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Simulating the Impact of Sugar-Sweetened Beverage Warning Labels in Three Cities.

Lee BY, Ferguson MC, Hertenstein DL, Adam A, Zenkov E, Wang PI, Wong MS, Gittelsohn J, Mui Y and Brown ST. *American Journal of Preventive Medicine* 2018; 54(2): 197-204.

This study uses computer simulation modeling to explore how sugar-sweetened beverage (SSB) warning labels may impact the prevalence of overweight and obese youth in three cities. When the evidence on the effectiveness of a policy is limited and studies of that policy are difficult to conduct in a 'real world' setting, computer simulation modeling may provide quantitative support to policymakers faced with decisions on the best way to address health issues like overweight and obesity. Simulations from this study suggest that implementing a beverage warning label would lower obesity in the three cities included in the model—Baltimore, Philadelphia, and San Francisco. ■

Abstract

Introduction: A number of locations have been considering sugar-sweetened beverage point-of-purchase warning label policies to help address rising adolescent overweight and obesity prevalence.

Methods: To explore the impact of such policies, in 2016 detailed agent-based models of Baltimore, Philadelphia, and San Francisco were developed, representing their populations,

school locations, and food sources, using data from various sources collected between 2005 and 2014. The model simulated, over a 7-year period, the mean change in BMI and obesity prevalence in each of the cities from sugar-sweetened beverage warning label policies.

Results: Data analysis conducted between 2016 and 2017 found that implementing sugar-sweetened beverage warning labels at all sugar-sweetened beverage retailers lowered obesity prevalence among adolescents in all three cities. Point-of-purchase labels with 8% efficacy (i.e., labels reducing probability of sugar-sweetened beverage consumption by 8%) resulted in the following percentage changes in obesity prevalence: Baltimore: -1.69% (95% CI= -2.75%, -0.97%, $p < 0.001$); San Francisco: -4.08% (95% CI= -5.96%, -2.2%, $p < 0.001$); Philadelphia: -2.17% (95% CI= -3.07%, -1.42%, $p < 0.001$).

Conclusions: Agent-based simulations showed how warning labels may decrease overweight and obesity prevalence in a variety of circumstances with label efficacy and literacy rate identified as potential drivers. Implementing a warning label policy may lead to a reduction in obesity prevalence. Focusing on warning label design and store compliance, especially at supermarkets, may further increase the health impact.

Taking the sweetness out of the 'Share a Coke' marketing campaign: the influence of personalized labelling on elementary school children's bottled drink choices.

McDarby F, O'Hora D, O'Shea D, Byrne M. *Pediatric obesity*. 2018;13(1):63-69.

McDarby et al. conducted a randomized controlled trial with children aged 8-13 years to examine how personalized labeling influences children's beverage choices. Children were more likely to select a healthy beverage with a personalized label, and personalization of an unhealthy beverage made children less likely to select a healthy beverage. ■

Abstract

Background: Drink personalization (featuring names on bottle labels) has been used by soft drink companies to make their drinks attractive to children, potentially increasing consumption. To date, no publicly available research has evaluated the influence of personalization on children's drink choices.

Objectives: To determine (i) whether personalizing bottled drinks influences children's drink choices; (ii) whether it is comparably effective in promoting healthy and unhealthy drinks and (iii) whether drink choices are affected by self-esteem, body mass index and parental factors.

Methods: Children aged 8-13 years (N = 404) were randomly assigned to one of three drink labeling conditions: Prime Healthy, Prime Unhealthy and Control. All participants selected one beverage from 12 options, comprising six healthy and unhealthy drinks.

Results: Personalizing healthy drinks increased choice of healthy drinks (OR, 2.21; 95% CI, 1.24-4.00), and personalizing unhealthy drinks reduced choice of healthy drinks (OR, 0.35; 95% CI, 0.15-.0.75). Higher self-esteem predicted choosing own-named drinks (OR = 1.08, 95% CI, 1.00-1.18; $p = .049$).

Conclusions: Children's drink choices are influenced by personalizing drink bottles. Tighter regulation of this marketing strategy for soft drinks may reduce children choice of these drinks. Personalization may also be used to encourage children to choose healthy drinks.

