Reviewer’s report

Title: Polyunsaturated fatty acids and child neurodevelopment among a population exposed to DDT: a cohort study

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Reviewer: Anna Choi

Reviewer's report:

This paper aims to assess the association between child neurodevelopment and maternal dietary intake of PUFAs during pregnancy among mothers who were environmentally exposed to DDT. The research issue of examining the mutual adjustment of DDT toxicity and nutrient benefit is of interest. However, the methods and the presentation of results require clarification and modification.

Specific comments:

1. What was the distribution of the prenatal maternal serum DDE concentrations? How were the levels compared to the WHO recommended guideline? Reporting such information is important as the low or high exposure levels might play a role in the relationship with the nutrients and the neurodevelopmental outcome. Furthermore, it will provide the readers a sense of the range these study subjects were exposed to.

2. Besides DDT, was the study population exposed to other contaminants, such as PCB, MeHg or PFAS? If so, were these compounds adjusted in the models?

3. The study was conducted to evaluate the association between prenatal maternal serum DDE levels and child development. However, the DDE concentrations were determined during the first trimester of pregnancy. What was the reason for measuring the serum levels at such early part of the pregnancy instead of say, at the third trimester or at delivery to reflect the prenatal exposure more closely?

4. Table 3 showed that dietary intake of ARA, EPA and DHA decreased significantly from the first to the third trimester, whereas the intake of LA and ALA increased significantly. Do the authors have any potential ideas as to why the change in the dietary intake among the expecting subjects?

5. Please cite a reference for the profile analysis used in the mixed effects models.
6. In the final model stated in lines 159-160, there were 2 "βs" (betas) in the interaction term: PUFAiβ*Bayley Scalesiβ. Wouldn't there be one estimate (β) in an interaction term? Please clarify. In addition, there would be βi for the covariates Xi's in the model? In general, stating the model in one line and using subscripts for the ij indices will make it clearer and easier to read.

7. The variable DDE is log base 2 transformed (lines 164-165), likely due to its skewed distribution?

8. It would be informative to specify the thinking behind performing a sensitivity analysis from 12 to 30 months of age (as opposed to another age range).

9. This study included 276 mother-child pairs. However, the number of participants included in breastfeeding in Table 1 was 279?

10. Table 2 showed the distributions of PDI and MDI scores for the 7 ages (in months). PDI appeared to be lowest at age 3 months and MDI was lowest at age 24 months. Do the authors have any thoughts on these differences?

11. The authors stated that the participants in the study were different than the non-participants in that the former had significantly longer breastfeeding duration, but scored lower HOME score and maternal IQ (as shown in Table 1). How might these differences between the two groups affect the conclusion of the results?

12. DPA should be spelled as Docosapentaenoic in Table 4 and Supplementary Table 1.

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