Sweet consumption and subsequent sweet food preferences and intakes:

Analysis Plan

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Analysis Plan

Data

Participants are randomized to increase their sweet food consumption, decrease their sweet food consumption or make no change to their usual diet.

Outcomes are sweet taste preferences, sweet food intakes, sweet taste intensity ratings, ratings of hunger and thirst and ratings of compliance with the intervention.

Sweet taste perceptions

Pleasantness, desire to eat and sweet taste intensity will be assessed on each test day using a taste perception test. Participants are instructed to consume bite-sized portions of six different foods, comprised of both sweet and non-sweet items of a range of textures. Participants are asked to rate pleasantness ('*How PLEASANT does this food taste to you right now?',* response anchors: '*not at all pleasant', 'extremely pleasant'*), desire to eat ('*Now, rate how strong your DESIRE TO EAT more of this food is right now?'* response anchors: '*not at all strong', 'extremely strong'*) and sweet taste intensity ('*How SWEET does this food taste to you right now?'* response anchors: '*not at all sweet', 'extremely sweet'*) using 100 mm visual analogue scales (VAS). Data are provided in mm from 0 to 100mm.

Sweet food intake

Sweet food intake will be assessed on each test day using an ad-libitum cold buffet-style breakfast. Participants will be presented with a variety of sweet and non-sweet foods and invited to consume as much or as little as they wish. All foods provided are commonly consumed for breakfast in the UK and have been previously been used to illustrate changes in intake over time. For each participant, foods are individually weighed before and after breakfast to allow calculations of the percentage weight consumed from sweet foods and sweet foods and beverages, percentage of energy consumed from sweet foods and sweet foods and beverages, the weight of sugar consumed from foods and from foods and beverages, and percentage of energy consumed from sugar from foods and foods and beverages. Data are provided in grams, kJ, and as percentages as appropriate.

Appetite

Hunger and thirst will be assessed using self-report ratings of '*How HUNGRY are you right now?',* response anchors: '*not at all', 'extremely*'; '*How FULL are you right now?',* response anchors: '*not at all', 'extremely'; and* '*How THIRSTY are you right now?',* response anchors: '*not at all', 'extremely';* using 100 mm visual analogue scales (VAS). Data are provided in mm from 0 to 100mm.

Compliance

Compliance with the intervention instructions will also be assessed at the end of the intervention period. Participants will be asked how well they adhered to the allocated diet ('*How well did you adhere (manage to keep) to your allocated diet?',* response anchors: '*not at all', 'extremely'),* how difficult they found it to adhere to the allocated diet ('*How difficult did you find it to adhere (manage to keep) to your allocated diet?',* response anchors: '*not at all', 'extremely*') and how different their allocated diet was from their usual diet ('*How different was your allocated diet from your usual diet?',* response anchors: '*not at all', 'extremely')*.

Responses will again be made using 100 mm VAS scales. Data will again be provided as mm from 0 to 100mm.

Analyses

Data for all outcome measures will be processed and collated using Microsoft Excel by one researcher who will remain blind to participant condition until all data have been checked and are confirmed.

Following unblinding, data will first be described, by participant group.

Prior to all analyses, data will be checked for normality and other violations of parametric assumptions. Violations will be addressed using corrections, e.g. Greenhouse Geisser, transformations or non-parametric tests will be used where appropriate.

For the taste perception measures, ratings for pleasantness, desire to eat and sweet taste intensity will be averaged across all sweet and non-sweet foods tested, resulting in two scores per outcome measure, one for sweet and one for non-sweet foods. These will then be analysed using 3 condition (increase sweet food consumption, decrease sweet food consumption, no diet change) x 2 time (day 0, day 7) x 2 food type (sweet foods, non-sweet foods) repeated-measures ANOVAs.

For sweet food intake measures, the weight of foods consumed in grams, will be calculated by subtracting the weight of foods returned to the kitchen from the amount served at breakfast, and used to calculate the percentage weight consumed from sweet foods and the percentage weight consumed from sweet foods and beverages. Manufacturer's information will then be used to calculate the percentage of energy consumed from sweet foods, percentage energy consumed from sweet foods and beverages, the weight of sugar consumed from foods, the weight of sugar consumed from sweet foods and beverages, the percentage of energy consumed from sugar from foods, and the percentage energy consumed from sugar from foods and beverages. Intake will then be analysed using 3 condition (increase sweet food consumption, decrease sweet food consumption, no diet change) x 2 time (day 0, day 7) repeated-measures ANOVAs.

Appetite will be assessed using 3 condition (increase sweet food consumption, decrease sweet food consumption, no diet change) x 2 time (day 0, day 7) repeated-measures ANOVAs, for each of the three measures.

Compliance will be assessed using 3 condition (increase sweet food consumption, decrease sweet food consumption, no diet change) x 2 time (day 0, day 7) repeated-measures ANOVAs.

Correlations between measures in the taste perception test and the subsequent intake measure will also be conducted.

Analyses will be undertaken on an intention-to-treat basis, with missing data imputed using models based on gender, age and baseline data. Per-protocol analyses may also be undertaken dependent on participant drop out and self-reported compliance.

Analyses will be conducted in SPSS (version 28.0.0.0) or Stata (version 15), as required. Data will be presented as means and standard deviations. Significance will be set at $p = 0.05$.