Author's response to reviews

Title: Contextual socioeconomic determinants of cardiovascular risk factors in rural south-west China: A multilevel analysis

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Author's response to reviews: see over
Cover Letter

To editors of BMC Public Health

Dear Sir or Madam:

I am submitting the revised manuscript “Contextual socioeconomic determinants of cardiovascular risk factors in rural south-west China: A multilevel analysis” (MS: 1713454718116369) to BMC Public Health. I have addressed my responses to the comments in the revised manuscript, and given a point-by-point explanation to the concerns in this cover letter.

The revisions/additions of the content are underlined whereas the English language corrections have been made in the normal text format to avoid confusion.

Best wishes.

Cai Le

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Reviewer: Georgios Lyratzopolos

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

(1) Title and overall use in the text of term “contextual”. Why not “environmental” or “community”, instead of contextual. Epidemiological terminology is inconsistent and changing, and although use of “contextual” may be acceptable, I would wish that the authors somewhere in discussion entertain its relative merits and dismerits and reflect on the preference for this term.

The merit of contextual analysis and its public health implications are given in the introduction (background).

(2) Abstract, conclusion. Very brief, and “out of the blue”. As presented, it is too strong a statement, and not justified by the evidence presented –which is a survey, and not a community intervention study itself. I would recommend that some more sentences/words are expended in this section, and it is a) first acknowledged that contextual factors may be important b), given “a”, that interventions at community level may therefore be important.

The whole abstract has been revised as per the reviewer’s recommendations

(3) Page 6, Methods. Three BP measurements –BP measures were based on the average of three BP readings. This is a bit unusual, I believe, certainly going by Health Survey for England/Scotland standard (reject 1st, and keep average of 2nd-3rd measurement), and also by MONICA standards. Somewhere in methods discuss issue –comparability.

We have added some sentences to discuss the comparability, please see Methods section, Page 6, para 3rd.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

(1) Results are very wordy, a lot of findings, serially exposed. Try editing?

We have removed sentences related to individual-level variables, and restricted to state village effect estimates. Please see Page 10, para 2nd.

(2) Idem, Tables could do with some more explanation in legends and or footnotes.

We have explained more meaning of parameters in legends or footnotes. Please see Table 2, 3 and 5.
(3) What B value means (in Table 5) should be explained a bit in Statistical analysis section of Methods, and in Table (e.g. footnote).

The importance of standardized coefficients to allow comparison across effects of different determinants is given in the method section. Please see Page 9, 1st para.

Reviewer: Anne A Kavanagh

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

This a large multilevel study of cardiovascular risk factors in China. The findings are of enormous interest and the study was well-conducted. My main concern is that the way the paper is currently written it is difficult to understand what the aims are, as well as to follow the methods and analysis and discussion. I make the following recommendations for improvement.

1. I suggest that they have someone who has excellent English to read the manuscript and improve expression.

It has been revised as per your kind advice.

2. The abstract is difficult to follow. At first I read that the sample size was only 200. It wasn’t until later that I realized that it was 6000. Please rework the abstract to show this.

We have revised the abstract. Please see Abstract section, Methods.

3. The introduction is poorly structured and I could not understand what they were trying to say in many parts. For example:
   a. what is meant by ‘Knowledge of the whole neighbourhood”? The sentence that this phrase is in is impossible to understand. (sentence 2, para 3 of intro)

The Introduction section is revised for clearer sentence with more explanation on the importance of contextual determinant of health.

   b. Likewise the last sentence of 3rd para is difficult to understand.

The Introduction section is revised for clearer sentence with more explanation on the importance of contextual determinant of health.

   c. I do not follow the argument about genetic factors.
Hopefully, the explanations given in the introduction is understandable. Otherwise, we are ready to re-revise.

d. There are a number of contextual SES characteristics used: population density, literacy levels, percent ethnic minorities, mean income and distance from city. As I am unfamiliar with China, and many other readers will be, they need to argue why they include these different measures of contextual SES. Clearer argument about the conceptual underpinnings of each of these variables will aid interpretation.

We have added some interpretations about these variables. Please see Page 4, 2nd para.

e. At the end of the introduction the authors need to make clear how their proposed study contributes to knowledge.

It has been revised as per your kind advice.

2. The methods need considerable improvement also.

a. How were the independent variables fitted: continuous or categorical etc?

We have added some sentences to explain it. Please see Page 8.

b. The statistical analysis section needs attention. They do not state whether they are doing ML linear or logistic regression. Presumably the analyses of current smokers and drinkers were logistic.

We have added some sentences to explain it. Please see Page 8, statistical analysis section.

c. They do not make clear what variables are included in the models. Is the idea to put all the individual variables and fit models for each of the contextual variables separately or are they all in the one model?

We have explained it. Please see Page 8, statistical analysis section.

4. Results:

(1) The presentation of the findings of table 5 needs improvement. It would be useful for key findings to repeat the effect estimates here. Sentence beginning “For individual SESE variables... This sentence goes onto to discuss the effect of age but it says it is about individual SES?? I suggest they restrict their discussion to area-level variables only.
We have removed sentences related to individual-level variables, and restricted to state village effect estimates. Please see Page 10, para 2nd.

(2) At the end of the results they say they tested every possible interaction but none were significant. Is this true? Why did they do this? This was not in the method. They should only include interactions if they think they are plausible.

We have included the method of interaction in Method section. Please see Page 9, para 1st. We have tested every possible interaction, although there are some significant interactions between or within contextual variables and individual variables, no sensible significant interactions between them.

5. Discussion

(1) The first paragraph is almost completely repetitive of the last para of the results. This para needs to be more focused and direct the reader to key findings.

We have revised the paragraph, and shorted the sentences. Please see Page 10, Discussion section, Para 1st.

(2) Overall this section needs to be more interpretative and less about restating the results. eg how might you interpret associations between adult literacy levels and CVD risk factors. What might future work examine and what might be potential interventions.

Done as suggested.

(3) The last sentence of 3rd para is very unclear. What is associated with ethnicity: drinking or literacy level or both?

Done as suggested.

(4) I am unclear as to why the argue for genetic influences in the last sentence of para 4.

Explanation is given in the Introduction.

(5) I suggest that rework the discussion. Shorten it, highlight important findings only and make clear recommendations about future research and outline more clearly the significance of their findings for health promotion and policy.

Changed substantially, isn't it?
Editors’ issues:

1. We have added an ethical approval section, please see Page 7.

2. The expression of English has been greatly improved by a native English speaker.