SELECTIONS FROM THE CURRENT LITERATURE

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LONG-TERM STUDY REPORTS THAT SUGAR CONSUMPTION IS ASSOCIATED WITH CARIES DESPITE USE OF FLUORIDE


Background. Increased sugar consumption has been associated with obesity and a number of diseases including dental caries. As noted by the authors, however, no prospective study has followed children from early childhood to early adulthood to investigate the role of sugar intake in dental caries. The purpose of this study was to assess whether various amounts of sugar intake affected the occurrence of dental caries from ages 6 through 18 years.

Methods. This study followed children in Brazil who were born in 1993 until they were 18 years old. The use of fluoridated toothpaste was ubiquitous among the children, and all were from an area in Brazil that has had water fluoridation since 1962. Dental caries and dietary sugar consumption was prospectively assessed over time among 300 to 350 children at ages 6, 12, and 18 years. Sex, family income, history of breast-feeding, mother’s education, regularity of dental visits, and toothbrushing habits were included in the statistical analysis.

Results. Based on data obtained from questionnaires and daily food diaries, approximately 20% of the children in this study consumed high amounts of sugar, approximately 40% consumed intermediate amounts of sugar, and approximately 40% consumed low amounts of sugar. Children who consumed high and intermediate amounts of sugar had a greater prevalence of dental caries and more missing and filled teeth compared with children who consumed low amounts of sugar. Among all children, the rate of dental caries was 20% and 66% higher in those who consumed intermediate and high amounts of sugar, respectively, compared with children who consumed low amounts of sugar. Even low levels of sugar consumption were associated with dental caries, despite the use of fluoride.

Why is this study important? Although the finding that sugar consumption is associated with dental caries is not new, this is an important study because it followed and documented the occurrence of dental caries in a random sample of children from ages 6 through 18 years. It provides additional clear evidence that increased sugar consumption is detrimental to oral health, even when sugar is consumed in low quantities in the presence of fluoride from sources such as toothpaste and the water supply.

It is also important to recognize that based on available epidemiologic evidence 37 years ago, Dr. Aubrey Sheiham—who passed away in 2015 and was one of the authors of this study—stated, “Epidemiological evidence suggests that a food policy directed at lowering the refined sugar consumption level to approximately 10 kilograms per person per year in conjunction with fluoride supplementation of the diet would virtually eliminate dental caries in industrialized countries.” As noted in an obituary published in The Guardian, “At a time when many were giving sugar in the diet a free pass, Aubrey was emphasising the importance for oral health of diets low in sugar. He played a central role in keeping the evidence on sugar and dental caries before policy makers. He stayed abreast of the developing evidence on sugar-sweetened beverages and obesity, and it became grist to his mill. His work in this area is still highly relevant, as evidenced by the recent publication of the Public Health England report, Sugar Reduction: the Evidence to Action.”

NORTH AMERICA, LATIN AMERICA, AUSTRALASIA, AND WESTERN EUROPE HAVE HIGHEST CONSUMPTION OF SUGAR-SWEETENED BEVERAGES IN THE WORLD


Background. As noted by the authors, people throughout the world have become aware of the role of added sugars, particularly in beverages, as a major factor in causing increased weight gain, diabetes, and cardiometabolic diseases. Moreover, as reported in a long-term study that is highlighted in this JournalScan article, dental caries in children is associated with sugar consumption, even in the presence of fluoride use. Popkin and Hawkes reviewed the consumption of caloric...
sweeteners to foods and beverages in the world and discussed ways in which governments around the world are increasingly developing and implementing policies to reduce intake of sugar-sweetened beverages.

Methods. Popkin and Hawkes used data from several large-scale studies in the world to compare sales of food products that contain sweeteners among various countries. They also reviewed the effectiveness of government policies implemented around the world to reduce intake of sugar-sweetened beverages.

Results. The authors reported that in 2014, people in North America, Latin America, Australasia, and Western Europe consumed the most sugar-sweetened beverages, and that people in sub-Saharan African and Asian-Pacific countries consumed the least amount of these beverages. For example, they reported that North American sales of sugar-sweetened beverages amounted to approximately 150 kilocalories (commonly called calories) per day, and that people in Asian-Pacific countries consumed approximately 20 kilocalories per day. They also reported that many countries have begun attempts to reduce consumption of sugar-sweetened beverages by taxation, reducing availability in schools, marketing restrictions to children, public awareness campaigns, and front-of-package labeling. They were able to identify 72 policy actions that have been implemented in 49 countries, mostly in high-income countries; no policy actions have been implemented in low-income countries. The authors reported that trends appear to show that consumption of sugar-sweetened beverages is decreasing in countries that tax these beverages (such as Mexico, Finland, Hungary, and France). They also noted that although there is evidence that other ways of reducing sugar-sweetened beverage consumption appear promising, more research is needed to determine what strategies are effective in reducing consumption of these beverages.

