Author's response to reviews

Title: Physical activity patterns during pregnancy through postpartum

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Response to the reviewers

Reviewer's report #1:

This is a very well written manuscript with a defined question that addresses a clear need in the scientific literature. The methods for recruitment of women and assessment of physical activity are clearly described and justified. The analyses and results are clear and appropriate, other than the omission of p values for the comparison listed below. The discussion and conclusions about the data are well balanced and supported by the data; however, an investigation of the demographic or psychosocial factors that predict the greatest increase in physical activity following delivery would substantially add to this manuscript and its conclusions. Also, the authors need to include in their limitations section the lack of objective measurement of physical activity (via accelerometers).

Major Compulsory Revisions

1) The authors need to report the p values for the differences between women who provided postpartum physical activity data and those who did not (top of page 5, parag. 1, sentence 1).

RESPONSE: We have moved this entire information in the manuscript to the methods section and revised the text to be more detailed. None of the comparisons were significant and we have noted this. Please see p. 5.

2) In the limitations section the authors should mention they did not have an objective measure of physical activity (i.e., accelerometer data).

RESPONSE: This important point has now been added to our limitations section and the sentence states: “Several limitations should be acknowledged. Physical activity measurement in our study was based on self-reports via interviews, which is not as accurate measurement method as some other used methods, such as accelerometers. However, it allowed for the characterization of the types of physical activities, not yet easily detected with accelerometry.” Please see p.8, last parag.
Minor Essential Revisions
none

Discretionary Revisions
1) The authors should consider conducting analyses to predict factors associated with a larger increase in physical activity during postpartum period (e.g., parity, BMI, etc.).

RESPONSE: We agree with the reviewer that the predictors of postpartum physical activity would bring important information. This is a significant undertaking, considering the various time periods and types of physical activity, and would be too much to include in this paper. We have not added this to our paper, but remained focused on describing change in physical activity.

Reviewer's report #2:
I think this is an interesting and timely study. However, the IOM has just come out with new guideline recommendations regarding BMI and weight gain during pregnancy. My suggestion is that the authors reanalyze their data to correspond to the more recent guidelines because the data as grouped by BMI are no longer valid. Because this is a descriptive study, regrouping the data would be worthwhile (see below).

Major Comments:
1) Abstract – There should be actual data listed in the abstract. Perhaps, changes in total MET/hours per week could be listed with p values?

RESPONSE: The MET h/wk values across the 4 time points are now added in the abstract. Also, we added the mean and median values in the results section to be consistent with the style of reporting.

2) Introduction – For third paragraph pg. 1, the authors should list all the time points measured. What is the hypothesis for their study?

RESPONSE: All 4 time points are now listed as suggested. We also added the hypothesis (p. 3, last sentence in the introduction): “We hypothesized that total physical activity would decline towards the end of pregnancy and increase by 12 months postpartum, with a shift in the types of physical activity from recreational and occupational activity towards care-giving and household oriented activity.”

3) Methods – How did your questionnaire distinguish between “physical activity” and “exercise”? Has your questionnaire been validated for postpartum women? This should be shown in methods as part of the procedure? A pregnancy questionnaire may not be valid for postpartum women?

RESPONSE: In the interviews, each mode (recreational, occupational, household, care giving, transportation) of physical activity was described with detailed examples. It was made clear than physical activity included a large variety of types of activity, not just exercise. Exercise was included as part of
recreational physical activity.

The questionnaire has not been validated in postpartum women, which is an important point to include in the text. We added a phrase indicating that this was not assessed in postpartum women. Please see p. 9, line 2.

4) Page 2– same section. As mentioned above, the BMI should be reevaluated according to the new IOM guidelines. This should also be rewritten on pg. 3 under Statistical methods.

RESPONSE:
We have discussed this issue with the co-authors and a PIN Study investigator, who also served on the IOM committee that created these new guidelines. In particular, she advised us to report BMI categories in effect during the study period. We have included a notation on this in the methods section.

5) Pg. 2 – why were 54 women greater than 5 months postpartum when they were contacted? Was the 12 month postpartum visit a home visit as well? Perhaps a chart of participants in numbers by time points that were completed would be helpful?

RESPONSE: The funding for the postpartum study was ascertained at a fairly late stage and some women were greater than 5 months postpartum at that time when the postpartum study was started. Therefore they were never included in the postpartum study as the time window for 3 months postpartum had already passed. These women, however, were part of the PIN study during their pregnancy.

The 12 month visit was home visit, as mentioned in the methods section, page 4; paragraph 2.

Adding a chart on participant flow would take extra space and increase the length of this paper unnecessarily. All exclusions are carefully listed in the text and give a precise description of our sample.

