

Title: Sugar -Sweetened Beverages and Weight Gain in Children

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Purpose: The primary aim of this project is to find out if delivering non-caloric beverages to the homes of teenagers decreases their consumption of sugar-sweetened beverages and affects their overall diet quality and body weight.

Background: Researchers from Children's Hospital Boston and the Institute for Community Health will be conducting this innovative pilot study during the 2003-2004 academic year.

We expect to enroll a total of about 150 adolescents. The entire study will last 8 or 9 months. Participants will be randomly assigned to one of two groups. Group 1 will receive non-caloric beverages for 6 months, and Group 2 will receive these beverages for 1 month. Beverage deliveries will contain a prearranged combination of carbonated and non-carbonated beverages (like spring water, iced teas, lemonade, punch, diet sodas). Times of weekly deliveries will be coordinated with parents/guardians.

Weight and height will be measured and a smoking history will be obtained during the school day at times when students will not miss class. Students will keep beverage logs and bring them to school for pick-up by research staff. Dietary information will be collected from students by telephone during non-school time.

Project Rationale: The prevalence of obesity among children in the United States increased by over 100% during the last 2 decades. Recent national estimates indicate that approximately 25% of children are overweight. Sugar-sweetened beverage consumption is one factor that has received surprisingly little attention with regard to effects on weight gain.

According to data from the US Department of Agriculture (USDA), *per capita* soft drink consumption increased by almost 500% over the past 50 years. From 1989-91 to 1994-95, soft drink intake rose from 6.6 to 9.3 oz among the general population and from 11.7 to 19.3 oz among adolescent males. Half of all Americans and most adolescents (65% of females and 74% of males) consume soft drinks daily, the vast majority of which are sugar-sweetened, rather than "diet". Currently, soft drinks constitute the leading source of added sugars in the diet, amounting to 36.2 grams per day for adolescent females and 57.7 grams per day for adolescent males. These figures approach or exceed the limits for total added sugar consumption recommended by the USDA.

It is reasonable to hypothesize that the rising prevalence of obesity in children is linked to increases in sugar-sweetened beverage consumption. Compensation at subsequent meals for energy consumed in the form of a liquid may be less complete than for energy consumed in the form of a solid food. School-age children drinking an average of 9 oz or more of soft drinks per day consumed almost 200 kcal/day more total energy than those drinking no soft drinks. **However, the impact of reducing sugar-sweetened beverage consumption on body weight has not been previously tested in any**

long-term intervention studies. This study will provide data of immediate scientific and public health significance.

Participant Recruitment: A recruitment packet will be sent by mail to the parents/guardians of all students in grades 9 to 12. The packet will contain a brochure explaining the study, the informed consent document, screening forms, and a self-addressed postcard for the student and his/her parents to indicate their interest in participation. Those who express an interest in the study will receive a telephone call from the study research assistant, who will explain the study and answer questions. The parents/guardians of adolescents who decide to enroll will be asked to sign the informed consent document, and the adolescent subjects will be asked to provide written assent. The research assistant will collect signed documents and completed screening forms from the adolescents at school.

Compensation and Benefits

- Participants receive delivery of non-caloric beverages to their home that may have beneficial effects on diet quality and body weight due to possible decreased consumption of sugar-sweetened beverages.
- Participants who complete the study will receive a gift certificate to The Gap, in the amount of \$100.
- The Cambridge Rindge & Latin School will receive a \$1,000 stipend.
- Descriptive height and weight data will be provided to the school.
- Participation affords an opportunity to have a possible impact in curbing the youth obesity epidemic.