

## Association Between Sweetened Beverages Provided in Public Schools and Caries

### Introduction:

Per the World Health Organization, dental caries is a major public health problem worldwide and is the most widespread noncommunicable disease. It is also the most prevalent condition included in the 2015 Global Burden of Disease Study, ranking first for decay of permanent teeth (2.3 billion people) and 12th for primary teeth (560 million children). Moreover, severe dental caries is a common cause of absenteeism at school. This disease impairs quality of life and in its advanced stages, can cause pain and infection (dental abscess), chronic systemic infection, and/or negatively impact normal growth and development. It is well known that dietary free sugars are the most important risk factor for dental caries.<sup>6</sup> Multiple studies have shown that children with higher daily intake of sugar-sweetened beverages had higher incidence of dental caries.<sup>1,3,4,5</sup> Dental caries is a lifelong progressive and cumulative disease is a major public health concern that desperately needs policy intervention.

### Issue:

Sweetened Beverages Provided in Public Schools may increase the prevalence of dental caries in children and adolescents.

Presently, the primary intervention for dental caries is mainly by costly, aggressive, and time-consuming clinical treatment rather than integrated, cost-effective, public health strategies focusing on prevention. Additionally, dental caries experience has been shown to be positively associated with free/reduced lunch/breakfast program eligibility.<sup>1</sup> Therefore, sugar-sweetened beverages should not be distributed or sold in schools across the nation, including chocolate milk. It is our responsibility to care for and protect one of our most *vulnerable populations, children*.

### Impact:

The risk of acquiring dental caries has been linked to the consumption of sugar-containing beverages in the form of sodas, sport, energy, and fruit-flavored drinks, as well as, to a lesser extent, 100 percent juice. The acids in carbonated beverages may have a more harmful impact than previously thought. Bacteria's main source of energy comes from fermentable dietary carbohydrates, which they then use to make acids like lactic acid, which lowers pH and demineralizes dental hard tissue. Thus, a diet high in mono- and disaccharides may be a significant risk factor for dental caries. It was previously thought that sticky foods had a high propensity to become stuck in the fissures and pits of teeth, increasing the risk of developing caries but liquid sugar can also have an increasing risk for developing caries as well. In addition to having an excessive amount of sugar, these drinks are acidic by nature, which immediately lowers the pH of the mouth. Saliva's ability to act as a buffer can at first offset this effect, but as sugar containing beverage exposure increases in frequency and intensity, caries development may also rise.<sup>1,2</sup>

### Critique of current approaches:

Currently, the Nutrition, Physical Activity, and Obesity Program (NPAO) is a cooperative agreement between the CDC's Division of Nutrition, Physical Activity and Obesity (DNPAO) and 25 state health departments. This program's goal is to prevent and control obesity and other chronic diseases through healthful eating and physical



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activity. DNPAO target areas include decreasing the consumption of sugar-sweetened beverages. Strategies related to the decreased consumption of sugar-sweetened beverages include limiting their access. Current approaches are only reaching a half of the school-aged population in need (only 25 state health departments are a part of the CDC's DNPAO). Each state has its specific policy, however if we look at California, this state allows beverages with less than 42 grams of added sweetener per 20-ounce serving. Chocolate milk is still being offered to children as part of the free/reduced lunch/breakfast program (20g added sugars). According to the substantial evidence, all beverages containing added sugar should definitely not be offered to children on free/reduced lunch programs and also should not be available for sale.

**Recommendations:**

Our recommendation is to provide and emphasize the public's education and awareness of the value of healthy eating practices as they relate to consuming the products accessible in vending machines.<sup>2</sup> With this, we will encourage the promotion of foods and drinks with high nutritional value; bottled water and other healthier options should be available in place of sugar-sweetened beverages as well as encourage school officials and parent organizations to think about the significance of maintaining healthy options in vending machines in schools.<sup>2</sup> Concurrently, we will raise public awareness of the negative effects of frequent and/or inappropriate consumption of sugar-sweetened beverages and low-nutrient dense snack foods on children's oral health and general health. This will be done by encouraging collaboration with other dental and medical organizations, governmental agencies, education officials, parent and consumer groups, and corporations.<sup>2</sup>

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**Citations:**

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