Author's response to reviews

Title: Out-of-pocket healthcare payments on chronic conditions impoverish urban poor in Bangalore, India

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

Thank you very much for the comments from peer reviewers on our manuscript. We found these comments very useful and we have now revised the manuscript accordingly. At the end of the letter, we provide a point-by-point response to all the remarks of peer reviewers.

In the revised manuscript, we have exchanged the order of the last two authors. This was done to conform to their respective contribution to this manuscript. All the authors agreed to this change.

Best regards,

Dr. Upendra Bhojani
<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Reviewer-1: Tewarit Somkotra</th>
<th>Authors’ response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The title is not appropriate because it did not reflect the whole figures of this study and also it may cause readers misunderstanding as its general figure of India. I would suggest the authors revise it for example: Catastrophic health expenditure of chronic diseases among households in Kadagondanahalli, India</td>
<td>We agree with Reviewer’s remark. We have now revised the title: “Out-of-pocket healthcare payments impoverish urban poor in Bangalore, India”</td>
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<td>2</td>
<td>In the introduction, the authors should provide brief information related health care system in that context instead of put it in some part of methods, and the authors should point out that why this is important to monitor and assess these aspects among population.</td>
<td>Information about the local healthcare system and community has now been moved (with appropriate rephrasing) from ‘Methods’ section to ‘Introduction’ section under the sub-heading ‘Context’. Rationale for the study has been further refined in the ‘Introduction’ section. Please see page no. 5 &amp; 6, line no. 105 -132</td>
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<td>3</td>
<td>Furthermore, The authors have to revise the objectives of this study as it reveals 3 main aspects i.e. OOP, catastrophe and impoverishment. As indicated in Page 4, it is NOT clear.</td>
<td>The information in Page 4 referred to the overall objectives of the KG Halli census. The current study explores only limited aspects of the census. In order to avoid confusion, we have now clarified the specific objectives of the study (in line with the suggestions of the reviewer) towards the end of the ‘Introduction’ section. See page no. 6, line no. 134-138: “The specific objectives of the present study was therefore to assess the i) incidence and extent of the OOP payments on outpatient care for chronic conditions; ii) incidence of the financial catastrophic due to OOP payments; and iii) resultant impoverishment among residents of KG Halli. The result of this study would feed into UHARP and serve as an avenue for discussion and action by stakeholders in the area to improve affordability of chronic condition care.” We also reduced the text explaining the overall objectives of the census and moved it to sub-section ‘Context’.</td>
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<td>4</td>
<td>In the methods: Although the authors provide important information but I suggest the authors add more information especially those presented in the supplementary files. For example, the catastrophe and impoverish measurement (should the author briefly explain in this section for those who are not familiar with these measurement, rather than keep it in the supplementary documents).</td>
<td>We have now integrated information on measurements (earlier provided in the Supplementary File 1) into the main text in ‘Methods’ section under the subheading ‘Measures and Analysis’. See page no. 8-10, line no. 185-246</td>
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</table>
In the result section:
The authors revealed findings and categorized into 3 section comprising OOP payments and consequences (catastrophe and impoverishment) which were appropriate, understandable-, and related to objectives of study. However, I would suggest the authors to revise tables and figures to enrich the paper to be well organized. For example Table 2 and fig. 3 could be merged, so in one table it can reveal both median percentage share of OOP and incidence of OOP across household quintiles. Table 3 provides less important information than other supplementary table such as Table S1 or S2. And please revise the text to be more concise and make the table consistent with. There are several studies related to this study, and the authors can borrow (but not plagiarize) some ideas to present these important findings.

