**Does the Consumption of Artificially Sweetened Beverages Compared to Sugar Sweetened Beverages Have An Effect on Weight in Children?**

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Childhood obesity is a major health problem worldwide with an increasing prevalence over the past 30 years. There are many negative early consequences of childhood obesity including but not limited to developing insulin resistance, hypertension, dyslipidemia, and type 2 diabetes. This list expands to also include having certain cancers, cardiovascular disease, and death at an early age when carried on into adulthood. The increase in prevalence of childhood obesity coincided with an increase in caloric intake among children and half of this increase came in the form of sugar sweetened beverages (SSB). Discussing weight loss and sound nutritional choices in children can be difficult; children or even their parents have difficulties grasping the associated long-term consequences. Parents often resist these discussions and poor dietary habits persist because parents purchase the food. Despite the fact that artificially sweetened beverages (ASB) exist in many “lighter” nutritional options, many people believe that ASBs cause weight gain in children despite the fact that the Food and Drug Administration (FDA) has released guidelines on the acceptable daily intake of all FDA-approved ASBs. This lack of clarity between the associations of weight with SSB vs. ASB makes a growing problem even more difficult to combat in healthcare. This led to my PICO question, does the consumption of artificially sweetened beverages compared to sugar sweetened beverages have an effect on weight in children?

An extensive review of the literature was performed using PubMed and Scopus using the following search terms: “BMI OR weight AND artificial sweetener AND beverage AND child OR adolescent” and “weight AND artificial sweetener AND children OR adolescent”. This search yielded 196 articles, and four relevant articles were used for this critical appraisal.

De Ruyter et al (2012) is a double-blinded randomized control trial performed in the Netherlands which concluded that the masked replacement of a sugar sweetened beverage with an artificially sweetened beverage significantly reduced weight gain and body fat in healthy children of normal weight and that the mean BMI z-score increased by 0.02 SD in the ASB as compared to 0.15 SD in the SSB group. The ASB group also gained significantly less body fat than the SSB group. This study was limited by lack of study completion and a study sample that may not have been representative of the true American population.

Ebbeling et al (2012) performed a randomized, partially blinded control trial performed in the United States which concluded that the replacement of sugar sweetened beverages with non-caloric beverages did not significantly improve body weight or BMI over a two year period. This study was limited by a smaller sample size and the use of self-report measures to determine endpoint values after a non-uniform intervention method.

Malik et al (2009) performed a meta-analysis that reviewed five randomized and quasi-randomized control trials which assessed the association of consumption of SSB and weight gain in children. This meta-analyses concluded that SSB consumption is associated with weight gain in children. The analyses was limited by publication bias, searches limited to the English language, a small effect size, data transformations and unexplained heterogeneity.

Reid et al (2016) performed a systematic review of reviewed randomized control trials and prospective observational cohort studies. The randomized control trials showed significant but contradictory effects on weight gain and the prospective cohort studies were unable to undergo appropriate subgroup analyses. This review concludes there is insufficient evidence to determine an association between early-life use of non-nutritive sugar exposure and long-term metabolic health.

The clinical bottom line of these four appraisals is that sugar sweetened beverages are associated with weight gain as compared to artificially sweetened beverages. However, no association can yet be determined between ASB and long-term metabolic health using the research data available. Efforts should be made to improve the randomization of study groups using outcome measures that can be more effectively analyzed. This would provide stronger evidence-based support for the development of any public policy regarding sugar sweetened beverages.

References

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