Author’s response to reviews

Title: Associations between trimester-specific gestational weight gains and childhood obesity at 5 years of age: results from Shanghai Obesity Cohort

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BPED-D-19-00055
Associations between trimester-specific gestational weight gains and childhood obesity at 5 years of age: results from Shanghai Obesity Cohort
Wenyi Lu; Xi Zhang; Jiang Wu; Xiaomeng Mao; Xiuhua Shen; Qian Chen; Jun Zhang; Lisu Huang; Qingya Tang

Dear Prof. Edna Yokoo,

We appreciate the opportunity of revising our manuscript titled "Associations between trimester-specific gestational weight gains and childhood obesity at 5 years of age: results from Shanghai Obesity Cohort." (BPED-D-19-00055) by Wenyi Lu. et al.

We have revised the manuscript based on the reviewer’s comments with the changes highlighted in red. And we have addressed all the comments point-by-point below. We found all the comments are very
valuable, and they have helped strengthen our manuscript.

With these improvements, we look forward to publishing our manuscript in the BMC Pediatrics.

Thank you for your consideration.

Sincerely yours,

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Response to Reviewer:
Response to samuel nkachukwu uwaezuoke, MB;BS FWACP (Reviewer 1):
Thanks very much for your comments on our paper. Overall the comments have been fair, encouraging and constructive. We have revised our paper according to your comments:
Comment 1:
The title may need to be modified to read "Association between trimester-specific gestational weight gain and childhood obesity at 5 years of age: results from Shanghai Obesity cohort".

Response:
Thanks for your suggestion. As suggested, we have modified the title to “Association between trimester-specific gestational weight gain and childhood obesity at 5 years of age: results from Shanghai Obesity cohort”.

Comment 2:
Your Abstract needs an extensive revision. For instance, under Objective, the background statement could read thus "It is still unclear if and at which trimester gestational weight gain is related to childhood adiposity." The aim could be made clearer thus "...to evaluate the association between trimester-specific gestational weight gain and body-fat compositions in Chinese children". Under Methods, please specify at what periods of gestation the maternal gestational weight was measured by trained nurses. The term you used frequently "body compositions" could better be rendered "body-fat compositions". You did not specify the p values and the level adopted for statistical significance, although you mentioned them in the body of the manuscript. Your conclusion was not clearly stated. The term "positively associated...." is better rendered "positively correlated with....at 5 years of age". Under the Introduction or Background, the first sentence should be revised. I suggest "The prevalence of childhood obesity constitutes a global health burden".

Response:
Thanks for your comments. All above suggestions have been revised in the abstract.
Comment 3:
Line 74 "...during the whole pregnant period" is ambiguous. Same for Line 75.

Response:
Thanks for your comments. “The maternal weight gain during the whole pregnant period” in Line 74 (now in Line 75) means total gestational weight gain, calculating the difference between the weight at the first and last prenatal visit just prior to delivery. And we have revised the sentence: However, most of these studies only used the total gestational weight gain as exposure factor other than trimester-specific GWG. (Line 74 – 75).

Comment 4:
Grammatical error is noted in Line 79 (now in Line 80).

Response:
Thanks for your comments. The error has been revised (now in Line 80).

Comment 5:
Under Methods, the sentences in Lines 111 to 112 are not clear. Ditto for lines 126, 129 and 144-146. In line 126, you state that "we examined abdominally obese children". Better to state "we examined children with truncal obesity".

Response:
Thanks for your comments. All the lines mentioned above have been well revised.
Line 111 to 112 (now Line 115 to 121): To evaluate the reliability of the calculated gestational weight gain, we conducted a study comparing calculated with clinically measured weight at gestational 13 weeks and 27 weeks. And we found that calculated weight was linearly correlated with clinically measured weight both at gestational 13 weeks and 27 weeks. The Pearson’s correlation coefficient is 0.989 for gestational 13 weeks and 0.994 for 27 weeks, respectively.

Line 126 (now Line 135): I am very sorry that my poor English may cause your misunderstanding. We evaluated the abdominal obesity by using waist-to-height ratio other than measured by bioelectrical impedance analysis, so it would be more appropriately to use “abdominal obesity” other than “truncal obesity”. Accordingly, we revised this sentence as “We used the waist-to-height ratio to evaluate the abdominal obesity in children”.

Line 129 (now Line 138): The duplicated information on Line 129 “We examined abdominally fat using the WHtR” have been deleted.

Line 144 – 146 (now Line 153 – 155): The information on duration of breastfeeding (< 6 months or ≥ 6 months) was collected via telephone interview when the child was 6 months old.

Comment 6:
Under Discussion, the sentences in lines 215-217 are ambiguous.

Response:
Thanks for your comments. This has been revised as following:
Line 215 – 217 (now Line 226 – 228): Our results suggested that larger 1st-trimester GWG was positively associated with higher BMI SD-scores at 2 and 5 years of age, and a higher risk of childhood overweight/obesity at 5 years of age.

Comment 7:
The Conclusion is not clearly stated. Poor syntax and grammar precluded proper understanding of this part of the manuscript.

Response:
Thanks for your comments. The whole conclusions have been thoroughly revised in both logic and language. We also made a proof language editing through the Wiley service. We hope current version of manuscript could satisfy your journal’s request.

Comment 8:
In your reference list, you did not use standard journal abbreviations based on index medicus. Even when journal names were written in full, you failed to capitalize the names properly.

Response:
Thanks for your comments. As suggested, we checked references and revised the incorrect journal abbreviations. Thank you!

Response to Sandra Costa Fonseca (Reviewer 2):
Thanks very much for your comments on our paper. Overall the comments have been fair, encouraging and constructive. We have learned much from it, and revised our paper according to your comments:

Methods
Comment 1:
Participants: As participants have been recruited from a tertiary hospital, it is necessary a definition of their clinical profile. Are these at-risk pregnant women?