We have revised the ‘Results’ section to make it more concise and bring in coherence between text and Tables/Figures. As suggested by the reviewer, we have dropped Figure 3 and integrated data from Figure 3 into Table 2. Table 3 has been shifted to Supplementary File 2, while Table S1 (in earlier version) has been incorporated into the main text as Table 4. See page no. 34 & 36 (for revised Tables)

The authors often explain the findings with some discussion (eg. Page 11 para 3 etc), please revise.
- this study reveals catastrophe at different thresholds, please explain more and discuss on what the findings provide such information (not only use for comparison with previous studies).
When the authors discuss about the potential explanation for the findings eg. OOP payments were made by medication, the user fees etc, the authors must provide the potential Implications of the present findings (point by point), after reading the whole story of discussion, I do not learn much as expected. Also, please do not overinterpret the findings and discuss beyond this study found, some references that used for explaining findings but just only the possible reason eg. Page 18 para 2.

We have revised the ‘Discussion’ considering the reviewer’s remarks. We have made this section more concise and have elaborated on implications of our major findings on health policy/practice. See page no. 17-21, line no. 409-517
Instead of the focus into the downstream of the health care delivery system, the authors should mention or discuss about the upstream especially when we currently have been discussing a lot in social determinants of health and its related with the health care system. To tackle the inequity in health care, what are the parts that should not be overlooked in your system or other context that could learn from you.

We have included a paragraph towards the end of ‘Discussion’ section reflecting on larger social determinants and its association with health systems. See page no. 25, line no. 602-608: “We only discuss the healthcare payments related impoverishment in this paper. It is important to consider this in context of the adverse social determinants that affect health and living conditions of urban poor communities. Limited access to drinking water, sanitation facilities, and education adversely affect their health and productively leading to deprivation. Also, like in many other low- and middle-income countries, India exhibits a ‘mixed health systems syndrome’ of low public financing, an unregulated private market, and poor governance in the health sector requiring reforms within and outside of the health sector.”

### Reviewer-2: Leizel P Lagrada

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<tr>
<th>Page</th>
<th>Section</th>
<th>Notes</th>
</tr>
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| 8 | Methods, under the sub-heading Catastrophic Healthcare Expenditures | Methods, under the sub-heading Catastrophic Healthcare Expenditures. We used the household monthly income as a denominator in calculating the CHE rather than the usually recommended household consumption expenditure or the non-food expenditure, as we did not have data on the latter.

We used household income instead of consumption expenditure to calculate Catastrophic Healthcare Expenditure (CHE). The limitations of using income in place of consumption expenditure is clarified in the ‘Discussion’ section under the subheading ‘Study Limitations’. See page no. 23, line no. 550-553: “The use of household income instead of the consumption expenditure (or non-food expenditure) for the calculation of CHE may lead to the overestimation of the household’s capacity to pay and an underestimation of the true CHE incidence.”

As clarified in the ‘Methods’ section, we did not collect data on household consumption (or non-food consumption) expenditure. Hence we used household income instead of consumption expenditure to calculate Catastrophic Healthcare Expenditure (CHE). The limitations of using income in place of consumption expenditure is clarified in the ‘Discussion’ section under the subheading ‘Study Limitations’. See page no. 23, line no. 550-553: “The use of household income instead of the consumption expenditure (or non-food expenditure) for the calculation of CHE may lead to the overestimation of the household’s capacity to pay and an underestimation of the true CHE incidence.”

| 9 | Methods, under the sub-heading Measures and Analyses | Chronic condition as a dependent variable # chronic condition is a presumed cause of OOP that could lead to catastrophic spending and impoverishment. Therefore, it should be categorized as independent variable, not a dependent variable.

We agree with the reviewer’s observation. We have revised the text accordingly and classified ‘chronic conditions’ as an independent variable. It has been treated as independent variable in the data analysis (and presentation).

We agree with the reviewer’s observation. We have revised the text accordingly and classified ‘chronic conditions’ as an independent variable. It has been treated as independent variable in the data analysis (and presentation).

| 10 | Page 11 | 68.1% (95%CI=66.6-69.5) of the chronic conditions led to OOP payments #: Do you mean that 68% of the HH who reported having chronic conditions have incurred OOP? Since your study question refers to which households are incurring OOP for chronic conditions, and who are becoming impoverished for a particular sentence referred to by the reviewer used ailment (chronic conditions) as a denominator (unit of analysis).

We have now clarified the rationale for using ailments (chronic conditions) as unit of analysis while presenting segregated data on incidence of OOP payments. We clarified this in Table 2 (where such data is presented) along with a
such spending, then it is important to be consistent with how you present the data.

footnote. See page no.34, line no. 832-835: “We used ailment as a unit of analysis instead of households. This is because individuals from a single household might seek care from different type (and levels) of health services making it impossible to do segregated analysis as presented in this table.”

In addition, we do provide data on how many households incurred OOP payments. See page no.13, line no. 304-305: “We found that 69.6% (95%CI=68.0-71.2) of households made OOP payments for outpatient care for chronic conditions in the 30 days preceding the census.”

11 Additionally, the column for each socio-econ level of HH (by type of ownership of facility) should equal to 100%. That is, among the poorest household who went to government health facilities, how many consulted the clinics/health centers, referral hospital and super specialty hospital. Similarly, the same comment for the private facilities.

We assume that the reviewer is referring to Table 2 (it is not very clear, this remark seem to be in continuation with the earlier remark and referring to the relevant table).

In Table 2, the data in the columns would not add to 100%. This is because these data are not about health-seeking behavior (who went to government/private facility?) but is about incidence of OOP payments (of those who went to government/private, how many incurred OOP payment?). Incidence of OOP payments varies as per the type (and level) of healthcare services in different quintiles. It does not need to add up to 100%.

We have clarified this in the title (and labels) of the Table: e.g. the label now reads “Incidence of OOP payments (ailment as unit)”
See page no. 34

12 Table 3. It is very hard to understand that your unit of analysis is per chronic condition when your objective is to identify the HH with chronic condition who incurred OOP. Similar comments as Table 2.

Table 3 has now been moved to Supplementary File 2 (See our response in Sr.No.5 of this table). We have clarified the rationale of using ailment (chronic condition) as an additional unit of analysis for calculating measures of OOP Payment (See Sr.No. 10 of this table). In the paper, we have also provided data on how many households incurred OOP payments.

In Figure 2. Please comment on hospital charges for government-owned clinic/health centers and high consultation fees for referral hospital, even those

The term ‘hospital charges’, especially in the context of clinics/health centers (NOT hospitals), might look as a misnomer. We have changed it to ‘facility charges’.
owned by the government.

See page no.8, line no.191-194, and Figure 2: “We collected data on ‘direct medical care’ (i.e., expenditures for consultation fees, facility charges, expenses for medications and laboratory investigations) and ‘other’ indirect expenditures (i.e., expenditures for travel, food, and any informal payments, such as bribes or kickbacks).”

These expenses would primarily include ‘registration charges’ (or ‘case fees’), and ‘user fees’ collected by government for selected health services, from people living above the poverty line. Also as clarified in the ‘Methods’ section, the classification of ‘type of services’ (being government or private) in this paper is based on the ownership of the facility where the consultation took place. However, expenditures that appear in a category of ‘government health services’ need not be entirely incurred in government sector: for instance, in the case where drugs are out-of-stock in the government facility, and where patients have no option but to purchase them in the private sector.

<p>| 13 | In methodology, please explain already the measures that you will be using: headcount, overshoot, mean positive overshoot. | We have now included details on the measures that we use in ‘Methods’ section under the subheading ‘Measures and Analysis’. (See Sr. No. 4 of this table) |
| 14 | Thus, residents of KG Halli incur surprisingly high OOP spending for outpatient care for chronic conditions #inconsistent with the statement in the Background session: page 4 People with chronic conditions are likely to incur higher OOP payments for outpatient care, as they need periodic outpatient visits and regular medication on a long-term basis. In addition, there is already indication from segregated estimates from the CES for the year 1999-2000 for urban India that suggests that the share of OOP payments on medications (69.6%) was more for outpatient care (56.3%) than inpatient care (13.3%) (Discussion section) | We agree with the reviewer’s remark and have amended this sentence: “Thus, residents of KG Halli incur high OOP expenditure for outpatient care for chronic conditions.” |
| 15 | Abstract, Result sub-section: Due to out-of-pocket payments, the number of poor people with chronic conditions doubled in one month # People do develop chronic conditions because they incur out of pocket. Please clarify this statement. | We have revised this sentence to bring clarity and avoid confusion: “The out-of-pocket spending on chronic conditions doubled the number of people living below the poverty line in one month, with further deepening of their poverty.” |
| 16 | Results In table 1, is there statistical difference in income/per capita income between those who have and do not have chronic conditions? If there is, may be the fact that they have chronic illnesses already. | As suggested by the reviewer, we checked for the difference in income-per-capita between those who reported chronic condition and those who did not report it. We find that unlike the reviewer’s hypothesis, the median (as well as the mean) income-per-capita was significantly higher among |</p>
<table>
<thead>
<tr>
<th>Page</th>
<th>Original Text</th>
<th>Revised Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Moreover, the percentage of those who accessed health care is not equal to the facilities consulted. Does this mean that the difference of 200 represents those who reported having chronic condition but opted not to seek care? Please clarify</td>
<td>We have now clarified this point in Table 1 as a footnote: See page no.33, line no.811-812: “The number of ailments treated in the government and private sector does not add up to the total (i.e. 3902), because in 120 instances individuals either used self-medication or did simply not seek care.”</td>
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<td>18</td>
<td>Abstract ...made out-of-pocket payments for outpatient care spending a median of 3.2% (95%CI=3.0-3.4) of their income# indicate whether disposable</td>
<td>We refer to total income (not the disposable income). We have revised this sentence. Page no.2, line no.42-44 “Overall, 69.6% (95%CI=68.0-71.2) of households made out-of-pocket payments for outpatient care spending a median of 3.2% (95%CI=3.0-3.4) of their total income.”</td>
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<td>19</td>
<td>Background, 2nd paragraph In India, 71.1% of healthcare is financed through out-of-pocket (OOP) payments By households at the time and point of healthcare use [7]. OOP payments act as the primary barrier to access healthcare services in India, and lead to significant impoverishment among those who use the services [8,9]. In 2004-2005, 64.4% of households in India had to incur OOP payments for healthcare [9]. # Switch the sequence: 71% of HC financed through OOP/ 64% of the HH had to incur OOP, which act as primary barrier to health care, leading to significant impoverishment. In fact, Berman and colleagues in 2004 reported that approx 6.2% of Indians fell into poverty because of OOP payments for health care</td>
<td>We have revised the text as per reviewer’s suggestion: See page no.4, line no.81-88: “In India, 71.1% of healthcare is financed through out-of-pocket (OOP) payments by households at the time and point of healthcare use [7]. In 2004-2005, 64.4% of households in India had to incur OOP payments for healthcare [9]. OOP payments act as the primary barrier to access healthcare services in India, and lead to significant impoverishment among those who use the services [8,9]. In fact, Berman and colleagues [10] reported that in 2004, approximately 6.2% of Indians fell below the poverty line due to OOP payments for healthcare; a greater proportion of them for outpatient care (4.9%) than for inpatient care (1.3%), while expenditure for medications constituted the greatest share (71.2%).”</td>
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Check consistency of correct grammar in the entire article e.g. Rest of them either did not seek care or relied on self-medication (Results, 1st paragraph) | Language editing was done by a professional language editor. We checked for grammar and syntax in the revised manuscript. |
| When calculating the response rate, why was Y2 not subtracted from N, like you did with Y3 | Unlike Y3, which represents uninhabited properties, Y2 represents inhabited properties where household members were not present at the time of census. Hence, while calculating the response rate, we believe it is desirable and a prevailing practice to include Y2 in the denominator. Though our census did not capture their responses, it was targeted to all the residents of KG Halli, hence inclusion of Y2 in the denominator. |