Why is this study important? This is an important study because increased sugar consumption is related to increased morbidity such as dental caries, diabetes, obesity, and cardiometabolic diseases. Because sugar consumption is associated with increased dental caries, oral health care providers should be active in developing effective ways of dealing with increased sugar intake among their patients and the population as whole.

HEALTH WARNING LABELS IMPROVE PARENTS’ UNDERSTANDING OF SUGAR-SWEETENED BEVERAGE HARMs


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Background. The authors noted that 66% of children, aged 2 through 11 years drink sugar-sweetened beverages daily, which has been reported to contribute between 69 and 118 calories daily to the diets of children of this age. Consumption of these beverages has been associated with weight gain, risk of adult obesity, diabetes, and dental caries. Moreover, the authors noted that 60% of sodas contain caffeine, which is an addictive substance. The purpose of this study was to investigate the effectiveness of warning labels on the knowledge and behavior of parents as related to sugar-sweetened beverages.

Methods. The authors recruited 2,381 demographically diverse child caregivers, who reflected the educational status of people in the 2010 US census, to participate in an online computer survey. The survey compared a beverage label that did not have a health warning (control label) to 5 different test labels on sugar-sweetened beverages. One of these labels stated only the caloric content of the beverage and the other 4 contained specific warnings regarding harmful effects of the beverage, including diabetes, obesity, and dental caries. Caregivers viewed images of the beverages with the various labels and were asked to imagine that they were using a vending machine to purchase a beverage for their child. The caregivers were also asked about their perceptions of the beverages, their intention to purchase the beverages, and whether they would support the use of warning labels on the harmful effects of sugar-sweetened beverages.

Results. In the vending machine simulation study, Roberto and colleagues reported that significantly fewer parents (40%) chose to purchase a sugar-sweetened beverage if they viewed 1 of the 4 labels that had health warnings on obesity, diabetes, and dental caries than if the beverage did not have a warning label (60%) or only had a label that stated the number of calories (53%). They also reported that parents believed that beverages having specific harmful health warnings were less healthy for their children than the same beverages that did not have the warnings or only had a label stating the caloric content of the beverage. Moreover, most participants reported that a warning label would change their beliefs about the healthfulness of a beverage and that it would encourage them to purchase fewer of the beverages for their children. Importantly, more than 73% of caregivers were in favor of a health warning on sugar-sweetened beverages and only approximately 6% opposed such a warning. A policy of requiring health warning labels on sugar-sweetened beverages was favored by a most caregivers who self-identified as Democrats (79%), Republicans (73%), and Independents (66%).

Why is this study important? This is an important study because it showed that specific health warning
labels on sugar-sweetened beverages may improve parent’s understanding of the harmful effects of these beverages and may reduce the purchase of the beverages for their children. As noted by the authors, a law was passed in San Francisco, California, that requires advertisements for sugar-sweetened beverages to include a health warning label, and other legislation has been introduced in California and New York that requires written health warnings on sugar-sweetened beverage containers. Given the association of sugar consumption, dental caries, and other comorbid conditions, it is important for oral health care providers to be aware that product labeling may be effective in limiting consumption of sugar-sweetened beverages.


DENTAL AMALGAM RESTORATIONS, SEAFOOD CONSUMPTION, AND BLOOD LEVELS OF MERCURY


Background. There is concern about the safety of dental amalgam restorations because of possible effects of mercury that may be released from the restorations. Moreover, there are limited long-term data regarding the possible effect of mercury from dental amalgam restorations on children who are born to mothers who have dental amalgam restorations. The purpose of this study was to assess the contribution of dental amalgam restorations to maternal total blood mercury (TBHg) levels and determine whether dental care may explain some of the sociodemographic variation in TBHg levels.

Methods. The authors used data from self-completion questionnaires and mercury assays of whole blood from 4,484 pregnant women in the United Kingdom. Questionnaire data included information about the number of dental restorations, visits to the dentist, placement and removal of dental amalgam restorations, dental extractions, dental radiographs, diet, and sociodemographics. They used statistical methods to estimate the contribution of dental amalgam restorations to TBHg levels and assess the contribution of dietary and sociodemographic factors to TBHg levels.

Results. The authors reported that dental amalgam restorations and seafood consumption contributed approximately 6.5% and 9.0%, respectively, to the variance of TBHg levels during pregnancy. Altogether, dietary and dental variables contributed approximately 20% and sociodemographic variables contributed approximately 3.5% to TBHg levels. Most of the variance in TBHg levels from dental variables was accounted for by the number of dental amalgam restorations at the beginning of pregnancy.

Why is this study important? This is an important study because it used data from a large sample of pregnant women and because it showed that dental amalgam restorations contributed approximately the same variance in TBHg levels as seafood consumption. The authors also noted that other data from the same population showed no relation between speech and language development of children who were 15 months old and dental amalgam exposure of their mothers during pregnancy. Other studies of this population reported no association of dental amalgam exposure during pregnancy and neurodevelopment (up to age 30 months), educational achievement, language, or other cognitive outcomes at age 5 years.


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Disclosure. Dr. Pihlstrom did not report any disclosures.