypertension.

These studies employed similar high-quality random-effects meta-analytic methods (an approach that pools estimates from multiple studies) and included literature through January 2015. The first study by Jayalath and colleagues included six prospective adult cohorts (with 240,508 participants). The second study by Cheungpasitporn and colleagues included the same cohorts as well as one additional prospective cohort and three cross-sectional studies (with 414,328 participants). Participants included men and women across the

adult age span living in the United States or Spain. The studies adjusted for major hypertension risk factors and were all of high quality.

Both studies found that participants in the highest quartile of consumption (one or more sugary drinks per day) had a 12% higher risk of developing hypertension relative to the lowest quartile (no sugary drinks). Jayalath and colleagues found that the risk of hypertension increased by 8.2% for every additional sugary drink consumed per day. The risk was higher in women. Sensitivity analyses in the second study showed equivalent findings when only prospective studies were included in the meta-analysis.

Limitations: These studies did not report on the risk associated with higher consumption levels, such as two or more beverages per day. The participants in the included studies were predominantly well educated and from the United States. The effect of sugary drinks appears to be independent of overweight as the included studies controlled for BMI.

Implications: These studies suggest that avoiding consumption of sugary drinks may help prevent the development of hypertension, which affects one third of Americans aged 20 years and older.

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