NOPREN Drinking Water Working Group

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Association of Caloric Intake From Sugar-Sweetened Beverages With Water Intake Among US Children and Young Adults in the 2011-2016 National Health and Nutrition Examination Survey

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Why are sugar-sweetened beverages important?

• Sugar-sweetened beverage consumption has been linked to many negative health conditions, such as weight gain, cavities, and type 2 diabetes.

• The 2015-2020 Dietary guidelines for Americans recommend reducing added sugars consumption to less than 10% of calories per day.
Declining SSB intake for kids since 2003

Bleich et al., 2018; Obesity, Volume: 26, Issue: 2, Pages: 432-441, First published: 14 November 2017, DOI: (10.1002/oby.22056)
Water as a key potential intervention point

• Substituting water for SSBs may reduce total energy intake (Wang et al., 2009)

• School-based interventions to displace SSBs by increasing water access were associated with decreased body mass index (Schwartz et al. 2016)

• However, how water consumption in daily life is associated with children’s caloric intake from SSBs is unclear.
Aims

• To assess what percentage of children and young adults did not consume water on a given day.

• To test whether the number of calories and percentage of total energy intake from SSBs differed among US children by water intake status on a given day.
Data Source: National Health and Nutrition Examination Survey (NHANES)

- Conducts interviews and examinations to assess the health and nutritional status
  - Representative of civilian, non-institutionalized, household population in the US
- Complex, multistage, probability sampling design
- Study sample:
  - $n = 8,400$ children 2-19 years
  - 2011-12 through 2015-16 survey cycles
Water Intake and SSB Measures

• 24 hour dietary recall
  • Water from all foods and liquids

• Water intake outcomes:
  • Plain water (% >0ml from tap and bottled)

• Sugar-sweetened beverages (SSBs) included:
  ▪ regular soda,
  ▪ fruit drinks (incl sweetened bottled waters and fruit juices and nectars with added sugars),
  ▪ sports and energy drinks,
  ▪ sweetened coffees and teas,
  ▪ other SSBs (including horchata and sugar cane beverages).

• SSBs do not include diet drinks [defined as approximately, < 40 kcal/240 mL of the beverage]; 100% fruit juice; beverages sweetened by the participant, including coffee and teas; alcohol; or flavored milks.
79.7% (SE, 1.0%) of children reported drinking plain water

Which means:

20% of US kids didn’t drink water on a given day
Overall effect of 93 kcal difference, but significant interaction between water drinking status and ethnicity
Significant interaction between water drinking status and age group – larger gap for 12-19 yr olds
Not drinking water was associated with 4.5% more calories from SSBs, NH white and black children consumed more than 10% of total calories from SSBs.
12-19 year olds consumed more than 10% of total calories from SSBs
Summary:

20% of US kids don’t drink water on a given day

Those who don’t drink water consume twice as many calories from sugary drinks as water drinkers and this varies across groups

Rosinger et al., 2019, JAMA Pediatrics
US children and young adults should drink water every day to help avoid excess caloric and sugar intake.
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Sensitivity analyses: Day 2

• Main effect for Day 2 (n=7,161) using day-2 dietary weights:
  • Not drinking water was associated with
    • 102 kcal (SE=21.2) more
    • 5.6% (SE=0.6) more total caloric intake