

Sugar-Sweetened Beverage and 100% Fruit Juice Consumption on Body Weight in Children and Adults: A Systematic Review and Meta-Analysis

Michelle Nguyen,¹ Sarah Jarvis,¹ Maria Tinajero,¹ Jiayue Yu,¹ Laura Chiavaroli,¹ Sonia Blanco Mejia,¹ Tauseef Khan,¹ Walter Willett,² Frank Hu,² Catherine Birken,¹ John Sievenpiper,¹ and Vasanti Malik¹

¹University of Toronto and ²Harvard T.H. Chan School of Public Health

Objectives: Sugar-sweetened beverages (SSBs) have been increasingly linked to the obesity epidemic, however, the evidence on 100% fruit juice and body weight remains controversial. The objective of this research was to synthesize the available evidence on SSBs and 100% fruit juice on body weight in children and adults.

Methods: MEDLINE, EMBASE, and Cochrane were searched through October 11th, 2020 for prospective cohort studies (≥ 6 months) and randomized controlled trials (RCTs) (≥ 2 weeks) assessing the effect of SSBs and 100% fruit juice on BMI and body weight in children and adults. Eligible trials assessed SSBs or 100% fruit juice added to the diet in adults, and reduced from the diet in children against a non-caloric control. Data were pooled using random effects models and presented as b coefficients with 95% CIs for cohort studies and mean differences (MD)s with 95% CIs for RCTs. Results are reported in compliance with the PRISMA guidelines, and the protocol was registered on PROSPERO (ID: CRD42020209915).

Results: Sixty-two articles were identified for SSBs: 40 in children (33 cohorts, 7 RCTs) and 22 in adults (14 cohorts, 8 RCTs), and 22 articles were identified for 100% fruit juice: 13 in children (13 cohorts, 0 RCTs), and 9 studies in adults (3 cohorts, 6 RCTs). Among cohort studies, each serving/day increase in SSB was associated with an increase in BMI in children and body weight in adults (0.06 kg/m²; 95% CI: 0.03, 0.10 and 0.47 kg; 95% CI: 0.24, 0.69, respectively). For 100% fruit juice, each serving/day increase was associated with an increase in body weight in adults (0.19 kg; 95% CI: 0.04, 0.34) while no association was found for children (0.02 kg/m²; 95% CI: -0.01, 0.05). RCTs in children indicated a reduction in BMI gain when SSB consumption was reduced (MD = -0.21 kg/m²; 95% CI: -0.42, 0.00). RCTs in adults indicated an increase in body weight when SSBs were added to the diet (MD = 0.76 kg; 95% CI: 0.51, 1.0), however no effect on weight was found for the addition of 100% fruit juice (MD = 0.08 kg; 95% CI: -0.79, 0.96).

Conclusions: SSB consumption promotes weight gain in both children and adults. Evidence from cohort studies indicate a positive association between 100% fruit juice and weight gain in adults and a marginal association among children. Findings from RCTs on 100% fruit juice in adults showed no effect, and there is a need for trials among children.

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