Author's response to reviews

Title: Correlates of unequal access to preventive care in China: a multilevel analysis of national data from the 2011 China Health and Nutrition Survey

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Author's response to reviews: see over
Dear Editor,

We thank the editor and reviewers for their constructive comments. We have substantially revised the manuscript according to their comments. Since we have made major revisions, we have not highlighted every change as almost 99% of sentences were changed (revised, deleted, or added). In the revised version, we have carefully addressed issues raised by the reviewers to improve its potential for publication. We also prepared a point-to-point response to all queries from reviewers. We hope all the comments have fully addressed, but would be happy to improve the manuscript if any new comments are given in future review.

We are looking forward to response from the reviewers and the editor.
Happy New Year!

Best regards
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Response to Reviewers’ Comments

Section 1
Reviewer: Sean Clouston

1. The paper is an interesting paper about the role of differences in health insurance in creating social inequalities. The paper would probably benefit from interacting more with sociological theory about the nature of social inequalities in health. Notably, I would direct them towards a wealth of literature discussing how social inequalities arise and how they exist globally. As it is, the authors do a good job of talking about how the literature discusses these issues within China, and also of wrapping up their results. I have a number of questions about the analysis, though, that I think temper my enthusiasm for the manuscript. The first is that there’s a concern about the exclusion criteria, which result in the removal of half of the
sample and there’s not enough discussion of the distribution of preventive care services both across communities and within them. GIS mapping may help them to reasonably discuss these differences and think about them. The discussion is heavy and hard to read as written – long winded. There are also a lot of small typographical errors, some of which are detailed below, but the paper would benefit from having a native English speaker editing it for grammar.

Re: Thank you for your comment. We have excluded adolescents (non-adults) from analyses because 1) they are financially dependent on their families and the patterns of their usage of health services differ from adults, and 2) our initial analysis based on the CHNS data also found too low usage of preventive services among them. We thought the analyses might be more useful if they were focused on adults.

We do agree the analysis of distributions of preventive services across and with communities may add more information to the current study. However, the CHNS data on community-level characteristics are not readily available and freely accessible at the moment. We have to purchase such data from the CHNS data owners. We think we may do additional analysis in a separate paper once we have funding available.

We also realize the manuscript has obvious language problems. We have invited a native English speaker to proofread the language.

Specific comments

The abstract is clear, though some issues remain –

2. It should be - “Regional disparities were found…”

Re: We have change it to a plural form.

Introduction

3. Any time you have statements such as “it has been proven…” you should have a citation showing that this is the case. Also, nothing with statistics is ever “proven” so having a more tailored language would be useful.

Re: We have rephrased sentences that used “proven” and used more accurate languages.
4. I’ve never heard of a “pro-rich effect” though I obviously understand the meaning. Marmot describes this as a social gradient, terminology that I think works. I’ve also seen socioeconomic inequalities. Both are okay. You currently define pro-rich effect, so if that’s a term you want to keep, then that’s up to you but I would go with more standard terminology.

Re: Thank you for pointing it out. We have used socioeconomic inequalities to replace pro-rich effect. In addition, we have deleted the coined term such as “pro-poor effect”.

5. Which services are “certain preventive care services”?

Re: We defined the preventive care services according to your suggestion.

6. Is China not a developed country?

Re: China is a developing country, although WHO classifies it as a middle-income country.
7. It might be clearer if you have headings – “Setting” for example (page 5 above the discussion of China).
Re: We have reorganized the Introduction section to make it clearer and more logical.

8. I think I take issue with how the sentence starting: “Although it is a voluntary insurance scheme…” is phrased. Firstly, those who are unemployed are unlikely to have a lot of cash sitting around for health insurance, so the view that they are able to pay may be somewhat absurd. It would be useful to know how many people are not covered by one of these schemes. Secondly, scheme is technically correct, but usually we say “health insurance program” rather than scheme.
Re: The Basic Social Medical Insurance (BSMI) system comprises the Urban Employee-based Basic Medical Insurance (UEBMI), Urban Resident-based Basic Medical Insurance (URBMI) and New Rural Cooperative Medical Scheme (NRCMS). A resident is only entitled to one of these three based on the residential registry (rural or urban) and employment status (if he/she is an urban resident). The most reliable evidence shows over 95% of Chinese is covered by one of the three BSMI programs. We agree it is better to use health insurance program instead of schemes, and have made changes in the manuscript. The terms for the three BSMI programs are established in China, and are thus not changed. Otherwise if not specifically pointing to these three, the schemes are all changed to programs.

9. The sentence starting “Registered doctors available…” needs to be clarified.
Re: In China, all doctors with a license need to be registered in the health agencies to practice medicine. In the revised manuscript, we have deleted the description on average numbers of doctors in rural and urban areas because they seemed redundant.

