Reviewer’s report

Title: Associations of Physical Activity and Sedentary Behavior during Pregnancy with Gestational Diabetes Mellitus among Asian women in Singapore

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Reviewer: Lisa Chasan-Taber

Reviewer’s report:

The authors prospectively evaluated the association between physical activity (PA) and sedentary behavior (SB) with gestational diabetes mellitus (GDM) and related outcomes among 1083 Asian pregnant women in Singapore. The manuscript extends prior research in this area and the topic is timely and important. Concerns are generally addressable.

Overall Comments

1. Given that one of the authors' primary goals is to evaluate the presence of effect modification by prepregnancy BMI, the methods section should include a section on the statistical power to achieve this aim.

2. There are concerns about the large number of covariates included in adjusted regression models. While including key risk factors based upon the prior literature is reasonable, the lack of a data-based approach (e.g., the change-in-estimate procedure) may have led to reduced statistical power to detect associations, particularly in the stratified analyses.

3. There is some concern regarding the validity of the statistical analyses in that the confidence intervals for the adjusted models often appear to be narrower than those for the unadjusted models. This is even more surprising given the large number of covariates.

4. The authors excluded women missing data on even one covariate (almost 14% of the sample). Please repeat the analyses including these women (e.g., using a missing dummy variable category for the relevant covariate) and comment whether findings were changed - both in terms of magnitude and significance.

5. Please describe whether those eligible women who agreed to participate but were missing an OGTT, PA, or SB (i.e., 1236-1083=153 women) differed from those who completed the OGTT, PA, and SB (n=1083) according to sociodemographic or medical history factors.

6. Overall, the Discussion focuses on the findings from randomized trials instead of more carefully comparing the current findings to those of prior prospective cohort studies. Please revise to instead compare the magnitude of current findings (not just their statistical significance) to the magnitude of findings from similarly designed studies. Repeat this approach for each of
the primary outcome variables. It would also be helpful for the reader to clarify the PA cutpoints used in these highlighted prior studies.

7. Discussion section: On a related note, clarify how many prior studies evaluated effect modification of these associations by prepregnancy BMI, and carefully present the magnitude of their findings.

8. Discussion: add a few sentences commenting on the clinical significance of the observed changes in 2hPG levels.

9. There are a number of grammatical errors throughout the manuscript. The revision will need to be carefully reviewed for writing style.

10. Table 1. Please replace row percentages with column percentages, so that the reader can more readily detect differences in characteristics across GDM cases vs. noncases.

Specific Comments

11. Page 9. Clarify in the text that the WHO and IPAQ recommendations for PA (citations 11, 12, 47) are not specific to pregnant women. It might be useful to also give an example of what the cutpoints of 600 and 3000 represent (e.g., x hours per week of moderate intensity activity).

12. Page 10, line 187. Please clarify how 'exposure to smoking' was determined. As written, it could be confused with secondhand smoke. Perhaps revise to be 'smoking during pregnancy.'

13. Page 11. Clarify that of the 1247 women who agreed to participate, 11 were excluded from analysis for eligibility reasons, and that then an additional 153 were excluded for missing data. As written, it appears that they were all excluded for missing data.

14. Page 13, line 54. The comment that, "The above results remind unchanged" is grammatically incorrect, but is also likely too strongly worded. Instead perhaps the authors mean to say that the findings were substantively similar in terms of magnitude and statistical significance.

15. Page 14, line 269: please remove citation 20 from this sentence as this is a meta-analysis of randomized trials.

16. Page 14, line 282. The Dye study is quite dated (1997) and could be removed.

17. Page 15, lines 291-296. Move this section on the prior epidemiologic studies to come before the discussion of the potential physiologic rationale (e.g., move to line 282).
18. Page 15, lines 298-302. Suggest removing this section on a physiologic explanation for the association between sitting time and glucose levels, as the current study did not find such an association.

19. Page 16, line 318. Remove citation #46 as this citation is not relevant to the assertion that the magnitude of imprecision is acceptable.

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.

Yes

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

Yes

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