November 30, 2019

Editor-in-Chief
Int. J. Environ. Res. Public Health

Dear Editors and Reviewers,

We are respectfully submitting a revised version of our manuscript, entitled "Relationship between the number of daily health-related behavioral risk factors and sleep health among the elderly in China", for your consideration for publication in the topical collection "Health Behavior and Public Health" of International Journal of Environmental Research and Public Health.

We very much appreciate the thoughtful and critical feedback. The reviewer 1 have requested some further clarification and revisions to our manuscript, which we have completed. The manuscript has been revised according to the reviewers’ comments, and all changes have been highlighted for ready identification. In addition, we have addressed each of the comments from you specifically, and our responses have been outlined in a comment/response format below (see responses to the comments).

We hope the revision is satisfactory, and this manuscript is now acceptable for publication in your journal.

I am looking forward to hearing from you soon.

Sincerely,

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Responses to the reviewers’ comments

COMMENTS

Please fully address comments 4, 5 and 10. I cannot see them being mentioned in the limitation section, or explained in the Results. The way you measure (and explain) sleep is fundamental to the scientific credence of this paper.

Comment 4) How was insufficient intake of vegetable and fruit defined?

Response: The China’s Health-Related Quality of Life Survey for Older Adults 2018 didn't ask about the specific intake of vegetables and fruits. Participants were asked to self-report whether they skip breakfast and/ or have an unbalanced diet like insufficient intake of vegetable and fruit. This is a limitation of this study, which we have mentioned in the Limitation section.

The first question is about skipping breakfast, The question is “How often do you skip breakfast? (1) Never, I have it every day; (2) I rarely skip breakfast; (3) I occasionally skip breakfast; (4) I often skip breakfast (5) Basically, I almost skip breakfast every day”.

Another question about eating habits is “Generally speaking, is your diet balanced? (1) Yes, I basically have a balanced diet of fruits, vegetables and meat; (2) No, I mainly eat meat and rarely eat fruits and/ or vegetables; (3) No, I mainly eat fruits and vegetables, basically do not eat meat”.

In this study, participants answered he/ she (3) occasionally skip breakfast/ (4) often skip breakfast/ (5) almost skip breakfast every day” and/ or “(2) mainly eat meat and rarely eat fruits and/ or vegetables/ (3) mainly eat fruits and vegetables, basically do not eat meat” was identified as unhealthy dietary behaviors.

Please see the revised text in the Methods section “2.2.2. Assessment of health risk behaviors”: 3) unhealthy dietary behaviors: individuals who self-reported to skip breakfast or have an unbalanced diet like insufficient intake of vegetable and fruit.

As for the bias that such subjective reporting may lead to, we have written in the limitations section that “Firstly, variables, including daily health-related behaviors, prevalence of sleep problems, and sleep quality were self-reported, even though the validity of these measures have been well established with respect to objective measures of epidemiological studies, and subjective reports of health outcomes, like sleep problems were commonly used in conventional epidemiological studies. [29, 32, 36] Secondly, recall bias due to false or inaccurate responses from the participants may play a role in our results.”

Comment 5) Can you clarify if in the question “The respondents were asked to answer the question as “whether you had the following sleep problems in the past 30 days: 1) do not have any sleep problem; 2) have trouble falling asleep; 3) dreaminess; 4) frequently wake up at night; 5) oversleep; 6) others” participants could specify how often in the past 30 days they experienced each sleep problem? Otherwise this would lead to extremely high
prevalence of sleep problems as participants with e.g. one sleep complaint will be in the same group as someone with daily sleep difficulties.

Response: We appreciate this thoughtful comment. But the questionnaire used standardized questions “yes-no” answers without reporting their frequency. Here’s the English translation of the question.

<table>
<thead>
<tr>
<th>Do you had the following sleep problems in the past 30 days</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I do not have any sleep problem</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 have trouble falling asleep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 dreaminess</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 frequently wake up at night</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 oversleep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Others, specify: _________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This is another limitation, which we have added in the discussion to explain the results, and also mentioned in the Limitation section.

We have added more detail to the Discussion section: “In the present study, 45.76% of the respondents self-reported having at least one sleep problem. The percentage is obviously high, which may be attributed to the method used in this study to measure sleep problems. Yet, findings of a comprehensive meta-analysis reported by researchers at the University of Macau [28] showed that the prevalence of sleep disturbances among Chinese older adults in rural areas was 44.0%, which is very similar to the result of this study. Furthermore, the fact is that most of the participants in this study were also from rural areas, but this is in line with the actual situation in China.”

We also mentioned in the Limitation section: “Firstly, variables, including daily health-related behaviors, prevalence of sleep problems, and sleep quality were self-reported, even though the validity of these measures have been well established with respect to objective measures of epidemiological studies, and subjective reports of health outcomes, like sleep problems were commonly used in conventional epidemiological studies. [29, 32, 36]”

and “Fourthly, the China's Health-Related Quality of Life Survey for Older Adults 2018 used standardized questions to measure sleep problems in the past 30 days without reporting their frequency. ”

Comment 10) In your limitations you say that “Thirdly, most of our participants are from rural areas, but this is in line with the actual situation in China”. Why is this a limitation? In fact I would like to see this discussed in the paper, and compared with other studies.

Response: We've removed these statements from the Limitation section.

We wrote in the Discussion section: “Furthermore, the fact is that most of the participants in this study were also from rural areas, but this is in line with the actual situation in China.” What’s more, sleep related health issue is overlooked in China. No national data on the prevalence of sleep health, like insomnia, sleep apnoea, and other sleep disorders
have been reported, nor have studies specifically targeted at sleep problems of the elderly been conducted.

Again, we very much appreciate the thoughtful and critical feedback from the reviewer.