



Association of State and Territorial Dental Directors
Policy Statement: Sugar-Sweetened Beverages
Adopted: April 2019

Problem

Dental caries is one of the most common chronic diseases among all ages globally, and is the most common chronic childhood disease in the United States.¹ According to the National Health and Nutrition Examination Survey during 2011-2014, 13.3% of children and adolescents aged 6–19 years experienced untreated dental caries.² Poor oral health is associated with impaired growth and development, chewing and speech problems, and lower self-esteem.³ The high prevalence of dental caries among children justifies the need to find effective interventions for caries prevention.

Several studies have indicated consumption of sugar-sweetened beverages (SSBs) can increase the risk for diabetes, heart diseases, obesity, and dental caries.⁴⁻⁷ SSBs are a common source of dietary sugar intake. Consumption of SSBs is detrimental to dental health; evidence shows a dose-response relationship between the prevalence of dental caries and the frequency of SSB intake.⁴ The acidity level in sodas and energy drinks can cause erosion in enamel, which can increase the chances of dental decay, an increased need for restorative treatment, and tooth loss.^{7, 8}

Soft drinks, which are high sources of energy with no nutritional or satiating values, are the main source of added sugar intake among Americans.⁹ The total energy intake coming from consumption of SSBs in adolescents and children (aged 6 to 11 years) is 9.5% and 6.2%, respectively.⁹ Fruit drinks, sports and energy drinks, and sweetened coffee and tea are a few examples of the SSBs that are made with various natural caloric sweeteners, such as sucrose, fruit juice concentrates, brown sugar, honey, molasses, corn sweeteners and more frequently, high fructose corn syrup.^{10,11} Consuming SSBs may alter taste preference and can affect the quality of diet resulting from habitual consumption of highly sweetened beverages.⁵ Adolescents aged 12 to 19 have the highest rate of SSB consumption.¹² The results of a study that assessed data from the 2012 School Health Policies and Practices Study and the 2013 Youth Risk Behavior Surveillance Survey indicated that almost 18% of high school students reported consuming soda at least once a day.¹³ Over the past 30 years in the U.S., consumption of fruits, vegetables, and milk has been trending down while SSB intake has increased steadily.¹⁶ In 2009 an average American consumed 45 gallons of SSBs, containing nearly 7 teaspoons of sugar per serving.⁷ A 12-ounce can of soda or fruit punch provides 150 calories, all from sugar; this is equivalent to 10 teaspoons of sugar.¹¹ Consumers may assume 100% fruit juices are healthier drink options compared to sodas and other SSBs, such as novelty coffee and energy drinks. However, fruit juice beverages have high naturally occurring sugar content with little or no fiber; some fruit juices have even more sugar than regular soda.¹⁷

Due to the detrimental overall and oral health effects of added sugar intake, the World Health Organization (WHO) provided guidelines and recommendations on consumption of free sugars, which are defined as monosaccharides and disaccharides added in SSBs or that naturally occur in syrups, honey, and fruit juices.^{5,8,14} According to the WHO recommendations, the energy coming from free sugars should be

less than 10% of total energy intake, and there are additional health benefits in reducing the intake below 5%.^{14,15} The 2015-2020 Dietary Guidelines for Americans suggests substituting sugary drinks with calorie-free beverages (e.g., plain water) or drinks with beneficial nutrients, such as low-fat and fat-free milk.^{7, 13}

Method

Strategies such as warning labels, increased taxes, and restricted marketing of SSBs can reduce consumption of SSBs at the population level, contributing to decreased healthcare costs.⁹ Food labels can inform consumers about the added sugar content in SSBs.¹⁴ Putting a clear, factual warning notice on SSBs regarding their health consequences can be an effective strategy to reduce SSB intake.¹⁸ Experimental studies have indicated there is a 61-65% chance that adolescents choose an SSB if it carries a warning, whereas the chances of choosing an SSB with no label is 77% among this population.¹⁹ Moreover, fewer parents choose a SSB for their child if the SSB has a warning label (40%) versus no label (60%).¹⁹ The variety in SSB packaging, including attractive designs, colors and use of cartoon-like graphics and typography²⁰ may have stimulating effects and visual cues for children and young adults that can trigger purchases.²¹ Plain packaging and warning labels on SSBs can significantly reduce the likelihood of purchasing SSBs and alter beverage preferences of adolescents and young adults.²²

