Author's response to reviews

Title: Trajectories of maternal sleep problems before and after childbirth: a longitudinal population-based study

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Author's response to reviews: see over
Dear Editor

Thank you for the positive response regarding the manuscript “Trajectories of maternal sleep problems before and after childbirth: a longitudinal population-based study.” We have now revised the manuscript according to the suggestions and comments from the reviewer.

1b. I don’t feel that this is an adequate response. The numbers do not differ “slightly” but instead in some instances by over 100. For example, between time B and C it is stated in the 2014 paper that 808 questionnaires were not returned. This drops to 667 in the current paper, but the number of returned Q2’s remains at 2943. Similarly between time C and D in the 2014 paper the numbers that did not return Q3 = 427, but this jumps up to 596 for the current manuscript. In addition, the number provided at time B (in the current manuscript), minus those that were not included or did not return their questionnaires does not equal the number provided at time C. Nor do the numbers add up at time D. Please check Figure 1 for accuracy but also I believe that a clear explanation of the why there are such large differences in numbers between the different paper that use the same dataset needs to be provided and added to the current manuscript.

- **Response:** Upon further examination, we realize that there were some errors in the originally submitted flow chart, causing the numbers to not add up. We apologize for this mistake. Having re-viewed our data, we have updated both the flow chart and corresponding text in the manuscript with correct values. To explain why the samples in the current study do not always match those of previous publications using the AHUS data, specifically the number of non-responders from C to D, the latest quality-assured data file released for research yielded some deviations in participants included. Due to momentary lag between the distribution of Q3 and the reminder to the participants, some respondents replied twice (n=36). At the same time, 133 participants were excluded due to failure to merge their questionnaire data with information in their electronic birth records. Since the difference in participants between times B (n=3 751) and C (n=2 943) was 808, the 131 participants who were not further included, either due to a new address or obstetric complications, should have been subtracted (808-131=677) in the 2014 paper. This error has been rectified in the current manuscript. To clarify the deviation between the samples in the current study from those in previous publications, we have added a sentence in the manuscript in the section titled *Study population and design*:

  “Note that the sample sizes at the different time points may deviate somewhat from previous AHUS publications due to small changes in the latest quality-assured data file released for research.”

2. The authors have provided demographic information on the responders and non-responders based on data collected at 17 weeks gestation. However, they have not addressed my comment about providing information on insomnia, short sleep and depression at the earlier time points for responders vs non-responders. I believe this is important as there may be an over or under representation of women with these concerns at the earlier time points. It also makes Table 3 impossible to interpret as, for example, it could be that women with insomnia at 2 years postpartum have chosen not to respond to latest wave of the study – rather than the prevalence of insomnia actually declining.
• Response: We apologize for not responding adequately on this important concern: We have now added the following paragraph under Sample characteristics addressing this issue:

“There were no significant differences on any of the sleep measures at T1 between women who had dropped out at either T2 or T3, and women who completed all waves. However, women dropping out after T1 had significantly more symptoms of depression than those who took part at all three time points (mean=5.9 [SD 4.7] versus 4.9 [SD 3.9], P < .001, respectively.”

As these findings indicate that there were no differences on any of the sleep measures between responders and non-responders, we consider Table 3 to still provide valid and important information on the stability of sleep problems.

3. The inclusion of depression at the earlier waves in models needs to be stated in the statistics section of the Methods (line 154).

• Response: This information has now been added at the end of Statistics.

Minor essential revisions:

Page 3, line 49: Perhaps re-phrase “Women have more Insomnia than men”. It is actually that greater numbers of women experience insomnia than men.

Page 3, line 64: Suggest sentence ends “continue beyond the first few months postpartum”

Page 3, line 69: Instead of “sustain” perhaps use “continue”

Page 3, line 71: Suggest insertion “…previous findings from the same data that is used in the current study…”

Page 4, line 93: ‘the’ missing

Page 4, line 107: suggest making last part of this sentence a new sentence

Page 8, lines 236-238: please revise as these sentences are difficult to follow.

Page 9, line 253: Declined “by” 2 years postpartum

Page 10, line 284: Remove the word “sufficient”

Page 10, line 294: Perhaps use the word measures instead of registrations.

• Response: We have now fixed the manuscript according to these suggestions.

Page 9, line 251: Why is sleep duration compared to women aged 40-44 years and not women closer in age to those in the cohort?
• Response: We agree that it would have been optimal to contrast our findings with a sample comprised of women with a more similar age. Unfortunately, the only large and nationally representative study in Norway that provide detailed information on sleep duration, is the Hordaland Health Study, and this study only included participants aged 40-44. And as sleep duration may vary across cultures and geographical region, we chose to retain this reference which is based on Norwegian individuals.

Page 9, line 257 and 258: Suggest providing the proportions of women experiencing insomnia in the general population and in the validation study of the BIS for comparison.

• Response: Information on the prevalence of insomnia among women in the general population has now been added to these sentences in the Discussion.

Page 10, line 303: I disagree with the statement that the response rates remained high. They were reasonable high from one time point to the next, but not relative to the number of women initially consenting to participate in the study. Also, a reference should be provided for the statement that a response rate of 50% after 3 time points in considered acceptable.

• Response: We are inclined to agree with this comment, and we have changed this section in the Discussion, which now reads:

“Also, the response rate across all 3 time points was not high, which may limit the generalizability of the sample. Unfortunately, the problem with non-participation in survey research seems to be on the rise [31]. It should also be noted that there were notable differences between the responders and non-responders, with responders being older, more educated, and more likely to be married/cohabitating. Of note, however, no differences in sleep were observed in women who completed all there waves compared to women who dropped out after T1 or T2.”

We believe that we have addressed the reviewer’s comments in full and hope that the manuscript is now acceptable for publication in BMC Pregnancy and Childbirth.

We look forward to hearing from you in due course.

Yours sincerely,

Børge Sivertsen