Response:
Thanks for your comments. In China, there is no compulsory graded diagnosis and treatment, everyone can select and go to the hospital he/she wants to. Due to the better services provided by tertiary hospital, most pregnant women would select a near tertiary hospital. Thus, the pregnant women recruited from the tertiary hospital, but they were not high risk women.

Comment 2:
Data source: Did authors try to validate self-reported pre-pregnancy weight?

Response:
Thanks for your comments. We failed to validate self-reported pre-pregnancy weight in our study. We tried to validate it, but we failed to collect the weight in the medical records before the last menstrual period. Then we looked up previous similar studies. Some studies observed that self-reported pre-pregnancy weight has a high correlation with weight measurements. They suggested that reporting
error did not largely bias associations between pregnancy-related weight and birth outcomes, and self-report is a cost-effective and practical measurement approach. So we used the self-reported pre-pregnancy weight in this study [1, 2]. And we found that most similar studies relied on self-reported pre-pregnancy weight. They have the same limitation with us [3-6]. And the limitation about self-reported pre-pregnancy weight has been added in line 294 – 299.

References:

Comment 3:
Why some pairs were had not anthropometric measures at 1 and 2 years? What were the reasons for non-participation at each stage?
A flow diagram would be useful.

Response:
Thanks for your comments. Actually, we called every pair recruited during June 2012 – March 2013 for the follow-up when child was 6 months, 1, and 2 years of age. Some pairs refused the follow-up at 6 months, 1 and 2 years for some reasons. We recorded the reasons for the failure of follow-up, mostly due to the inconvenience of the follow-up. For example, the child was too young, or the parents were too busy, and so on. Rather than the real loss of follow-up. Although the pairs were not followed up earlier, we still called them for the follow-up at 5 years of age. As the cohort study was not only conducted to assess the association between gestational weight gain and childhood obesity. That's why some pairs were had not anthropometric measures at 1 and 2 years.
As suggested, the flow chat has been added in line 103.

Comment 4:
Bias: Authors must describe characteristics of "excluded" pairs. 31 pairs were excluded because they had missing data. Although they represent less than 6%, it is important to know if this loss was selective.

Response:
Thanks for your suggestion. Based on your suggestion, the table about the characteristics of 31
excluded pairs, and the difference between excluded pairs and included pairs were added in additional file 1. There was no significant difference in the characteristics between 31 excluded pairs who had missing data and included pairs, except for duration of breastfeeding. And we described it in Line 99 – 101.

Comment 5:
Study size: I would like to know how the authors arrived a sample of 539 patients. There is no commentary about size sample in methods section.

Response:
Thanks for your comments. I am very sorry that my poor English may cause your misunderstanding. Actually, we invited all pairs recruited during June 2012 – March 2013 for the follow-up at 5 years of age. However, only 539 pairs were willing to participate in and complete the follow-up. We have revised the sentence as following:
Line 93 – 96: We invited all the mother-offspring pairs for the 5-year-old follow-up during August 2017 - September 2017. Eventually 539 mother-offspring pairs completed the follow-up face to face by nutritionists and pediatricians at children’s 5 years of age.
And we discussed the limitation about loss to follow-up in discussion (line 292 – 294).
Line 292 – 294: First, there was a considerable loss to follow-up during the long study period, which would have resulted in bias, especially in the stratification analysis.

Comment 6:
Limitations
Authors affirm that "maternal gestational weight was measured in antenatal clinics and the correlation between estimated and exact measured weight was good."
How good? There are no results that support this affirmative. Pre-pregnancy weight is a crucial variable, as gestational weight gain in first trimester had the strongest associations with outcome. If there was no validation, authors must discuss possible bias and their directions.

Response:
Thanks for your comments. Since mothers may visit at variable gestational day, linear interpolation was applied to calculate gestational weight gain for the first and second trimesters. In order to evaluate the reliability of the calculated gestational weight gain, we conducted a study comparing calculated with clinically measured weight at gestational 13 weeks and 27 weeks by referring to previous studies. The Pearson’s correlation coefficient is 0.989 for gestational 13 weeks and 0.994 for 27 weeks, respectively. In some previous studies, the correlation was considered high if Pearson’s r > 0.9 [1, 2]. So we think the correlation between calculated and clinically measured weight is good.
About self-report pre-pregnancy weight, we failed to validate it.
As suggested, we have added the discussions about possible bias and their directions in Line 294 – 299.
Line 294 – 299: Second, the pregnant women weight was not measured in same gestational week and the pre-pregnancy weight was self-reported. Although some studies concluded that self-reported maternal gestational weight has a high correlation with weight measurement (39, 40), women generally underestimate their own weight (41), which may lead to a higher GWG than the actual value. And the association between GWG and childhood overweight/obesity would be enhanced.

References:


Comment 7:
Generalizability - As the setting was a tertiary hospital, are results applicable to general pregnant population?

Response:
Thanks for your comments. Although the participants were recruited from the tertiary hospital, they were not high risk pregnant women. And in the analysis, we have adjusted the confounding factors such as history of gestational diabetes mellitus and antibiotic use during pregnancy. So we think the results are applicable to general pregnant population.

Comment 8:
A substantial percentual (16%) had been underweight at 5-year-old and were excluded from the study. What was the clinical profile of these mothers?

Response:
Thanks for your comments. The characteristics of children with underweight have been added in Table 1. And because of the addition of underweight children, the median birth weight and trimester-specific gestational weight gain has been changed in Results (Line 184 – 193).

Thank you again for your consideration.

Sincerely yours,

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