Author’s response to reviews

Title: Measurement and explanation of socioeconomic inequality in catastrophic health care expenditure: evidence from the rural areas of Shaanxi Province

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Author’s response to reviews: see over
Dear Editors and Reviewers:

Thank you for your helpful comments on our manuscript entitled “Measurement and explanation of socioeconomic inequality in catastrophic health care expenditure: evidence from the rural areas of Shaanxi Province” (ID: 8590133731405900). We have revised the manuscript following your suggestions and we feel that the paper is better and more suitable for the BMC Health Services Research as a result. We hope you will agree.

Response to Reviewer: Tin Tin TTS Su

The quality of the manuscript is improved substantially. However, there are still some issues in the manuscript.

Major compulsory revision

One of the potential reasons is that expanded program on immunization for children promoted in Shaanxi Province has successfully prevented and controlled outbreak……

Comment: Please provide the evidence that there is a decreasing trend of infectious disease among under five years old children.

Thank you for this suggestion, we have added the reference in the revised manuscript.

The Expanded Programme on Immunization (EPI) was initiated by the WHO in 1970s with the aim to vaccinate children throughout the world. The EPI has strengthened China's routine immunization programme. In Shaanxi Province, the absolute number of cases suffering from five infectious diseases (i.e. pertussis, diphtheria, measles, meningitis, and type-B encephalitis) dropped from 204,000 in 1970s to 520 by the end of 2008. According to the surveillance data reported by Shaanxi government in 2009, since the implementation of EPI the morbidity of type-B encephalitis, epidemic cerebrospinal meningitis, pertussis and the tetanus among the newborn had dropped by 99.40%, 99.94%, 99.74% and 86.76%, respectively. By the end of 2010, the morbidity of 26 selected infectious diseases in Shaanxi Province was 2.1207‰, lower than national average level. The morbidity of infectious diseases has dropped to the lowest level in the history.


A small low-income household with more inpatient treatments, having elderly member(s), lack of health insurance and illiteracy of the household head, had the highest risk for incurring CHE.

Comment: it seems it is a composite variable “small low-income household with more inpatient treatment” It should be written as “small family, low income households, having more inpatient treatment, ……

We have rewritten the relevant sentence as reviewer suggested (lines 357 -359).

In addition, low income households have risk for facing CHE for 2008 is correct. However, in
2013, even households belong to richer quintiles such as 4th and 3rd are having CHE then how the authors concluded low-income households faced CHE.

*Compared to the richest group, all other four income quintiles had statistically significant ORs higher than 1 in 2013, indicating the existence of an inverse relationship between economic status and the likelihood of incurring CHE. We have rewritten the corresponding sentence as ‘a lower economic status played an important role in increasing the risk of incurring CHE in 2013’.*

In addition, we have further enriched the discussion on the relationship between economic status and CHE in 2008. As reported in Table 3, the poorer households were 1.37 times more likely to face CHE compared to richest households in 2008. However our study found that the poorest households had no significant association with CHE in 2008. One possible explanation is that the poorest households forwent their needs and did not consume health care due to financial hardship, and consequently avoided the occurrence of CHE. Our unpublished analyses using data in 2008 found that 36.08% members in poorest households refused inpatient treatments in the past year, whilst 53.50% members in these households suffering from illness and injury in the past two weeks chose not to seek medical treatment; both figures ranked the highest among all five income quintiles (lines 337-343).

Fourthly, as a retrospective study, there was likely to be recall bias.

Comment: The study has a recall bias, not because of retrospective study design (actually it is not retrospective, cross sectional) because of long recall period (one year). It would be difficult for the respondents recall illness, health care utilization and expenditure.

*Thank you for this suggestion. We have rewritten the fourth limitation as ‘there was likely to be recall bias because of a long recall period’ (lines 405-406).*

Minor essential revision

Table 1 Comment: Need total number of households in the heading of last and second last column.

*We have added total number of households in Table 1.*

**Response to Reviewer: Paul Marschall**

The paper improved a lot by the latest revision.

Major Compulsory Revisions

1. Complete Paper: In your reply you emphasized that you used exchange rates for converting Chinese Yuan - RMB into US$.
   a. Are your cost figures (e.g. lines 134, 136,…) based on daily exchange rates or yearly average rates? Using a daily exchange rate might be a severe problem because of fluctuation

   *We have adopted a yearly average exchange rate in 2013 throughout the paper. The average exchange rate in 2013 is US$ 1 = 6.20 Chinese Yuan.*
b. which source did you use?

The yearly average exchange rate was drawn from the World Bank [Website: http://data.worldbank.org/indicator/PA.NUS.FCRF (accessed 8 February 2015)].

c. Were your analyses based on the Chinese currency or on US$?

All analyses in this study were based on Chinese currency.

d. Did you really use the same conversion rate for both years?

Yes, we used same conversion rate for both years.

2. You should carefully interpret the results from your estimation. Including some numbers in table 3 is not enough.

Thank you for this suggestion. We have enriched the result section in our revised manuscript.

Minor Essential Revisions
1. Methods: Sampling and sample size (lines 137-148): It is not clear, if you did that work by your own, or not. If “not”, please include references.

Thank you for this suggestion. We have added references as reviewer suggested (line 142).

2. Methods. Please harmonize/ rearrange the sections “Sampling and sample size”, “Questionnaire” and “data collection”. I recommend defining a section “data collection”, in which these aspects are described in a logical and consistent way

We have rewritten methods section as reviewer suggested.

Discretionary Revisions
1. Abstract & Introduction: Estimation of the change in household catastrophic care expenditures (line 42 AND line 118): The reader gets still the impression, that within the paper the expenditure change is analysed for each household. Perhaps you should include the word “overall” in the corresponding sentence

We have inserted “overall” in the corresponding sentence as reviewer suggested.

2. Abstract + Conclusions: “Although health systems have made great improvements in alleviating CHE” (line 406) – a) is this really a part of the conclusion you draw from your own study? b) the statement is not concrete enough.

Our study found that the overall proportion of households incurring CHE dropped from 17.19% in 2008 to 15.83% in 2013, with a statistically significant difference at the level of
\alpha=0.10 (\chi^2=3.509, \ P=0.061). We agree with the reviewer that our original statement of “great improvements” was not appropriate. We have rewritten the sentence as “Although health systems have made some improvements in alleviating CHE…” (lines 59, 373, 408).

3. Results – line 289 – replace “possibility” by “probability”

Thank you for this suggestion. We have changed to use “probability” in the revised manuscript.

Needs some language corrections before being published

The revised manuscript has been proofread by a professional proofreader.