Evidence shows low socioeconomic status (SES) and low health literacy are associated with increased SSB intake.¹⁸ SSB intake is higher among boys, adolescents, Mexican-Americans, and Black youths from low-income families.^{13,15} Considering the existing disparities in SSB intake among individuals with low health literacy and low SES, a warning label can increase consumer awareness regarding the health risks of SSB intake, influence their SSB choice, and decrease the rate of diseases related to SSB consumption (e.g., diabetes, obesity, and tooth decay).¹⁸

Television advertising is one of the most powerful tools used by the SSB industry to increase sales.²³ Commercial appeals to children started with the widespread adoption of television; it grew exponentially with the advent of cable television, and opportunities to advertise to children further expanded with the explosive growth of internet and thousands of child-oriented websites that specifically targeted children.²⁴ By 2004, it was estimated that the advertising industry spent \$12 billion on ads targeted at children, bombarding young audiences with persuasive messages through media (i.e., television and internet).²⁵ Advertising has changed tremendously during the past few decades; its focus has shifted increasingly toward young children and reaches them through subtle ways, such as including ads in the games they play.²⁵ Despite the growth of online marketing, in many countries television still remains the primary medium of food and beverage advertisement to youth and constitutes the greatest food advertising expenditure targeted at children.²⁶

SSBs are highly marketed; in 2006, the beverage industry spent \$1.6 billion to promote its products to consumers younger than age 18.²⁷ Food and beverage marketing has a great impact on unhealthy consumer choices among low-income individuals, minorities, and rural communities. Low-income individuals are disproportionately targeted by the food and beverage industry, and they are usually more likely to see more ads that feature high-calorie, nutrient-dense food and beverages compared to their high-income counterparts.²⁷

Most available literature that explores the effects of marketing unhealthy commodities has focused on traditional broadcast media (television). Television remains the most utilized promotional medium; however, evidence suggests there is a shift in marketing budgets from traditional to digital media.²⁸ Restricting TV advertisements for unhealthy foods and sugary beverages aimed at children could be the most cost-effective population-based intervention available to governments. In the U.S., both adults and children are targets for heavily marketed SSBs; hence, oral health educators alone cannot compete with this carefully organized outpouring of social media messages promoting SSB intake.²³ Similar to the ban on TV cigarette advertising by many governments (that has shown to be effective), one potentially effective strategy is to limit or completely ban SSB advertisements.²³

Considering the pervasive nature of marketing activities on digital platforms, there is a need for proactive and effective regulations on unhealthy commodities marketed at children and young adults in the online environment.²⁸ Many industries have recognized the potential of marketing through social media and are increasing their investments in marketing through these platforms. The food and beverage industries have a leading role in conducting and implementing market research on social media.²⁹ Social media is accessed by people of all ages; however, young people remain the center of the social media economy. Children are being exposed to digital marketing of SSBs on social media, and there are no regulations to protect them from this exposure.²⁹

Governments can act to restrict SSB consumption; a feasible option is to increase taxes on SSBs. Globally, SSB taxes have been successfully implemented in 45 jurisdictions, including Mexico, Norway, United Kingdom, France, Peru, India, and Philippines.^{30, 31} Various taxes on SSBs are in place in the U.S.; taxes can be levied as an excise tax before sales or as a sales tax at point of sale.¹⁵ A 20% tax on current SSB prices can lead to 16-20% reduced consumption^{15,23} especially among individuals with high levels of consumption (e.g., people in low-income groups).¹⁵ The first city in the nation to pass a tax on SSBs was Berkeley, California.³² Berkeley's ordinance imposed a general tax on the distribution of SSBs and pre-made syrups used in fountain drinks.³² In 2016, the first year after the ordinance went into effect, the one cent per fluid ounce excise tax on SSB distribution resulted in a 21% decrease in consumption of SSBs in low-income neighborhoods, a 9.6% decline in SSB sales, and 15.6% increase in plain water consumption in Berkeley.¹⁹