10. The sentence “Meanwhile, [the] urban-rural gap…” is unclear.
Re: We have rephrased the sentence.

11. The sentence “Although the NRCMS has a …” is unclear and badly worded. I would go with more descriptive language, such as: “has been associated with
decreases in socioeconomic inequalities in health” or something else rather than “pro-poor effect”.
Re: This sentence has been revised.

12. The sentence “Arguably, health insurance schemes…” is heavily biased. Not all are meant to do this, so I would be careful.
Re: We deleted the sentence.

Methods
13. It is unclear if the loss of sample size (from 27K to 13K) is due to the adult restriction or to the sample covered by BSMI.
Re: The halving of the sample is mainly due to exclusion of adolescents (non-adults).

14. Excluding those who are not covered, since the lack of coverage is itself both a reason to see increases in social inequalities and also an interesting comparison group.
Re: Fewer than 5% of Chinese are not covered by any of the three BSMI programs. The small number of Chinese without subscription to any BSMI programs was not useful for group comparisons in statistical analyses.

15. “Written informed consent was obtained…”
Re: The sentence has been corrected.

16. Not “The respondents with a higher income…” but “Respondents with higher incomes…” similarly, “Never-married single respondents…”
Re: The two sentences have been corrected.

17. There is not really any such thing as a “0 percentile”. I would note that you’re doing this, and then label it high or low as is standard.
Re: We have revised the percentiles (Table 1-4).
18. Table 2 is a drastically smaller sample than it should be.
Re: We have rearranged Table 2 to make it clearer. The numbers represent those who use preventive care or specifically physical examination. The percentage is the number in Table 1 divided by the corresponding number in Table 2.

19. It would be useful to see something relating to the distribution of community level variability in the outcome, certainly, and in SES-related outcomes.
Re: As mentioned earlier, we have no access to the community-level data, and thus cannot do such analyses.

20. The empty model is pointless unless you have a measure of model fit derived from it to compare with, or something.
Re: We have deleted the empty models in Table 3 and 4.

Discussion

21. I would remove “These figures are extremely low compared to…” and just describe the rates in other places (something you already do). The sentence thus seems uninformative and redundant.
Re: The sentence has been deleted.

22. “Consumers are selective of preventive care services.” Is a meaningless sentence.
Re: The sentence has been deleted.

23. “This study proved that age, sex…” No statistical study can prove anything, it can only find associations.
Re: We have rephrased the sentence to make it clearer.

24. There are sociological theories that try to detail the overall impact of such inequalities in access to prevention and their effects on health, morbidity, and mortality overall. It might be useful to tie this into that discussion:


Re: There are important articles on equalities in health care and preventive services. We have radically revised the Discussion section. In the new version, we have incorporated major findings from Phelan, Jo C. et al.

Section 2
Reviewer: Kate Bartlem
1. General comments:
The authors provide a well detailed explanation of the health insurance context in China, which is necessary for a naïve reader such as myself. This is an important and relevant article that identifies important determinants of inequality in receipt of preventive care, particularly in regards to the impact of different health insurance schemes.

Re: Thank you for your comment.
2. Major compulsory revisions:
Results: ‘Overall preventive care usage’ and ‘uptake of general physical examinations’ paragraphs: Should the data here be presented as odds ratios throughout? For instance, “Compared with men, women were 0.2 times more likely to use preventive care services” (lines 393-394) seems to indicate a reduced likelihood of females to use preventive care services, whereas females were more likely to utilise such services. (I may be confused, as I am thinking in odds ratios, as these have been used throughout the tables). Please check – this might simply be my misunderstanding of how the data is presented.
Re: Thank you for pointing out the issue around properly expressing the odds ratios. We have revised all inconsistencies between descriptions and statistics in tables. In the revised manuscript, we have used ORs from the Tables (without any conversions) to present the correlates of overall use of preventive care and specific use of general physical examination.

Minor essential revisions:
3. There are quite a number of grammatical mistakes throughout. I have not pointed out each of these occasions, as they are quite numerous, however, this will need attention.
Re: We have invited an English native speaker to proofread the language. We hope the current language meets up the requirements for publication.

4. Introduction: Para 1, final sentence: provide some examples of the types of preventive care services mentioned here.
Re: We have added more information of preventive care services.

5. Introduction: Para 4, final sentence: include RMB in full for the first use, for international readers
Re: We have added the full currency, Renminbi, before RMB.
6.Methods: Data source paragraph 1: Line 212 – Please indicate whether all households, or a random sample of households of the selected communities were invited to participate. If a random sampling procedure was used, please indicate the approximate % of households sampled and/or reference another publication using the larger data source that includes additional sampling information.

Re: We have added sampling information in the first paragraph of the Methods section. Twenty households were sampled from each community, but the percentages were not clear even from the original data collection descriptions.