Association Between Dietary Factors and Mortality From Heart Disease, Stroke, and Type 2 Diabetes in the United States.

Micha R, Penalvo JL, Cudhea F, Imamura F, Rehm CD, Mozaffarian D. *JAMA*. 2017;317(9):912-924.

Data from the National Health and Nutrition Examination Survey (NHANES) were analyzed to determine the relationship between 10 foods/nutrients and cardiometabolic mortality (mortality due to heart disease, stroke, and type 2 diabetes). Researchers found diet-related cardiometabolic deaths were associated with high intakes of sodium, processed meats, and sugar-sweetened beverages and low intakes of nuts and seeds, vegetables, fruits, and omega-3 fats from seafood. High sugar-sweetened beverage consumption was associated with 51,694 deaths in one year and accounted for 7.4% of all cardiometabolic deaths. ■

Abstract

Importance: In the United States, national associations of individual dietary factors with specific cardiometabolic diseases are not well established.

Objective: To estimate associations of intake of 10 specific dietary factors with mortality due to heart disease, stroke, and type 2 diabetes (cardiometabolic mortality) among US adults.

Design, Setting, and Participants: A comparative risk assessment model incorporated data and corresponding uncertainty on population demographics and dietary habits from National Health and Nutrition Examination Surveys (1999-2002: $n = 8104$; 2009-2012: $n = 8516$); estimated associations of diet and disease from meta-analyses of prospective studies and clinical trials with validity analyses to assess potential bias; and estimated disease-specific national mortality from the National Center for Health Statistics.

Exposures: Consumption of 10 foods/nutrients associated with cardiometabolic diseases: fruits, vegetables, nuts/seeds, whole grains, unprocessed red meats, processed meats, sugar-sweetened beverages (SSBs), polyunsaturated fats, seafood omega-3 fats, and sodium.

Main Outcomes and Measures: Estimated absolute and percentage mortality due to heart disease, stroke, and type 2 diabetes in 2012. Disease-specific and demographic-specific (age, sex, race, and education) mortality and trends between 2002 and 2012 were also evaluated.

Results: In 2012, 702308 cardiometabolic deaths occurred in US adults, including 506100 from heart disease (371266 coronary heart disease, 35019 hypertensive heart disease, and 99815 other cardiovascular disease), 128294 from stroke (16125 ischemic, 32591 hemorrhagic, and 79578 other), and 67914 from type 2 diabetes. Of these, an estimated 318656 (95% uncertainty interval [UI], 306064-329755; 45.4%) cardiometabolic deaths per year were associated with suboptimal intakes-48.6% (95% UI, 46.2%-50.9%) of cardiometabolic deaths in men and 41.8% (95% UI, 39.3%-44.2%) in women; 64.2% (95% UI, 60.6%-67.9%) at younger ages (25-34 years) and 35.7% (95% UI, 33.1%-38.1%) at older ages (≥ 75 years); 53.1% (95% UI, 51.6%-54.8%) among blacks, 50.0% (95% UI, 48.2%-51.8%) among Hispanics, and 42.8% (95% UI, 40.9%-44.5%) among whites; and 46.8% (95% UI, 44.9%-48.7%) among lower-, 45.7% (95% UI, 44.2%-47.4%) among medium-, and 39.1% (95% UI, 37.2%-41.2%) among higher-educated individuals. The largest numbers of estimated diet-related cardiometabolic deaths were related to high sodium (66508 deaths in 2012; 9.5% of all cardiometabolic deaths), low nuts/seeds (59374; 8.5%), high processed meats (57766; 8.2%), low seafood omega-3 fats (54626; 7.8%), low vegetables (53410; 7.6%), low fruits (52547; 7.5%), and high SSBs (51694; 7.4%). Between 2002 and 2012, population-adjusted US cardiometabolic deaths per year decreased by 26.5%. The greatest decline was associated with insufficient polyunsaturated fats (-20.8% relative change [95% UI, -18.5% to -22.8%]), nuts/seeds (-18.0% [95% UI, -14.6% to -21.0%]), and excess SSBs (-14.5% [95% UI, -12.0% to -16.9%]). The greatest increase was associated with unprocessed red meats (+14.4% [95% UI, 9.1%-19.5%]).