Excise taxes on SSBs is the most debated policy instrument to limit SSB intake.⁷ To successfully implement and sustain tax policies, a broad base of policy and community support is needed; otherwise, such policies are likely to be challenged by strong industry interests, which leave tax laws vulnerable to hostile lobbying.³³ The repeal of the Cook County (Illinois) sweetened beverage tax law in 2017 due to lack of community support is an example.³⁴ Recently, the industry developed a campaign against local soda taxes in Washington State and Oregon, using misleading messages and sending deceitful mailers calling the imposed taxes on soda "grocery tax".³⁵

The primary goal of health taxes (e.g., SSB taxes) is reduced consumption; policy makers should be clear about this primary goal and should consider the fact that emphasizing the adverse health effects of SSB consumption through public messages that resonate with communities³⁴ and earmarking health taxes for health spending can increase public support.³³

Potential revenue from SSB taxation could be used to subsidize the cost of healthy drinks and foods,¹⁵ improve access to healthy food and safe drinking water, promote health and wellness, and prevent chronic diseases.¹⁹ It should be noted that a considerable tax increase is needed to detect a significant impact on consumption rates.²³ In the United States, seven cities and the Navajo Nation have successfully implemented sugary drink taxes,³¹ Table 1 shows the experience of seven cities, including Philadelphia, PA; Berkeley, CA; Albany, CA; Oakland, CA; San Francisco, CA; Boulder, CO; and Seattle, WA.³¹

San Francisco is an example of successful tax initiatives; Healthy Food America’s policy profile of the sugary drink tax in San Francisco estimates tax revenue at \$15 million per year, which will be deposited into the city’s general fund. Expected health benefits over the next decade include prevention of 3,750 cases of obesity, \$36 million savings in health care costs, and decreased incidence of diabetes by 4% during the first year after the tax takes full effect.³⁶

Table 1. Implementation of Sugary Drink Taxes in Seven U.S. Cities

Location	Effective Date	Annual Revenue (\$1,000,000)	Tax Rate Per Ounce (cent)	Type of Beverage	Use of Revenue	Estimated Revenue Per Year
Philadelphia, PA	1/1/2017	\$77.3	1.50	Sweetened	Pre-k, parks, community, schools	\$78.8 million, (raised revenue, Jan 1, 2017 - Dec 31, 2017)
Berkeley, CA	1/1/2015	\$1.6	1.00	Sugary	Health	\$2.5 million (raised revenue, Mar 2015- Jan 2017)
Albany, CA	4/1/2015	\$0.3	1.00	Sugary	Health	\$220,000 (over \$205,000 raised revenue, Apr 1, 2017 -Dec, 2017)
Oakland, CA	7/1/2017	\$10.6	1.00	Sugary	Health	\$11 million
San Francisco, CA	1/1/2018	\$15.3	1.00	Sugary	Health	\$15 million
Boulder, CO	7/1/2017	\$ 5.0	2.00	Sugary	Food access, health	\$3.3 million (raised revenue, Jul 1, 2017- Feb 28, 2018)
Seattle, WA	1/1/2018	\$21.7	1.75	Sugary	Food access, health, early childhood	\$15 million

(Adapted from “Map and chart the movement” by [Healthy Food America](#), n.d.)

