

Calories from Soft Drinks — Do They Matter?

Obesity has emerged as one of the greatest global health challenges of the 21st century. Its increase among children and adolescents is particularly frightening, given the associated metabolic and cardiovascular complications. Studies from developing countries with populations that are undergoing rapid changes in nutrition are showing increases in the prevalence of childhood obesity.

The increase in consumption of sugar-sweetened beverages among both adults and children in the United States and other countries is considered a potential contributor to the obesity pandemic. Sugar intake from sugar-sweetened beverages alone, which are the largest single caloric food source in the United States, approaches 15% of the daily caloric intake in several population groups. Adolescent boys in the United States consume an average of 357 kcal of the beverages per day. Sugar-sweetened beverages are marketed extensively to children and adolescents, and large increases in consumption of sugar-sweetened beverages have occurred among black and Mexican-American youth, who are known to be at higher risk for obesity and the development of type 2 diabetes than their white counterparts.

Unlike carbohydrates with high fiber content, sugar-sweetened beverages are nutrient-poor and are often associated with consumption of salty foods and fast foods. An emerging association between the increased consumption of sugar-sweetened beverages and chronic diseases such as type 2 diabetes, hypertension, and coronary heart disease is a major concern. A widely proposed explanation for this association is that caloric beverages elicit weak satiety and compensatory dietary responses. However, the evidence supporting this hypothesis remains inconclusive. Another potential explanation is the use of high-fructose corn syrup, a key ingredient in most sugar-sweetened beverages. Many studies have shown that dietary fructose promotes hepatic lipogenesis and the development of insulin resistance, thereby fueling the development of fatty liver disease and type 2 diabetes.

Three studies published recently. These studies provide strong evidence that there is a significant interaction between an important dietary factor — intake of sugar-sweetened beverages — and a genetic-predisposition score, obesity, and the risk of obesity. Hence, participants with a greater genetic predisposition may be more susceptible to the adverse effects of sugar-sweetened beverages on obesity; this is a clear example of gene–environment interaction. It is important to note, however, that this interaction is apparent only when a score is calculated from multiple genetic variants. The mechanisms accounting for the observed interaction are, unfortunately, not provided by the study. They describe the effects of interventions to reduce consumption of sugar-sweetened beverages on weight gain in normal-weight children and overweight and obese adolescents, respectively. Nevertheless, the results clearly suggest that masked replacement of a sugar-containing beverage (104 kcal) with a sugar-free beverage significantly reduced weight gain and fat accumulation in normal-weight children.

Taken together, that calories from sugar-sweetened beverages do matter. Furthermore, policy decisions about sugar-sweetened beverages should not be considered in isolation. Other strategies to achieve and maintain normal weight, including increasing physical activity, will be important to stem the obesity epidemic and its effects. The time has come to take action and strongly support and implement the recommendations from the Institute of Medicine, the American Heart Association, the Obesity Society, and many other

organizations to reduce consumption of sugar-sweetened beverages in both children and adults.

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