Conclusions and Relevance: Dietary factors were estimated to be associated with a substantial proportion of deaths from heart disease, stroke, and type 2 diabetes. These results should help identify priorities, guide public health planning, and inform strategies to alter dietary habits and improve health.

Legal and Administrative Feasibility of a Federal Junk Food and Sugar-Sweetened Beverage Tax to Improve Diet.

Pomeranz JL, Wilde P, Huang Y, Micha R, Mozaffarian D. *Am J Public Health*. 2018;108(2):203-209.

Pomeranz et al. reviewed the scientific literature, junk food and SSB tax bills and laws, and federal taxing mechanisms to determine the feasibility and best approach to implementing junk food and SSB taxes. Researchers conclude that a federal junk food tax based on product categories, nutrition criteria, specific nutrients or calories, or a combination of these approaches is feasible. ■

Abstract

Objectives: To evaluate legal and administrative feasibility of a federal "junk" food (including sugar-sweetened beverages [SSBs]) tax to improve diet.

Methods: To assess food definitions and administration models, we systematically searched (1) PubMed (through May 15, 2017) for articles defining foods subject to taxes, and legal and legislative databases as well as online for (2) US federal, state, and tribal junk food tax bills and laws (January 1, 2012-February 28, 2017); SSB taxes (January 1, 2014-February 28, 2017); and international junk food tax laws (as of February 28, 2017); and (3) federal taxing mechanisms and administrative methods (as of February 28, 2017).

Results: Articles recommend taxing foods by product category, broad nutrient criteria, specific nutrients or calories, or a combination. US junk food tax bills ($n = 6$) and laws ($n = 3$), international junk food laws ($n = 2$), and US SSB taxes ($n = 10$) support taxing foods using category-based ($n = 8$), nutrient-based ($n = 1$), or combination ($n = 12$) approaches. Federal taxing mechanisms (particularly manufacturer excise taxes on alcohol) and administrative methods provide informative models.

Conclusions: From legal and administrative perspectives, a federal junk food tax appears feasible based on product categories or combination category-plus-nutrient approaches, using a manufacturer excise tax, with additional support for sugar and graduated tax strategies.

The role of obesity in exceptionally slow US mortality improvement.

Preston SH, Vierboom YC, Stokes A. *Proc Natl Acad Sci USA*. 2018;115(5):957-961.

For this study, data from NHANES were analyzed to examine the relationship between body mass index (BMI) and mortality. Researchers found that increasing BMI has reduced improvements in mortality rates. They estimate that there were 186,000 excess deaths in 2011 due to increases in BMI. ■

Abstract

Recent studies have described a reduction in the rate of improvement in American mortality. The pace of improvement is also slow by international standards. This paper attempts to identify the extent to which rising body mass index (BMI) is responsible for reductions in the rate of mortality improvement in the United States. The data for this study were obtained from subsequent cohorts of the National Health and Nutrition Examination Survey (NHANES III, 1988-1994; NHANES continuous, 1999-2010) and from the NHANES linked mortality files, which include follow-up into death records through December 2011. The role of BMI was estimated using Cox models comparing mortality trends in the presence and absence of adjustment for maximum lifetime BMI (Max BMI). Introducing Max BMI into a Cox model controlling for age and sex raised the annual rate of mortality decline by 0.54% (95% confidence interval 0.45-0.64%). Results were robust to the inclusion of other variables in the model, to differences in how Max BMI was measured, and to how trends were evaluated. The effect of rising

Max BMI is large relative to international mortality trends and to alternative mortality futures simulated by the Social Security Administration. The increase in Max BMI over the period 1988-2011 is estimated to have reduced life expectancy at age 40 by 0.9 years in 2011 (95% confidence interval 0.7-1.1 years) and accounted for 186,000 excess deaths that year. Rising levels of BMI have prevented the United States from enjoying the full benefits of factors working to improve mortality.

