Author’s response to reviews

Title: Prenatal Exposure to Extremely Low Frequency Magnetic Field and its Impact on fetal growth

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Responses to Comments

Re: #ENHE-D-18-00335

We thank the editor and the reviewers for these thoughtful comments. We have revised the manuscript accordingly. The revisions have been highlighted in yellow in the revised manuscript.

Reviewer reports:

Reviewer #1:

Comment 1. The definition of MF in this study has not been addressed and defined properly: Magnetic fields represent a wide spectrum of frequencies and sources, eg. extremely low frequency (ELF), or low frequencies (LF), and so on. The type of MF addressed should be defined and explained, not only in methods, but throughout the text.
Response:

Thanks for the comments. We have added the definition and type of magnetic fields in the Introduction section (Page 4, lines 73-74; Page 4, lines 78-81), and revised all related description throughout the manuscript.

Comment 2. Only measurements of (40-100 Hz) magnetic field were used in the exposure assessment with EMDEX. Exposure assessment, when based only on measurements, has some deficiencies: exposure of the study subjects to other frequencies (than 40-100 Hz) from other sources, is not detected. It is also unclear, if other information on other sources or historical exposures to magnetic fields was collected, eg, by questionnaire or interview, to get a more comprehensive information on MF exposure during 3rd trimester.

Furthermore, the validity of the 24-h EMDEX measurements when evaluating study subjects' exposure during the 3rd trimester, is not explained or discussed. How much is there misclassification of exposure of the study subjects - this is an important question when interpreting the study results.

Response:

Thanks for the comments. The current study examined the effect of extremely low frequency MF in the range 40-1000 Hz which was the range of the MF measuring meter EMDEX. In the interview, only the binary data whether to use some appliances or not was collected, it can’t reflect effective exposure time. Thus, the study finding may or may not apply to MF in other frequencies although they are on MF spectrum with different frequencies. We have revised the discussion section and a briefy description was given in the limitation (Page 14, lines 291-293).

In addition, according to the suggestion, we have already discussed the validity of 24-h EMDEX measurements as well as the impact of misclassification in the Discussion section (Page 13, lines 284-287; Page 14, lines 288-291).

Comment 3. High exposures are not present, which should be taken into account in the interpretation of results. In Tables 2 and 3, N of boys is 38 both in the P50, and P75 in the "above median" exposure categories. Please explain the exposure profile of the study subjects. Does this imply some difference of MF exposure between boys and girls? If so, it should be explained. The results of the study seem to be only indicative and should be interpreted cautiously due to potential misclassification of MF exposure of the study subjects and lack of higher exposures.

Response:

Thanks for the comments. Small sample size limited the analysis of association between high exposures and outcome. We added the corresponding limitation in the Discussion section (Page 14, lines 305-307).
In addition, we compared MF exposure level between boys and girls. Although the exposure level of girls was found slightly lower than that of boys, the difference was insignificant. Distributions of maternal MF exposure among boys and girls were added in Table 1, and described in the Result section (Page 10, lines 204-205).

Reviewer #2:

The topic is important and describe interesting and important study on the health effects (fetal growth) from magnetic fields emitted by daily Household electronic appliances. These appliances are commonly increasing in modern world and needs studies on the possible health impact on humans, especially when exposure is chronic. The study presented in the manuscript is well written, designed and performed. The analysis of results is very detailed. I have only minor correction.

Abstract row 31: "measurement of FM exposure", please correct "MF exposure".

Response:

We apologize for the error. We have made the correction accordingly.

Reviewer #3:

The article is written in a simple and concise manner. The reader can easily go through and understand the aims and findings.

The authors stated that when testing statistical associations, they adjusted for potential confounders (age, parity, etc.). Can the authors describe the way this adjustment was made?

Moreover, the difference of magnetic field exposure is statistically significant between different age groups. Can the authors give stratified analyses (like they for boy/girls) for different maternal age groups?

Finally, I do not know the journal policy on datasets, but probably it would be better to have them as supplementary material, and not "available on reasonable request"

Response:

Thanks for the comments. In the study, all the adjusted confounders were included in the model. We have added the description in the manuscript (Page 8, lines 179-180).

We have performed the analysis stratified by maternal age and presented the results in Supplementary Table S1, Table S2 and Table S3. At the same time, we have added this information in the method section (Page 9, lines 185-187) and in result section (Page 11, lines 232-234).
The provision of data will depend on the publication policy of the Journal.