Reviewer’s report

Title: FFQ versus repeated 24-hour recalls for estimating diet-related environmental impact

Version: 1 Date: 17 Sep 2018

Reviewer: Zach Conrad

Reviewer’s report:

The authors present an analysis of the relationship between dietary assessment methods, diet quality, and environmental impact. The authors should be commended on conducting a much-needed study, very relevant to current nutrition-environment debates, using a rigorous study design. The notable strengths of this study are:

* Analysis of the relationships between diet quality and environmental impact, using multiple measures of dietary assessment, multiple measures of diet quality, and multiple measures of environmental impact;

* Use of a composite environmental impact score instead of just one or two indicators of environmental impact; and

* Rigorous statistical assessment of variation and very good interpretation of observed variation.

Please find more specific comments below.

Introduction

Very well-written. Comprehensive yet also concise.

Methods

Lines 90-91: "Multiple 24hrs were administered throughout the two-year study period" - this is rather vague; please provide even an approximate frequency, even though it is specified in greater detail later (e.g., every 1-5 months).

It is confusing whether the data were collected longitudinally (line 88) or cross-sectionally (line 91). From Figure 1 it appears that the data were originally collected from 2,048 people (I assume from a longitudinal study), then the final sample was 1,169 (and were analyzed cross-sectionally). But the text is confusing because it doesn't specify that- it would be helpful if the authors would be more explicit in the text about how the final sample size was reached, and whether the data were originally collected from a longitudinal sample and why they are being analyzed cross-sectionally.
If the participants completed two 24HRs and one FFQ, how can this be a cross-sectional analysis?

Can the authors please clarify the temporal spacing between 24HRs and FFQs for each participant?

Please provide an explanation of the pReCiPe formula in standard mathematical notation. For example, underneath the formula please include "where GHGE represents greenhouse gas emissions in kg of CO2-equivalents", etc. Also, please specify what the values in the formula represent. I understand that the ReCiPe method is provided in citation 24, but this manuscript should provide enough detail on the methods for it to stand alone to some extent.

Line 157 and throughout: "Data" should be pluralized (i.e., "data were", rather than "data was").

Lines 160-162: Please specify how physical activity was categorized from a continuous variable to a categorical variable. Equal tertiles? Prespecified cutoff points?

Line 174: Do the authors mean that T represents the known intake? Also, if there was only one FFQ administered, how can there be a within-person error in the FFQ model?

Line 195: Usually, "diet-health" associations refer to the associations between a dietary exposure and a health outcome. Since the authors are not assessing health outcomes, I don't feel that this term is appropriate. Actually, I'm not clear on what the intended association is, so it would be appreciated if the authors would please clarify that (do they mean the association between dietary intake and diet quality?).

In the field of nutritional epidemiology, energy-adjustment is most often conducted using the residual method or the density method (Walter Willet has a fundamental paper on this from years ago). Can the authors please explain why they chose to energy-adjust by including energy as a model covariate?

Results

Lines 217-226: If the authors are comparing men vs. women (or any other groups, for that matter), they should be basing their statements on the results of statistical tests. Please indicate the type of test used and the results of those tests for each of the comparisons.

Can the authors please confirm that the values presented in Table 1 have been energy-adjusted? In other words, do men's diets have a greater environmental impact than women's diets simply because men consume more food (i.e. kcal)?

Table 1: Are these values from the 24HR or the FFQ? It seems that, instead of comparing men vs. women, the more relevant comparison is 24HR vs. FFQ.
Why does table 3 indicate that there are two replicates of the 24HR, while Table 2 does not? Was only one 24HR represented in Table 2? My understanding from the Methods section was that a mixed model was used to estimate usual intake using the 24HRs.

All tables: please present results of statistical tests of difference, and indicate the tests used.

Discussion

Line 295: Here the authors state that no gold standard exists, but earlier in the manuscript they stated that the 24HR was the gold standard. Please clarify.

Very well-written.

Level of interest
Please indicate how interesting you found the manuscript:

An exceptional article

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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