6) On page 3, under Statistical methods, does “other” mean Hispanic if there are non-Hispanic white, Non-Hispanic black?

RESPONSE: Other category mainly comprised Hispanics and Asian people, but was clearer to entitle as “other”, instead of listing all possible ethnic groups.

7) Pg. 4, results, par. 1 – What were the several important covariates? These should be listed and justified as to why they were considered as important?

RESPONSE: The several important covariates were age, race/ethnicity, education, marital status, parity, general health status, and pre-pregnancy BMI. They are now listed with the results. The covariates were selected as they have previously been reported to associate with physical activity. We added this information in the statistical methods section: “All GEE models were adjusted for factors known to associate with physical activity: age (16-25, 26-34, >=35 years),
race/ethnicity (Non-Hispanic white, Non-Hispanic black, other), education (<=12, 13-15, >=16 years), marital status (partnered or not), parity (0, 1, or more),
general health status (excellent or very good, good, fair or poor), and
pre-pregnancy BMI (underweight or normal weight, overweight or obese).”

8) Pg. 4, results, par. 2 – Does care mean child-care? Self-care? Care of elderly? Please explain. If care refers to child-care, why would this not increase up to 100% if all women now had an infant to look after? Why was this only 51% at 3 months and 58% at 12 months? Please explain as this does not make sense? This is also indicated on Figure 1, when the changes over time are examined.

RESPONSE: Care here means child and adult care-giving. We have changed the wording from “care” to “care-giving” throughout the paper to be more precise. The questionnaire included physical activity with intensity levels from somewhat light to very hard and thus not all activities were included. For example, sitting down and breast feeding did not qualify as care-giving physical activity. So, at 3 months postpartum, 51% of women reported any care-giving that was at least of somewhat light intensity. Later, at 12 months postpartum, 58% of women reported any care-giving. This is shown in Figure 1.

9) On pg. 5, when included and excluded participants are compared, the current cohort appears to be not generalizable to other populations of pregnant and postpartum women. Why is this cohort so different on all variables?

RESPONSE: We believe the way we presented the excluded participants was misleading, since it included women who became pregnant again or moved out of the study area (and thus ineligible for the study). It also included duplicate women – women who participated in the study more than once. We have revised this section. We note in the limitations section that generalizability still may be a concern.

10) Did you see different physical activity patterns based on pre-pregnant BMI? This would be interesting and new as this has not been done before? For example, were the normal weight women more active than the overweight or obese women, based on the new IOM guidelines?

RESPONSE: We concentrated on reporting the change in physical activity levels across different modes of activity. This is the first report on physical activity levels of the entire PIN postpartum study and we believe that a paper on the detailed modes of activities we reserves a study report of its own; there is hardly any literature on the change in physical activity in postpartum using a large sample. The postpartum weight change reserves a more detailed exploration itself and would lengthen this report extensively.

11) Do the women in your sample know about the ACOG guidelines? Would this not perhaps bias these results if they do not know of these guidelines?

RESPONSE: The study was started before the ACOG 2002 guidelines were released, but unfortunately we did not include any questions whether these women knew of the existing physical activity recommendations. This would be an
interesting question to study, though!

12) Did the authors examine physical activity patterns prior to pregnancy? You stated that many women resumed physical activity at 3 months post delivery but was this back to pre-pregnancy levels?

RESPONSE: Unfortunately pre-pregnancy physical activity was not examined with the same questionnaire. This is mentioned as a limitation in our discussion section. So we cannot make any speculations whether the rebounded activity levels were similar to pre-pregnancy levels.

13) What is the difference between Figures 1 and 2, they look very similar? Are the data similar just presented different ways?

RESPONSE: Figure 1 present the prevalence of women reporting any physical activity, while figure 2 shows proportions of how much time women spent in each mode of their total physical activity. For example, at 3 months postpartum, 51% of women did some care-giving physical activity of at least somewhat light intensity (Figure 1) and care-giving physical activity constituted 30% of all their physical activity (Figure 2). Figure 1 gives an answer to yes/no and Figure 2 an answer of how much of the total (in hours per week).

Minor Comments:
1) Abstract – line 9, add “the” before “past week”
RESPONSE: Added as suggested.

2) Pg. 3, line 2, add a “,” after “postpartum”.
RESPONSE: Added as suggested

3) Pg. 6, par. 2, line 6, changed “measured” to “conducted by telephone interview”
RESPONSE: Changed as suggested

4) Pg. 6, par. 3 line 2 and 3, change “loss” to “lost”
RESPONSE: Changed as suggested.