Author’s response to reviews

Title: Blood pressure and hypertension prevalence among oldest-old in China for 16 year: based on CLHLS

Authors:

Jiaju Du (yaoyaolunwen@sina.com)
Guoning Zhu (baoxuebo@163.com)
Yanhong Yue (jhwang301@163.com)
Miao Liu (liumiaolmbxb@163.com)
Yao He (380753512@qq.com)

Version: 1 Date: 06 Jun 2019

Author’s response to reviews:

June 6, 2019

Re: BGTC-D-19-00304

"Blood pressure and hypertension prevalence among oldest-old in China for 16 year: based on CLHLS"

Dear Editor-in-chief and Reviewers:

Thank you very much for your positive comments on our manuscript and the opportunity to revise the paper. We are grateful for the reviewers’ constructive suggestions and our revised paper has incorporated all the suggestions. Below is our line by line response to the reviewers’ comments. We hope that the revised paper meets your approval for publication in BMC Geriatrics.

Sincerely

Miao Liu, Yao He

Institute of Geriatrics,
Chinese PLA General Hospital,
28 Fuxing Road, Beijing 100853, China.
Reviewers' comments

(Chenkai Wu, PhD, MPH, MS)

Reviewer 1 (Du):

This study examined the trend of hypertension prevalence among the oldest-old Chinese using a large, prospective cohort study. Given the scarcity of epidemiologic data on hypertension among the oldest-old in China, research findings from this study are of importance. However, there are a few major methodological issues:

1. Information about anti-hypertensive medication was unfortunately not available in the CLHLS, which precludes us knowing whether the measured BP was natural or treated. This will inevitably bias the estimate of hypertension prevalence (and also prevalence of awareness and control of hypertension), potentially by a lot.

Reply: Thanks for your careful review. As you mentioned, we didn’t have specific medication information, so this may lead bias to the result. Based on the opinions of several reviewers, the author decided to delete the awareness and control rates.

2. CLHLS has a longitudinal design, which means participants may have repeated measurements of BP in multiple waves. The authors need to use specialized statistical methods to deal with these correlated data.

Reply: Thanks for your careful review. We agree with you that there are some of the participants who have repeated measurements of BP in multiple waves. However, from the perspective of research design, this study is not a cohort study with multiple follow-up visits, but several cross-sectional surveys. In addition, only part of the subjects has multiple measurements, and most of the subjects only have one. For example, there nearly 40% new added participants in the 2014 survey wave. Based on the above considerations, this article is based on multiple cross-sectional survey design in different time periods to analyse the epidemic trend of hypertension. Therefore, conventional statistical methods are still used. In the future, multi-level methods will be used to analyse the trend of hypertension, taking into account the impact of multiple measurements.

3. A large amount of the CLHLS participants had limited remaining life since their first participation in the study, their BP may indicate the end of life instead of abnormal cardiovascular function. Some sensitivity analyses may be needed.
Reply: Thanks for your careful review. We agree with your suggestion and have added the sensitivity analyses, the results and table were listed in the revised result part in the manuscript and in the appendix table 7.

4. The authors used the 6th Chinese national census data, which were collected in 2010, to provide age- and sex-adjusted hypertension prevalence. This may create difficulties in interpreting the results as the first several waves of CLHLS data were collected over 10 years ago.

Reply: Thanks for your careful review. We have adjusted according to your suggestion. The age and gender adjusted prevalence of hypertension for the first four waves (1998, 2000, 2002, 2005) was calculated using the direct methods based on the fifth Chinese national census data, and the age and gender adjusted prevalence of hypertension for the last three waves (2008, 2011, 2014) was calculated using the direct methods based on the fifth Chinese national census data.

5. The authors did not specify the number of participants excluded from the present study due to missing BP or other key variables.

Reply: Thanks for your careful review. We have added the detailed number of participants due to missing information in appendix table 1.

Appendix Table1. General characteristic of the seven survey waves

<table>
<thead>
<tr>
<th>Wave</th>
<th>Total population</th>
<th>Total oldest-old</th>
<th>Excluded oldest-old due to missing information</th>
<th>Included population</th>
<th>Mean age</th>
<th>Male (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>9093</td>
<td>8959</td>
<td>265</td>
<td>8694</td>
<td>92.3±7.6</td>
<td>39.7</td>
</tr>
<tr>
<td>2000</td>
<td>11200</td>
<td>11162</td>
<td>354</td>
<td>10808</td>
<td>91.3±7.5</td>
<td>41.6</td>
</tr>
<tr>
<td>2002</td>
<td>16064</td>
<td>11175</td>
<td>102</td>
<td>11073</td>
<td>92.6±7.6</td>
<td>39.4</td>
</tr>
<tr>
<td>2005</td>
<td>15638</td>
<td>10658</td>
<td>160</td>
<td>10498</td>
<td>92.8±7.2</td>
<td>39.2</td>
</tr>
<tr>
<td>2008</td>
<td>16540</td>
<td>12002</td>
<td>701</td>
<td>11301</td>
<td>92.7±7.4</td>
<td>39.4</td>
</tr>
<tr>
<td>2011</td>
<td>9765</td>
<td>6530</td>
<td>129</td>
<td>6401</td>
<td>92.2±7.7</td>
<td>40.2</td>
</tr>
<tr>
<td>2014</td>
<td>7192</td>
<td>4738</td>
<td>151</td>
<td>4587</td>
<td>91.3±7.6</td>
<td>41.3</td>
</tr>
</tbody>
</table>

Reviewer 2 (Jane Masoli):

While this paper describes a study that provides blood pressure epidemiology for the oldest old in China and therefore may provide a useful contribution to very limited existing literature, in its current format I would not support publication. There were several major issues leading to this conclusion.
1. The main issue is that the English language fluency is inadequate in essential segments of the paper for the reader to interpret key aspects of the study design and results.

Reply: Thank you for your careful review. We have invited native speakers to edit the English language of the manuscript.

2. In addition, there is a failure to provide sufficient information in some of the key results - for example geographical regions are compared (which I would suggest omitting from any future submission) with an apparent lack of statistical testing - while other results are not sufficiently succinct - for example the DBP.

Reply: Thank you for your careful review. As you mentioned, there was insufficient information on geographical regions. Based on the opinions of several reviewers, the author decided to delete this variable.

3. I would query the methodology used to ascertain "awareness" of hypertension, which requires sound methodology to be relevant for interpretation. Interpretation of BP "control" requires a treatment status, which is not known in this study.

Reply: Thanks for your careful review. As you mentioned, we didn’t have specific medication information, so this may lead bias to the result. Based on the opinions of several reviewers, the author decided to delete the awareness and control rates.

Editor Comments:

The manuscript presents interesting data on an important issue in an understudied population. However, the reviewers have raised a number of issues with the paper. Of particular importance are the comments on awareness, treatment and control of hypertension, missing data and the statistical methods used. English language editing is also essential.

Reply: Thank you for the positive comment. We have answered the issues and questions raised by reviewers (see the line by line response to the reviewers’ comments above). In addition, we also invited native speakers to edit the English language of the manuscript.
Once again, we really appreciate the reviewers’ comments and suggestions, which are valuable in improving the quality of our manuscript.

Should you have any questions, please contact us without hesitate.

With kindest regards,

Sincerely yours,

Miao Liu, Yao He