Implementing policies that limit SSB availability is another effective way to deal with the dilemma of added sugars. Studies evaluating the effectiveness of limiting SSB availability in middle schools in the U.S. indicated that one quarter of the students consuming SSBs decreased their intake after the restriction of SSBs in schools.²³ Similarly, when high schools limited access to SSBs through vending machines, a result was decreased consumption.²³ The federal supplemental nutritional assistance program (SNAP) has restricted purchasing of a few types of SSBs, but the Women, Infants, and Children Program (WIC) allows the purchase of fruit and vegetable juices (limited to 64 ounces per month for children younger

than age five, and none for infants and women).³⁷ The U.S. Postal Service subsidizes air transportation of food and beverages to remote communities (e.g., Alaska), resulting in a reduction of SSB prices and increased SSB availability in rural Alaskan communities.³⁷ Although the beverage industry has supported some policies to reduce SSB consumption, it has opposed others including limiting the availability of large portion sizes and imposing taxes.³⁸ In 2012, the New York City Board of Health passed a regulation that prohibited the sale of SSBs in containers bigger than 16 ounces in food service establishments. The beverage industry and different retailers sued the City to prevent the law from going into effect, arguing that the board had overstepped its authority. As a result, the state's highest court struck down the regulation in 2014.³⁹

Individuals tend to consume more when offered a larger portion size, regardless of appetite or taste.⁷ Since 1950, there has been a parallel increase in soda consumption with increased soda cup size, suggesting that the driving force behind increased SSB consumption could be the increased supply and not demand. Increasing the availability of smaller size servings can encourage the acceptance of a modified standard portion.⁶ Smaller portions have gained acceptance, possibly as a result of marketing strategies responding to a demand for them and for fewer calories per serving.⁴⁰

Efforts to reduce SSB consumption often are based in programs responding to the obesity epidemic in the U.S. and have implications for reducing dental caries as well. Oral health messages about reduced SSB intake coming from dental professionals and other health care providers, combined with policy changes at the school, state, and national levels, may decrease SSB consumption and consequently reduce the prevalence of dental caries among children.^{6,16} Considering the complex and multifactorial nature of dental caries, single-level interventions that focus only on increasing oral health awareness, dental services utilization, and/or strategies to reduce dental caries risk factors such as SSB consumption, are unlikely to address this oral health issue comprehensively.³⁷

Community-based oral health educational programs are essential strategies for limiting SSB intake and improving public awareness regarding oral health and healthy nutrition. For example, educational programs about the importance of drinking water combined with improved access (by increased access to water fountains and reusable bottles) could increase water consumption in preference to SSBs.⁴¹ Community programs also can promote the added preventive benefit of drinking water when that water is optimally fluoridated.

Oral health professionals see the negative effects of SSB consumption on a daily basis; they are well-positioned to provide new and powerful health arguments to both policy-makers and the public and to advocate for policies aiming to reduce SSB consumption and improve the oral health of whole populations.⁴² They can play a critical role in providing nutrition education because they have knowledge and expertise as well as frequent contacts with patients. Moreover, their influential role as health professionals allows them to address patients' poor nutritional habits and promote a healthy diet.³³

State and territorial oral health programs (S/TOHP) can work with their state dental, dental hygiene and health professional associations to develop and disseminate community education information with consistent, common messaging. Dental public health professionals and decision-makers can strive to develop multi-level oral health interventions including behavioral interventions related to diet and oral hygiene, oral health educational programs, and policy changes regarding SSB advertising, sponsorships

and taxes.^{6,37} State and territorial oral health programs can collaborate with their partners to collect data on children's and adolescents' habits regarding drinking water and other beverages, and use those data to plan interventions. They can also work with stakeholders, such as school nurse associations and public health and health professional organizations, to promote policies and partner in program initiatives such as "Drink the Tap Water" campaigns.

Policy Statement

ASTDD supports the development of policies that result in limiting the availability of sugar-sweetened beverages (SSBs) and encouraging increased consumption of beverages with low or no added sugar content. State and territorial oral health programs, in collaboration with oral health professionals, coalitions and established public health, medical and dental related organizations, should participate in education and efforts to make a strong and cohesive case for policies and practices that limit SSB intake.

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Note: As this paper was finalized, the American Academy of Pediatrics issued a new [policy statement](#) on this topic: Muth ND, Dietz WH, Magge SN, et al. American Academy of Pediatrics, AAP Section on Obesity, AAP Committee on Nutrition, AAP American Heart Association. *Public Policies to Reduce Sugary Drink Consumption in Children and Adolescents*. Pediatrics. 2019;143(4):e20190282.

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