Reviewer’s report

**Title:** How diet, physical activity and psychosocial well-being interact in women with Gestational Diabetes Mellitus: An integrative review

**Version:** 0  **Date:** 11 Oct 2018

**Reviewer:** Mengying Li

**Reviewer's report:**

This is a systematic literature review investigating 1) how physical activity, diet and psychosocial well-being "interact" in women with GDM and in their offspring; 2) how effective interventions that address more than one domain of interest are in reducing risk factors such as anthropometry, metabolic laboratory control, delivery and other clinical features. Two observational studies and 15 interventional studies including at least two domains of interest (diet, physical activity and psychosocial well-being) were included. The observational study found that psychosocial well-being was positively associated with dietary quality and physical activity. The interventional study found that interventions combining diet and physical activity lead to increased physical activity and diet and lower stress perception; many of them also led to reduced BMI, improvements in some metabolic outcomes, reduced risk of type 2 diabetes after pregnancy and inconsistent birth outcomes. No intervention study has a psychosocial component. However, the conclusion regarding the "interactions" of psychosocial well-being with diet and physical activity and the recommendation of integrating psychosocial well-being in interventions were only vaguely supported by 2 observational studies and 1 or 2 intervention studies. Of equal importance, the study never addressed the question of whether combined intervention has better effects on the outcomes compared to interventions addressing a single domain - which is necessary to justify any combined intervention in the first place.

Other major comments:

1. The term "interact" is vague and misleading. Upon reading the word, I thought the study examines whether diet, physical activity and psychosocial wellbeing have synergistic effects on health outcomes (i.e., statistical interaction), where in fact it examined whether the three domains are correlated. A clearer term is needed.

2. The "clinical outcomes" needs to be prespecified in the inclusion criteria (page 8, line 162). Also, different outcomes were reported in different articles, thus there is a potential for publication bias - only significant findings were reported, as the author noted. This problem is augmented by the paper's lack of clearly prespecified outcomes - thus any significant
results reported in the articles were captured in the review. Maybe a formal test for publication base can be used.

3. Are the interventions during pregnancy or postpartum? This distinction has important implications and perhaps should be discussed separately. This point wasn't clear in the paper.

4. There is one study that compared women in the lifestyle intervention group to those without GDM (page 11, line 231-232). This study should not be included as the comparison does not demonstrate the effects of lifestyle interventions on GDM.

5. For outcomes reported in sufficient number of articles, meta-analysis may be used to synthesis the findings in a more formal way.

6. Although over adverse perinatal outcomes have been associated with the lifestyle interventions in the reviewed articles (page 21, line 473-479), this was never discussed as a potential downside to these interventions in the discussion.

7. There were large heterogeneities in the study intervention and follow-up period across studies, making interpretation of the findings difficult. The author may try to explain some of the differences in results in relation to this heterogeneity.

Minor comments:

1. Page 5, line 77: this is not how GDM was defined. Please check for the standard definition.

2. Page 5, line 79-80: should this be prevalence or incidents? Among whom? Also, the percentage seems high than what I know.

3. Page 8, line 154: why does the updated search in 2018 yield fewer articles than the older search in 2016?

4. Page 8, line 172: only dietary interventions, but not observational studies on dietary supplements were not excluded?

5. Is the JBI's checklist for analytical cross-sectional studies appropriate for the prospective cohort study? There are other checklists such as STROBE statement for observational studies. What's the difference between JBI's checklist for RCT and the CONSORT statement?
6. Page 10, line 209: "most" should be more than half.

7. Page 10, line 214: what is "intervention trials"? Does it have randomization and/or comparison group? Better specify it.

8. Page 22, line 497: depression, anxiety and sleep were searched but no article contain such information.

9. Page 22, line 504-505: this again implies that the three domains have synergistic effects on health outcomes, which this study did not investigate.


11. Page 27, line 641-643: this claim is not supported

12. Page 28, line 656-657: the RCT design per se addresses internal validity, but not generalizability.

**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.

No

**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.

Not relevant to this manuscript

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

Needs some language corrections before being published
**Declaration of competing interests**

Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal