Author’s response to reviews

Title: Effect of a typical systemic hospital reform on inpatient expenditure for rural population: the Sanming model in China

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Author’s response to reviews:

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Dear Dr Armando Arredondo,

We would like first to extend our most sincere gratitude to you and the reviewers for the thoughtful comments and helpful suggestions to our manuscript "Effect of a typical systemic hospital reform on inpatient expenditure for rural population: the Sanming model in China" (BHSR-D-18-01894).

In line with the reviewers’ comments, we extensively revised the manuscript. We described the changes in “Response to Reviewers” as follows. The major modifications were shown in red color in the revised manuscript.

All authors have read and approved the revised manuscript, and there are no financial or other relations that could lead to a conflict of interest.

If you have any further questions or any suggestions about our revised manuscript, please contact me. We will be very grateful for your input.

We look forward to hearing from you.

Yours sincerely,

Huazhang Wu
Response to the reviewers’ comments:

Dr Abubakr Abdelraouf Alfadl (Reviewer 1):

(1) My main concern is sample size calculation. It is not clear on what base the authors chose the number 1,113,615 as their sample size. Such large sample size is sometimes problematic. It is widely understood among statisticians that the null hypothesis is always false in the real world. If it is false, even to a tiny degree, it must be the case that a large enough sample will produce a significant result and lead to its rejection. So if the null hypothesis is always false, what's the big deal about rejecting it? Therefore, while large sample provide great opportunities for empirical researchers, but also create potential problems in interpreting statistical significance. With such large sample size it is not necessary for statistically significant parameter to be of 'practical' significance. The challenge is to take advantage of this large sample without falling victim to deflating p-values. It is necessary to see the authors acknowledging this concern in the method section.

Response: We appreciated this good suggestion. For the sample size of this study, we chose all registered inpatient admissions from the rural new cooperative medical scheme (NCMS) database in Sanming from 2007 to 2016 (Page 7, line 133-134). We tried our best to acknowledge the concern of this large sample size in the 'Method' section (Page 9, line 186-189).

(2) Statistical Analysis: Page 8, line 148; remove the phrase "the average growth rate (abbreviated as AGR)". Repetition, it is enough to mention the abbreviation.

Response: We made this change (Page 9, line 177).

(3) Page 8, line 151; it is mentioned "T-test and Analysis of Variance (ANOVA) tests were used to test the significance". Is there any post hoc analysis conducted to know exactly where is the difference?

Response: Thanks for the reviewer’s suggestions. For analysis of variance (ANOVA), we used post hoc multiple comparisons of Bonferroni to compare the differences between every two groups. We added this information in the 'Method' section (Page 9, line 181-183).

(4) Results: Table 1 was neither presented in the 'Result' section, nor in the 'Discussion' section.
Response: We are sorry for this ambiguity. We combined the previous Table 1 (NCMS reimbursement policies) and the previous Table 2 (OOP expenditure as a share of total expenditure and their ratio to annual net income) as Table 1 (NCMS reimbursement policies and per capita OOP expenditure) in our revised manuscript, and we presented the revised Table 1 in the 'Result' section (Page 10, line 204-209). We also made a discussion about the Table 1 in the 'Discussion' section (Page 14, line 287-290).

(5) Discussion: In this section authors need to acknowledge the large sample used through moving their focus from relying solely on statistical significance to consideration of practical significance. This can be achieved through a sound presentation of the practical significance of findings. Authors need to be cautious in assessing whether the small p-value is just an artifact of the large sample size, and carefully quantify the magnitude and sensitivity of the effect. In other words, with such sample size, conclusions based on significance alone, claiming that the null hypothesis is rejected, may most probably be meaningless unless interpreted in light of the actual magnitude of the effect size. If these concerns are not considered, jumping from statistical significance to managerial and policy implications may not be warranted.

Response: Thanks for the reviewer’s wonderful suggestions. In the 'Discussion' section, we acknowledged that it should be noteworthy that a large sample is likely to produce a significant result. So, we not only interpreted the result based on significance, but also interpreted it in light of the actual magnitude of the effect size, considering the practical condition (Page 11, line 234-239).

(6) Although many demographic characteristics were tested (age, sex, Annual net income per capita) in addition to other parameters (e.g., Level of hospital, Hospital regions, Chronic conditions, etc.), and although all of these gave significant results; but only few were presented in the discussion section.

Response: We appreciated the suggestion. We added some discussion information about the parameters with significant results. (e.g., age, Level of hospital, Hospital regions, Chronic conditions) (Page 13, line 267-271; Page 13, line 275-280; Page 14, line 292-294).
Dr Monireh Afzali (Reviewer 2):

Your study has considered the impact of health reform on the rural population. This subject is very important for your local health system. Since you don't attend to the criteria of transferability it remains in a level of local information and no more attractive for other countries.

Response: We are sorry that we didn't pay attention to the criteria of transferability. In many low-and middle-income countries (LMICs), some similar issues with China exist, such as rapid growth of health care costs and higher out-of-pocket expenditure. Some cost containment policy options in our study may provide a reference for the LMICs with the similar issues. We added some information about this in the 'Introduction' section (Page 3, line 54-62). We also addressed this as one limitation, considering that the results may not be generalized to other areas (Page 14, line 304-307).

Also, there are some additional notes that are listed below:

(1) Some of the methodological information have expressed in the introduction section that is not required.

Response: We deleted methodological information in the 'Introduction' section.

(2) There is no information about how the health system reduces the charges for high-tech medical diagnostic tests. Are they subsidized by the government or something else?

Response: We are very sorry for this ambiguity. The charges for high-tech medical diagnostic tests were reduced because the prices for high-tech diagnostic tests were decreased by the Development and Reform Commission (This department has the power to set price). For example, the price of CT scanning per person declined by 15%. We added the information about why and how the charges for high-tech medical diagnostic tests were reduced in the manuscript (Page 5-6, line 110-115; Page 6, line 122-127).

(3) Some of the results (for example table 2) could be represented in graph or chart instead of a table.

Response: Thanks for the suggestion. We represented the results of the previous Table 2 as Figure 2 in our revised manuscript. Please see Figure 2.
(4) Please complete table 5 with more information of model including coefficient and Std.Err.

Response: We added information of the coefficient and Std.Err in the model. Please see Table 4 in our revised manuscript.

(5) Discussion is full of introduction information. Please remove them and begin with your main foundlings.

Response: We are sorry that we introduced a lot of irrelevant information in the 'Discussion' section. Thanks for the suggestion. In the revised paper, we deleted the introduction information in the 'Discussion' section. We made the discussion based on our study results and discussed the implications of the findings in context of existing research.