Reviewer's report

Title: Race and region have independent and synergistic effects on dietary intakes in black and white women

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Reviewer: Lisa Signorello

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Race and region have independent and synergistic effects on dietary intakes in black and white women, by Newby et al.

The authors describe a cross-sectional analysis of dietary patterns in a large study population of women, and how nutrient intake may vary by race, region, or both. Strengths of the study include its large size, the use of a well-established food frequency questionnaire for dietary assessment, and the availability of measurement-based data on covariates. My suggestions are as follows:

Major compulsory revisions:

1. The income and education differences between blacks and whites in this study are so large, and the nutrient differences between blacks and whites found are so small, it is possible that the black/white differences are a result of residual confounding by income or education. Socioeconomic status has a strong influence on diet. The authors should discuss the potential implications to their findings. Further, they should attempt to explore this issue using the data, to either confirm or alter their statements regarding race effects. For example, as one step, they could perform a sub-analysis among the group with income <$25,000 per year and see whether black/white differences disappear that were there previously.

2. Page 10, line 147. What proportion of the study population would have been dropped from the models had dummy variables for the covariates not been used? This statement raises concern that missing data was common.

3. Did the authors use any formal statistical testing (e.g., likelihood ratio test) of the race * region interaction? Also, was any consideration given to using a different cutoff for statistical significance (i.e., other than 0.05) to adjust for the multiple comparisons being made?

Minor essential revisions:

4. Page 10, lines 137-140. Actually, the number of nutrients examined is substantially larger than the few presented here. This should be changed to either list them all, or refer to the tables.

5. It is unclear from the text why some (i.e., few) nutrients are presented in Table
5 and not others.

6. Page 14, lines 227-229. The authors are probably aware the FFQs can provide a means of determining the RELATIVE intake of nutrients between groups, but are usually not an appropriate means of accurately determining ABSOLUTE intake. Therefore, their statement about overall fiber intake has dubious validity.

Discretionary revisions:

7. Page 4, lines 21-22: “The evidence on racial and regional disparities in diet among women is thus equivocal and limited”. I do not believe a case is made for this statement. The authors describe a number of studies, and indeed there are many more, that have examined either racial or regional differences in diet. The fact that the results of these studies vary has largely to do with their coverage of different decades, different geographical areas/states, different age groups, etc. The authors’ current study certainly adds to this existing literature, but again only as a reflection of their particular study,

8. Page 5, line 32: The authors should define or clarify “elsewhere”.

9. Page 5, line 40: The authors should clarify the breakdown of black and white among the 30,000.

10. In this Reviewer’s opinion, the paragraph on page 9, lines 119-124, is not necessary. First, the proportion of those who completed the FFQ (81%) is high enough to not warrant strong concern about analyzing a very selected group. Second, those who completed vs. did not complete the FFQ actually seem to be quite similar for many of the factors (e.g., mean BMI = 29.6 vs. 30.0 kg/m2), but the size of the study sample is driving the statistical significance, and so the fact that these are being called out as significant differences can be misleading to the reader. Finally, even acknowledging some real differences (e.g., there are clear differences for education and income), your analyses are internal to the (large) cohort subset who completed the FFQ and so does have internal validity.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.