Sugar intake by type (added vs. naturally occurring) and physical form (liquid vs. solid) and its varying association with children's body weight, NHANES 2009-2014. [🔗](#)

Welsh JA, Wang Y, Figueroa J, Brumme C. *Pediatric obesity*. 2018.

Welsh and colleagues used data from NHANES to examine sugar consumption (both added and naturally-occurring sugars) among children 2-19 years and its relationship with weight. Added sugars (and not naturally occurring sugars), specifically added sugars in liquid form, are associated with weight gain. ■

Abstract

Background: Sugars and their primary dietary sources (milk, fruits, sweetened foods and beverages) are associated, in different ways, with a range of health outcomes, including obesity. The contribution made to total sugar intake and how the different types and forms of sugar associate with body weight is unclear.

Objective: To describe sugar consumption and examine its association with weight status among U.S. children by sugar type [added {AS} vs. naturally occurring {NOS}] and form (solid vs. liquid).

Design: Cross-sectional dietary data (2 24-h recalls) from children 2-19 years in the National Health and Nutrition Examination Survey, 2009-2014 (n = 8136) were used to estimate the amount of each type and form of sugar by age and weight status. Linear regression models tested trends and the multivariate adjusted association between the different sugars and weight status.

Results: Mean total sugar, AS, and NOS was 118.1 g [25.3% total energy {TE}], 71.5 g (14.8% TE), 46.7 g (10.5% TE), respectively. AS in sugar-sweetened (non-dairy) beverages and NOS in juices contributed 6.9% and 2.4% of TE, respectively. Only %TE from AS (controlled for potential demographic, lifestyle confounders) was associated with change in body mass index z-score (BMIz) [AS in beverages: BMIz beta + 0.01 {95% CI: 0.002, 0.03}; AS in foods: BMIz beta - 0.03 {95% CI: -0.04, -0.02}].

Conclusion: Dietary sugars, most of which are AS, are a major contributor of calories in the diets of U.S. children. Only AS in non-dairy sources were associated with weight although the direction differed by the form consumed. AS in beverages were associated positively and those in foods were associated inversely with children's weight status.

QUICK TAKES

Pass-Through of a Tax on Sugar-Sweetened Beverages at the Philadelphia International Airport

Cawley J, Willage B and Frisvold D. *JAMA* 2018; 319(3): 305-306.

For this small study, researchers examined prices of sodas before and after the implementation of the Philadelphia SSB tax in the Philadelphia International Airport. Part of the airport was subject to the tax and the other part was not. Among stores subject to the tax, researchers found that 61 percent of the tax was passed on to consumers. ■

Prevalence of Obesity Among Adults, by Household Income and Education — United States, 2011–2014

Ogden CL, Fakhouri TH, Carroll MD, et al. *MMWR Morb Mortal Wkly Rep.* 2017;66(50):1369–1373.

NHANES data were analyzed to examine obesity prevalence by household income and education level. The relationship between obesity and income and education varied by gender and race/ethnicity. Lower income and lower education levels were not necessarily associated with a higher prevalence of obesity, especially among men. ■

Can the government require health warnings on sugar-sweetened beverage advertisements?

Pomeranz JL, Mozaffarian D, Micha R. *JAMA* 2018;319(3):227-228.

In this editorial, Pomeranz and colleagues provide evidence that SSB warning labels are supported by the first amendment and scientific literature. ■

Taxes and sugar-sweetened beverages.

Powell LM, Maciejewski ML. *JAMA* 2018;319(3):229-230.

In this editorial, Powell and Maciejewski review the emerging evidence on the effectiveness of SSB taxes, discuss the controversial nature of the taxes, and summarize issues policymakers should consider as they draft and implement excise taxes. ■

Research Watch reviews the evidence on the health effects of sugar and the effectiveness of policy and other interventions to curb consumption and inform sugar reduction activities across the US.

This publication was prepared by Sally Bullock.

Healthy Food America acts on scientific evidence to drive change in food policy and industry practice, giving people greater control over their health and reducing diet-related illnesses, such as obesity, diabetes, and heart disease.