Reviewer’s report

Title: In utero exposure to mercury and childhood overweight or obesity: counteracting effect of maternal folate status

Version: 0 Date: 03 Jul 2019

Reviewer: Andrea Cassidy-Bushrow

Reviewer's report:

This is an interesting study examining maternal mercury levels and childhood overweight. Importantly, this study provides evidence of a potentially important mitigating factor, maternal folate status in reducing the burden of Hg exposure on childhood overweight status. There are a few major concerns with the manuscript currently:

A large number of maternal-child pairs were excluding from the study. There is no description of why the subset of 1,551 mothers were selected for Hg measurement. Further, given that there is a risk of selection bias, methods to account for this should be considered in the analysis. Supplemental Table 1 shows that only race and smoking status differed between the excluded and included groups, but only a small number of factors were compared (what about maternal BMI, folate, fish consumption, or other factors of importance in this analysis)?

There is concern that the use of logistic regression/odds ratios may overestimate the effect sizes given the high prevalence of overweight in the sample (see Lovasi GS et al Open Epid J 2012;5:13-17). Please provide details on the number of BMI measures per child; it is somewhat confusing how this longitudinal data is presented.

There is no justification for the focus on the combined category of overweight and obesity. The study does not take advantage of the variability in the outcome data by reducing it to a dichotomous variable.

Minor comments:
The methods section on page 4 refers to supplemental figure 1 on pairs with completed data (lines 16-17); this figure doesn't seem to match the context of this section.

The figures appear mis-numbered in the text.
There are a number of typos and awkwardly worded sentences throughout the manuscript that would benefit from careful editing.

Although use of the medical record to obtain BMI data is a strength in reducing self-report bias, it is possible there are systematic measurement errors across different clinics, providers, etc… This is not addresses as a possible limitation.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Not applicable

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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

Needs some language corrections before being published

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