



Nutrition Society Congress 2024, 2–5 July 2024

Reducing free sugar intakes: the effects of dietary sweet taste modification on sweet taste perceptions and sweet food intake

A. D. Bielat¹, P. J. Rogers² and K. M. Appleton¹¹Department of Psychology, Faculty of Science and Technology, Bournemouth University, Bournemouth, UK²School of Psychological Science, University of Bristol, Bristol, UK

The World Health Organisation currently recommends a global reduction of free sugar intakes to reduce diet-related ill-health⁽¹⁾. One of the proposed strategies to achieve this reduction is to limit the consumption of all sweet-tasting foods and beverages, based on a rationale that regular exposure to dietary sweet taste increases preferences for all sweet-tasting foods and beverages, including those which contain free sugars⁽²⁾. Limited studies, however, have directly examined the effects of repeated dietary sweet taste exposure on subsequent preferences and intakes of sweettasting foods and beverages, with the existing literature exhibiting contradictions and failing to investigate the effects of whole-diet-sweet taste exposure on the outcomes of interest⁽³⁾.

This randomized controlled trial aimed to assess the effects of a whole-diet, six-day dietary sweet food and beverage intervention on sweet taste perceptions and intakes of sweet-tasting foods and beverages. A total of 104 adults were recruited and randomized to either: a) increase their sweet food intake ($n = 40$); b) decrease their sweet food intake ($n = 43$); or c) make no dietary change ($n = 21$); for six consecutive days. On day 0 (baseline) and day 7 (end), pleasantness, desire to eat, and sweet taste intensity were rated for six dietary items, and sweet food intake was measured in a buffet meal, as percentage weight and percentage energy consumed from sweet foods and beverages, weight of sugar consumed and percentage energy consumed from sugars.

Intention-to-treat analyses found no statistically-significant dietary exposure x time interactions for perceived pleasantness ($F(2, 101) = 2.04, p = .14, np^2 = .04$), desire to eat ($F(2, 101) = 1.49, p = .23, np^2 = .03$) or any measure of sweet food intake (largest $F = 2.53, p = .09$). A significant dietary exposure x time interaction was detected for sweet taste intensity ($F(2, 101) = 4.10, p = .02, np^2 = .08$), which showed that for participants in the decrease sweet food consumption group, sweet foods tasted sweeter post-intervention compared to baseline ($t(42) = 3.36, p < .01, M_{diff} = 6, SE = 2$). No effects were found in the increase sweet food consumption or no diet change groups (largest $t(39) = .38, p = .70$).

Our findings contradict the predictions made by public health institutions that dietary sweet taste exposure influences the intake of sweet-tasting foods and beverages, and that reduced exposure leads to reduced intakes⁽²⁾. They also suggest that, whilst the extent of dietary exposure to sweettasting foods and beverages affects sweet taste intensity, it does not affect the perceived pleasantness of or desire to eat other sweet-tasting foods.

References

1. World Health Organization (WHO) (2015) *Guideline: Sugars Intake for Adults and Children* [Available at: <https://www.int/publications/i/item/9789241549028>].
2. World Health Organization (WHO) (2016) *Regional Office for the Eastern Mediterranean* [Available at: <https://www.emro.who.int/media/news/who-policy-to-lower-sugarintake.html>].
3. Appleton KM, Tuorila H, Bertenshaw EJ *et al.* (2018) *Am J Clin Nutr* **107**(3), 405–419.