Author’s response to reviews

Title: Potential gains in health-adjusted life expectancy from reducing four main non-communicable diseases among Chinese elderly

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Version: 1 Date: 08 Nov 2018

Author’s response to reviews:

Dear Dr. Tovah Honor Aronin and Dr. Helen Roberton,

Many thanks for giving us an opportunity to revise our manuscript. We appreciate editors and reviewers very much for these positive and constructive comments and suggestions on our manuscript entitled “Potential gains in health-adjusted life expectancy from reducing four main non-communicable diseases among Chinese elderly” (BGTC-D-18-00323).

We have studied reviewers’ comments carefully and made revisions accordingly. Revised portion were marked in yellow with modification tracks in the manuscript. Attached please find the revised version, which we would like to submit for your kind consideration.

Looking forward to hearing from you!

Thank you and best regards!

Yours sincerely,
Reviewer Comments to Author:

Ma Stefan (Reviewer 1): General comments:

This is a well written paper and interesting study which quantified the potential gains in health adjusted life expectancies if four major non communicable diseases would be hypothetically eliminated among Chinese elderly in China.

This is an ambitious but good attempt to adopt cause deletion method that is commonly used in the cause deleted lift expectancy, but this time it modified the method to incorporate cause deleted disability prevalence in addition to cause deleted probabilities of dying in life table to calculate cause deleted health expectancies. However, there are some issues that didn't explain and address in the study as follows:

1. In page 6, 1st formula: It assumed that all D_ik deaths were able to be eliminated, but in reality, there is impossible to eliminate all upstream associated risk factors. Likewise, it also assumed that this assumption held for YLD_r_ik in the subsequent 2nd formula.

Re: It is exactly true as Reviewer suggested. Thus, we have added this point in discussion according to the Reviewer’s suggestion. Please see in page 11, Lines 27-31.

2. For these four major non communicable diseases studied, it assumed each of them were mutually exclusive or independent. However this is not the case as these diseases shared with some common risk factors.

Re: As Reviewer suggested, we have added this point in discussion. Please see in page 11, Lines 31-34.

3. This study is only focusing elderly, but it didn't explain in more details why they don't look into expectancies at birth? Above issues are expected to be discussed or addressed somewhere in paper.

Re: Considering Reviewer’s suggestion, we added explain in introduction and discussion. Please see in page 3, line 8; page 4, lines 30-31; and page 11, lines 38-41.

Specific comments:

1. In page 2, 1st line of 2nd para: it should be no 's' after disease.
Re: We are very sorry for our incorrect writing and have deleted the ‘s’ after disease accordingly. Please see in page 2, line 8.

2. In pages 5, 6: please specify 'w' from the 2 LE formulae.

Re: Considering the Reviewer’s comment, we have added introduction of ‘w’ in the two formulas. Please see in page 6, line 4-5 and line 28.

3. In page 4, line 2: it should be CRD instead of cancers.

Re: We have modified it accordingly. Please see in page 4, line 1.

In tables 1, 2: in addition to present delta of two HALEs, it is better to present % differences of HALE without elimination as it can help readers understand the relative gains.

Re: According to Reviewer’s suggestion, we added the results about the proportion of potential gains in HALE without elimination and relative explanation. Please see in page 8 and page 9.

Special thanks to you for your useful comments.

Reviewer 2:

PEER REVIEWER ASSESSMENTS:

OBJECTIVE - Full research articles: is there a clear objective that addresses a testable research question(s) (brief or other article types: is there a clear objective)?

Yes - there is a clear objective

DESIGN - Is the current approach (including controls and analysis protocols) appropriate for the objective?

Yes - the approach is appropriate

EXECUTION - Are the experiments and analyses performed with technical rigor to allow confidence in the results?

Yes - experiments and analyses were performed appropriately
INTERPRETATION - Is the current interpretation/discussion of the results reasonable and not overstated?

No - there are minor issues

OVERALL MANUSCRIPT POTENTIAL - Could an appropriately REVISED version of this work represent a technically sound contribution?