7.Methods: Explanatory measures predicting the use of preventive care, socioeconomic status paragraph: Please provide more information on the measurement instrument used for household income- specify whether this was a tool designed specifically for this study, or a validated questionnaire.

Re: We have added more information on the instrument that collected income information. Details were available at http://www.cpc.unc.edu/projects/china/about/contactus. We have cited the link in the manuscript.

8.Discussion: Paragraph 4: Given these interesting and important findings regarding the health insurance schemes, and relevance to policy related to these, could the authors make some specific suggestions for addressing these inequalities under these schemes?

Re: Since our manuscript focuses on possible determinants of inequalities in preventive care use, we actually cannot make any recommendations for changes in BSMI based on our results alone. However, a recent important review paper summarizes potential initiatives for an equitable and efficient health system, of which the consolidation of three BSMI programs is prioritized. We have cited this in our manuscript.

Discretionary revisions:
9. Introduction: There is a general lack of referencing throughout the first paragraph. While much of this is general background type information, some specific points should be referenced. For example, para 1, lines 2-3: “Empirical evidence has shown that people with low-income are more likely to suffer from ill health” deserves a reference, preferably for evidence within China (where this study is based)

Re: We have updated/added citations for the first paragraph of the Introduction section. We have tried to use Chinese evidence as our citations.

10. Methods: Outcome measures for the use of preventive care, para 1: Was the receipt of preventive care for these items limited to specific health service contexts (eg inpatient service, outpatient, primary care etc), or could participants respond in relation to any health service?

Re: Participants were provided a full list of preventive care services to choose from after answering yes to the question whether he/she received any preventive care services. We cited such information in the Methods section. However, all these services were not limited to specific contexts (inpatient, outpatient, or primary care). In this regard, we could not analyze the service contexts.

Section 3

Reviewer: Peter Goldblatt

1. The authors point to the limitation of the data in only recording use of preventative services over the four weeks before interview. Despite this they frequently refer to the study highlighting low use of preventative services. But that raises a question of what constitutes an appropriate use of such services in a random 4 week period. If annual use were appropriate, then a four weekly figure of 7% would be about right. The value of the study is the emphasis on inequality - and that should replace comments on low usage. What would be sensible and in line with comparable studies, would be to estimate what level of usage would be required in disadvantaged groups to level up access.
Re: We acknowledge we should emphasize on inequality in preventive care use instead of low use of preventive care in general. We have deleted sentences that deviate from such emphases. From the current study, we cannot determine what level of usage is required for disadvantaged group. We cannot compare with other studies since what are included in preventive services packages differ in different studies. We thus have deleted such comparisons with other countries in the revised manuscript (particularly in the Discussion section).

2. Given the unspecified nature of the preventative services that were self-reported, the higher usage by those with current illness raises the possibility that some usage was illness related and therefore hardly upstream prevention. This deserves some caveat at least. It would be interesting (but not essential) to undertake modelling on the currently healthy sub-sample.

Re: This is a good point. We have noticed the issue related to the unspecified nature of preventive services, and also pointed out the high uptake of preventive service might be due to needs for disease monitoring among those with health problems, particular those with a chronic condition.

We agree that it would be interesting to have a separate analysis among the healthy sub-sample, and would like to do so in a separate article.

3. Greater clarity is needed on the value of a general physical examination in those who are symptomless. As in (2) above, it is appropriate as diagnostic tool among those with current ill health or symptoms - but that is very downstream and a pre-requisite for treatment.

Re: The benefits and harms of general physical examinations for the symptomless are debated for long. However, they are generally promoted by the government as measures to prevent diseases in China. We have added some discussions in our manuscript.

Minor revisions

4. The core of the paper is Table 4. It would be helpful to list models A, B, C and D in the statistical methods section (rather than burying them in a descriptive
paragraph as first second, third and forth). This would assist transparency of a complex multilevel modelling process.

Re: According to your suggestion, we have revised the statistical analysis section to include models A-D.

5. The statement on page 26, line 482, that increasing disparities in health are the result of increased health expenditure by better of consumers is not based on evidence. The role of an increased Gini coefficient on social, economic and environmental conditions in society that are associated with the risk of disease - irrespective of treatment received. Of course, inequalities in health care have a role in inequalities. But this varies between three and fifty per cent depending on how far the country is from achieving universal basic provision.

Re: We have deleted the statement that “there is evidence showing that escalated health expenditure in China, largely driven by the better-off consumers, has contributed to enlarged health inequality” in the revised manuscript.

6. Some clarification is desirable over the relationship between the different health insurance schemes and the other social protection and income benefits available to the insured. For example UEBMI is related to public employment (page 27).

Re: We have substantially revised the paragraph on the three BSMI programs in China.