Reviewer’s report

Title: Maternal cell phone use in early pregnancy and child's language, communication and motor skills at 3 and 5 years: The Norwegian Mother and Child Cohort Study (MoBa)

Version: 0 Date: 23 Feb 2017

Reviewer: Valborg Baste

Reviewer's report:

Maternal cell phone use in early pregnancy and child's language, communication and motor skills at 3 and 5 years: The Norwegian Mother and Child Cohort Study (MoBa)

The study has a large sample with information on cell phone use collected at time of exposure and years before the self-reported outcome; the child's language, communication and motor skills at 3 and 5 years. These two conditions are a strength of the study. But, the information about cell phone exposure and utilization of data from the MoBa study is not gratifying and must be improved.

Major compulsory revisions:

Maternal cell phone use during pregnancy (page 4): The exposure from maternal cell phone use is essential. In this paragraph, maternal cell phone use, is (so called) categorized into 4 groups, the only thing done is changing of the words of the original categories - why? For instance "daily" is changed to "average", average in this situation says nothing about the use of the cell phone.

Further, the MoBa study also included question on duration of the call this is not mentioned in the manuscript. Duration of the call is important when assessing the mother's exposure of cell phone and should not be ignored. In an article from 2015, regarding maternal and paternal cell phone use and reproductive outcome, based on data from the Norwegian Mother and Child Cohort Study, a combined variable of the two questions was created. Why are not both questions, or a combination of these questions (for instance like the 2015 article) used in the current study?

Child language, communication and motor skills at 3 and 5 years (page 4): Language developments, what is the rationale behind assess 'the risk of low sentence complexity, by grouping any ratings below six'.

Low Motor skills were defined as the lowest tertile. The cutoff value for both ASQ at 3 year and CDI at 5 year must be given. How can the lowest tertile be calculated for the included study sample, include 23%? Why is not the ASQ cutoff-point for low motor skills at 3 year used?
Other characteristics (page 5): P6/L 21-24: Year of delivery was used in '… sensitivity analyses included stratified analysis by year of birth (1999-2004, 2005-2006, 2007-2009) to study the potential effect of changes in cell phone technology.' There are no references or arguments for choice of the three time periods.

In the MoBa study paternal questionnaire was distributed to the expectant fathers around week 15 of gestation. But, the question about paternal cell phone use, was regarding used 6 months before conception. And there were two different versions of the questionnaire, one with four response categories concerning cell phone use, and one with five response categories. None if these conditions are mentioned in the manuscript. How was paternal cell phone use defined? It is not clear why it is included in the manuscript, and why as an exposure in Supplementary table 8?

'Paternal use of cell phones during pregnancy was also assessed, but only 20,424 (45%) of the fathers provided information,' - This must be clarified, 75 200 fathers participated, 'provide information' about what?

Statistics: The presentation of statistical methods is not fully described. What model was used in general and how was the cluster of siblings within the mother accounted for.

Results and supplementary tables/figures: The chapter should be more succinct. Especially the two first paragraphs can be shortened. Figure 2A and 3A can be omitted, only mentioned gender in the text. Figure 1A and 1B could be merged, with each outcome grouped and for each outcome the OR for the three levels of exposures (instead of grouping the level of exposure and OR for each outcome). Similar could be done for Figure 2B and 3B.

Supplementary table 7 and 8 can be omitted, Table 7 due to same results as not taking into account siblings, and Table 8 because the paternal cell phone exposure is inadequate (see above comment).

Table 2: The n noted for the model is not the sum of the n given for the categories, and the % given in the table, cannot be calculated from the numbers given. Further, why is not the % given for 'Any use' (regards also table 3 and 4).

Discussion: It is unclear what possible mechanism of the RF-EMF field from the cell phone exposure could have in this study. Is it through the maternal head exposure or the possible exposure of the fetus through the abdomen?

The argument that the span of the recruitment years can be considered as a strength of the study, could rather be argued as a limitation. Changes in technology does not mean that everyone is
changing at the same time, so it would have been easier to assess cell phone exposure in a period
where the technology was more homogeneous. In the time period the cell phone use has
increasing while the RF-fields have been reduced with newer technology.

The authors claim that the main limitation is reporting exposure and outcome, however, this is
years apart and together with lots of possible exposures and outcomes. How could the
misclassification bias influence the results?

The conclusion in the abstract, ‘…which might be explained by enhanced maternal-child
communication among cell phone users.’ There was no association with communication skills,
and it has not been shown an enhanced maternal-child communication among cell phone users.

Minor comments: The language could be more succinct, for instance exclude confusing extra
words:

P3/L12; 'In spite of' (the findings have nothing to do with the numbers of studies) P3/L57; 'Now'
(the study enrollment ended 9 years ago) P4/L11; 'included' P5/L34,' We note that even
though' P13/L38 'Nevertheless, and similar …'

Insufficient information on abbreviation; OR, CI.

P3/L 35-39: One of the background arguments, interventions and monitoring of maternity and
antenatal health care is weak; it refers to two articles concerning use of text messaging, which
generates minimal RF fields. The references should either be deleted or commented in a relevant
way.

P5: A lot of possible confounders are listed; some of them seem odd, for instance folic acid
supplement, BMI. Include women with an extrovert personality as one of the confounders rather
than write 'We hypothesized …'.

P 13: The two first sentences belong to the method section.

P 13/L 38: School aged children, 5 years? and 'similar' referring to a Spanish study regarding 6
and 18 months?

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**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

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:

Acceptable

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.