Review of: "Consumption of Beverage among Secondary and Intermediate Students in Riyadh Schools, Saudi Arabia: A Cross-Sectional Study"

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Potential competing interests: No potential competing interests to declare.

Important topic, but I do have a few comments regarding the methods for data collection and analysis employed by the researchers. As it happens, collecting information on food or beverage intake is very difficult and needs to be done carefully.

First, how exactly were the questions worded? Were students asked how much liquid they consumed YESTERDAY? (As is done in a 24-hour recall instrument). Or were they asked how much liquid they consume in 24 hours, ON THE AVERAGE? (As is done when a Food Frequency Questionnaire is employed). If the latter, how far into the past were the students asked to recall? Last week, last month, last three months, other? This is a really important question, because the actual instrument used to collect intake information determines the error structure of the observations. Observations collected using 24-hour recalls are subject to both between and within subject variability, and tend to be unbiased. But observations collected using frequency questionnaires are in principle only subject to between person variability and tend to be biased. In food consumption surveys, the gold standard is to administer repeated (typically two) 24-hr recalls on each participant. The replicate observations enable estimation of the “usual” or “typical” consumption per person per day because with more than one observation per person, it is possible to adjust the data by removing the effect of the within-person variation in consumption. See, e.g., Carriquiry (Journal of Nutrition, 2003).

Second, I was baffled by the non-random selection of parents. If not randomly, how were parents selected? What were the criteria for contacting some parents and not others? I wonder whether the resulting sample of participating students was representative of the population of students in Riyadh.

Third, Section 2.4 on determination of sample size is welcome, but the formulas are incomplete, and sentences appear to be unfinished. Please revise and provide complete formulas and well-constructed sentences.

Results are reported as mean +/- some measure of variation that I believe is a standard deviation of the observations rather than a standard error of the mean. The authors should instead present the standard error of the mean (SE), which is calculated as the standard deviation divided by the square root of the number of observations used in the calculation of the mean. Or a 95% confidence interval for the mean, calculated as mean +/- 1.96 * SE. With consumption data, that tend to be skewed to the right, it is often more appropriate to report median and various quantiles of the distribution of consumption, rather than mean and SE.

Finally, the authors should consider reporting results using no decimals. In the manuscript, consumption is reported in ml, with two decimals, which suggests a high level of precision. In reality, self-reported intakes are not precise, and therefore, it is not really appropriate to pretend otherwise by adding decimals to the already overly precise quantities expressed as ml/d.