Probably - with minor revisions

PEER REVIEWER COMMENTS:

GENERAL COMMENTS:

Overall this paper seems to have a sound research question and appropriate methodology. Some minor comments to consider:

1) The introduction is far too long: it should be three paragraphs as a maximum. Some minor grammatical English errors can also be found throughout the manuscript.

Re: We have re-written the part of introduction and cut it into three paragraphs according to the Reviewer’s suggestion. Please see in page 3, lines 3-4, lines 21-23, lines 31-35, and lines 40-43; and page 4 lines 4-7, and lines 14-21. We moved some sentences to the discussion section. Please see in page 11, lines 12-14.

As Reviewer suggested, we have revised some grammatical errors. Please see in page 2, line 8 and lines 18-19; page 3, line 30 and line 39; page 4, line 3 and lines 22-23; page 6, line 7; page 7, lines 1-2, line 7, lines 15-16 and line 18; page 10, line 4, lines 9-11, line 24, line 28, and line 30; and page 11, line 11, line 19, lines 34-38, and line 44.

2) Paragraph 1 of results: Make sure you are specific with which year you are referring to when describing these results

Re: We have made corrections according to the Reviewer’s comments. Paragraph 1 of results aimed to describe the change of HALE from 1990 to 2016 comparing Table 1 and Table 2. Please see in page 6, lines 37-38 and page 7 line 6, line 13.

3) Be specific when describing all results. For example, when describing CRD it is confusing to say that HALE didn't decreased, but the gains in HALE after removing CRD were not as great in 2016 as they were in 1990 - I assume this is most likely because CRD is far less prevalent in 2016 than 1990, coinciding with declining smoking rates - which should be commented on.
Re: It is quiet true as Reviewer suggested. We have revised this point accordingly. Please see in page 7, lines 22-25 and lines 29-32.

4) in the discussion (paragraph #4), the authors suggest males will benefit more in terms of HALE by removing these 4 NCDS - when in fact, your data suggests females benefit the most.

Re: We have re-written this part according to the Reviewer’s suggestion. Please see in page 10, lines 36-41.

5) Can the authors comment on the ethnic breakdown in China? Are there differences in regions/ethnicity? Are there data on differences such as rural vs. urban that could be explored to add to this manuscript?

Re: It is quiet true as Reviewer suggested that there are differences in HALE in rural and urban area in China. While the public data in Global Burden of Disease 2016 of China were just on the country level. We have added this comment as a limitation in the part of discussion. Please see in page 11, lines 41-43.

6) include details of how CVD, DM, CRD and cancer are defined.

Re: Considering the Reviewer’s suggestion, we have added the details of CVD, DM, CRD and cancers in the part of method. Please see in page 5, lines 19-34 and additional file 1.

7) Are there any limitations with the model used for estimating HALE that should be acknowledged such as assumptions made, or the data used?

Re: We have added limitations about the assumptions made in this model according to Reviewer’s suggestion. Please see in page 11, lines 27-34.

8) I think it is worth commenting that the greatest gains in HALE will occur by preventing NCDs in the youngest age groups. 60-69 for example may be the best group for targeted intervention

Re: Considering the Reviewer’s suggestion, we have added this point in the part of discussion. Please see in page 10, lines 41-44.

Special thanks to you for your useful comments.

REQUESTED REVISIONS:

See my comments above
We appreciate for editors and reviewers' warm work earnestly, and hope that the corrections will meet with approval.

We tried our best to improve the manuscript and made some revisions according to the guidelines for authors in your journal. We contained a Declarations section including the mandatory sub-sections in the manuscript. We have revised the statement in “Availability of data and materials” section (page 12, lines 31-32 and line 34) and added a separate section of additional file (page 16, lines 38-40). In addition, a professor who is fluent in English reviewed this revised version. These changes would not influence the content and framework of the paper.

Once again, thank you very much for your comments and suggestions.