Author’s response to reviews

Title: Parental smoking and blood pressure in children and adolescents: A national cross-sectional study in China

Authors:

Zilong Zhang (zhangzl@bjmu.edu.cn)
Jun Ma (majunt@bjmu.edu.cn)
Zhenghe Wang (18993198804@163.com)
Yanhui Dong (dongyanhui01@163.com)
Zhaogeng Yang (yzg345589601@163.com)
Bin Dong (bindong@bjmu.edu.cn)
Yinghua Ma (yinghuama@bjmu.edu.cn)

Version: 1 Date: 22 Feb 2019

Author’s response to reviews:

We greatly appreciate the reviewers for the thorough review on our manuscript and the valuable comments. We have made revisions accordingly, which are shown in the manuscript with tracked changes. We have also provided point-by-point responses to each reviewer’s comments, which are shown below in bolds for easy reference.

Reviewer 1:

The topic is extremely important and the aim absolutely appropriate. The paper is clear and well written.

Minor remarks:

Comment 1: The authors state that: "Blood pressure measurements were performed after 10-minute rest" while in the main paper describing methods (reference nr 20) 5 minute period is mentioned.
Response: We thank the reviewer for pointing out this issue. We have revised the sentences to keep consistent with Reference 20.

“Blood pressure measurement was performed after at least 5-minute rest with participants in seated position.” (Page 5, Line 92-94)

Comment 2: Description of blood pressure measurements should be more detailed. There is no information on the interval between BP measurements. In the Reference 20. 1-minute interval between the BP measurements is mentioned. It seems to be too short (ESC/ESG and AHA guidelines recommend 2 min)

Response: We have added the following information as suggested by the reviewer. We agree that the 1-minute interval is shorter than the ESC/ESG and AHA recommendations. The children were asked to keep quiet and to sit still during the measurement, so we believe that there should not be substantial variations between two measurements.

“Blood pressure was measured twice with 1-minute interval and children were asked to remain quiet and to sit still while each reading was being taken.” (Page 5, Line 96-98)

Comment 3: In the 80. row there is 599.59. It should be 59,959.

Response: We are sorry for the typing error and it has been corrected.

“Blood pressure measures were available for 599,59 children and adolescents.” (Page 4, Line 80)

Major comment:

Comment 4: The authors wrote that only 482 participants out of 59959 boys and girls reported smoking behaviors. It is hard to believe that less than 1% of children aged 7-18 y.o. smoke cigarettes in China. The HBSC results form 2013 show that in many European countries the rate was much higher eg. more than 10% of 15 y.o. children regularly smoked cigarettes. In China much more adults smoke than in Europe ... so, the rates in children can be expected also higher.

It raises doubts whether the questionnaire in children was performed anonymously. This is not stated in the manuscript. If so, the rate of actively smoking children would be much higher and the authors could measure combine effects of passive and active smoking esp. in adolescents. What was the age structure among those 482 active smokers? I would suggest a separate analysis for younger and older children (eg. 7-12 and 13-18). In younger it is much more probable that only the passive smoking effects were analysed.
Response: We thank the reviewer for the good suggestion. The questionnaire was non-anonymous. We agree that this may have resulted in underreported smoking rates.

The average age of the 482 active smokers was 13.8 (SD: 2.8) years and most of them were middle school or high school students. As suggested by the reviewer, we split the participants into two groups: younger students (7-12 years of age) and older students (13-18 years of age).

We found similar results in the younger group: exposure to parental smoking was associated with increased SBP and DBP and higher prevalence of hypertension in girls, although the association for DBP did not reach statistical significance; in younger boys, no significant associations were found, which was in line with our main analysis. Therefore, we think our results should not be seriously affected by active smoking.

We have included the subgroup analysis and related descriptions in our manuscript. We have also added the following sentences in Discussion to acknowledge the use of non-anonymous questionnaire as a limitation of our study.

“We also performed a subgroup analysis by classifying the study participants into two groups: younger group (7 -12 years of age) and older group (13 - 18 years of age). Active smoking is rare in younger children, and therefore findings from this group would be less likely to be affected by active smoking.” (Page 8, Line 128-131)

“In subgroup analysis, we found similar results in the younger group. Exposure to parental smoking was associated with increased blood pressure and higher prevalence of hypertension in girls, although the positive association between DBP and parental smoking did not reach statistical significance. No significant associations were found in younger boys. (Additional file 2)” (Page 8, Line 158-162)

“An additional limitation is that the questionnaire used in the present study was non-anonymous and this may have resulted in underreported active smoking rates. Consequently, it was possible that not all active smokers had been excluded and we were not able to completely rule out the influence of active smoking. However, in our subgroup analysis, we found similar results in the younger students, which were less likely to be affected by active smoking. Therefore, our overall findings on the adverse effects of parental smoking on blood pressure should not be seriously affected.” (Page 10, Line 204-210)
Reviewer 2:

GENERAL COMMENTS: The study under review is an important and interesting one. The report is generally well-written and does not cause serious critique. I have just one methodological suggestion and several observations regarding the sentences in need of revision.

Response: We thank the reviewer for the favoring comments. We have revised the manuscript accordingly.

ADDITIONAL REQUESTS/SUGGESTIONS:

Here are some suggestions and observations to take into account.

Comment 1: I did not find in the text whether the authors have examined the associations with paternal and maternal smoking separately and suggest testing this.

Response: We thank the reviewer for raising this question. Unlike some western countries, smoking rate is much higher in men than in women in China. (World Health Organization, 2015) This is true in our study as only 1.3% participants reported exposure to maternal smoking. (Page 5, Line 105-106) The low maternal smoking rate limited our ability to investigate the health effects of paternal smoking and maternal smoking separately. Therefore, we categorized parental smoking into two groups: non-exposure group (neither of the parent smoked) and exposure group (at least one parent smoked).

We did try to examine the effects of paternal smoking and participants reported exposure to maternal smoking were excluded. We found very similar results with our original findings. (Please see the table below). However, we prefer not to include the analysis on paternal smoking because and this may lead to some confusions to the readers. Also, it is difficult to biologically differentiate the effects of paternal smoking and maternal smoking. We hope the reviewer would agree.

Associations between exposure to paternal smoking and blood pressure and hypertension in children and adolescents

<table>
<thead>
<tr>
<th>Blood Pressure</th>
<th>Boys (N=21,186)</th>
<th>Girls (N=21,023)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coeff (95% CI)</td>
<td>P</td>
</tr>
<tr>
<td>SBP (mmHg)</td>
<td>0.06 (-0.21, 0.34)</td>
<td>0.65</td>
</tr>
</tbody>
</table>
DBP (mmHg) -0.01 (-0.22,0.21) 0.93 0.25 (0.03,0.46) 0.02
Hypertension (Odds ratio) 0.94 (0.86,1.01) 0.11 1.10 (1.01,1.20) 0.02

References:

Comment 2: Here is a link to one more related study:
Response: Please see our response above.

Comment 3: There are possible problems with comas in the table presented as Additional file 1.
Response: We are sorry for the typing errors and the table has been revised.

Comment 4: Table 1 is called "Characteristics of participants at baseline and over all visits". It seems that the words "at baseline and over all visits" are redundant.
Response: The title of Table 1 has been revised. (Page 16)

Comment 5: In lines 147-148: "The girls with exposure to parental smoking were 1.11 times more likely..." Odds ratios are not equal to the expression "times more likely". It would be more correct to write "The girls with exposure to parental smoking had 1.11 higher odds..." or similar.
Response: We thank the review for pointing out this issue. We have revised the relevant sentence.

“The girls with exposure to parental smoking had 1.11 higher odds of having hypertension than their counterparts without exposure [odds ratio (OR): 1.11, 95% CI: 1.02, 1.20].” (Page 7-8, Line 154-156)

Comment 6: In lines 169-170: "Another two studies in the U.S.10 and Iran..." – grammar
Response: We have revised the sentence.

“Two other studies in the US 10 and Iran 16 found that passive smoking was associated with higher prevalence of metabolic syndrome (MS), but not with elevated blood pressure, a single component of MS.” (Page 9, Line 180-182)

Comment 7: "We are not sure about the reasons responsible for the observed sex differences..." - "reasons" is not an appropriate word here.

Response: We have changed the phrase.

“We are not sure about the underlying mechanisms responsible for the observed sex differences…” (Page 9, Line 185-186)