Author's response to reviews

Title: Maternal and Neonatal Health Expenditure in Mumbai Slums (India): A Cross Sectional Study

Authors:

Jolene Skordis-Worrall (j.skordis-worrall@ucl.ac.uk)
Noemi Pace (n.pace@unive.it)
Ujwala Bapat (uiwala@snehamumbai.org)
Sushmita Das (sushmita@snehamumbai.org)
Neena S More (neena@snehamumbai.org)
Wasundhara Joshi (wasundhara@snehamumbai.org)
Anni-Maria Pulkki-Brannstrom (a.pulkki-brannstrom@ich.ucl.ac.uk)
Davis Osrin (d.osrin@ich.ucl.ac.uk)

Version: 2 Date: 7 December 2010

Author's response to reviews: see over
12 November 2010

Manuscript Number: 1817547187457725
Manuscript Title: Maternal and Neonatal Health Expenditure in Mumbai Slums (India): A Cross Sectional Study
BMC Public Health

Dear Miss Anderson and Prof Latkin,

Thank you for the opportunity to revise this paper and for the useful comments received from the two Reviewers. We believe the paper is much better for the changes suggested and we hope you will agree. We have tracked all changes in the Manuscript and have noted in the Revision Notes how Reviewers’ suggestions and your own have been addressed, and where in the document any changes can be found.

Should you have any further queries about the article please don’t hesitate to contact me.

Regards,

[Signature]

Dr Jolene Skordis-Worrall
RESPONSE TO THE EDITOR AND REVIEWERS’ COMMENTS:

1) Editor:

1) Data availability - Please document within your manuscript if the data you have used is openly available. If it is not openly available, please document the name of the ethics committee which approved its use.

- The study was nested within a cluster randomised controlled trial which has not yet reported. The data are not currently freely available, but will be in future. Data collection and usage was approved by the Mumbai Independent Ethics Committee for Research on Human Subjects (IECRHS).
- A statement to this effect has now been added on page 6 of the paper.

2) Copyedit - Further consideration of your manuscript is conditional on improvement of the English used. Please ensure particular attention is paid to the abstract. You should have a native English speaking colleague help you with this, if possible, or use a commercial copyediting service.

- The lead authors on this paper are native English speakers. We have given the article a thorough copy-edit, paying particular attention to the abstract. These editing changes have not been tracked throughout.

3) Please also highlight (with ‘tracked changes’/coloured/underlines/highlighted text) all changes made when revising the manuscript to make it easier for the Editors to give you a prompt decision on your manuscript.

- We have used track changes within the document and have listed all changes in the response to the reviewers that follows, along with page references to identify where the changes can be found in the manuscript.

4) Please also ensure that your revised manuscript conforms to the journal style (http://www.biomedcentral.com/info/ifora/medicine_journals ). It is important that your files are correctly formatted.

- We have checked the formatting of all files.
2) **Reviewer #1: Steffen Flessa**

1. **Principal statement**: This article covers a very important topic and has access to data which the scientific community should get to know. Consequently, I strongly encourage the authors to improve this article so that it can be published.
   - *We have made every effort to improve the article in accordance with your suggestions.*

2. **Heading**: The paper is mainly focused on catastrophic household expenditure. This should be reflected in the title. I also wonder whether we could write "Mumbai (India)" because it might be that not every reader knows at once where Mumbai is.
   - *The heading has been changed to “…Mumbai Slums (India): A Cross-Sectional Study”*
   - *We are concerned that adding the term catastrophic to the title would make it unwieldy and might suggest this is the only focus of the paper. The title currently reflects the focus on expenditure (catastrophic and otherwise). We will however, try to ensure that ‘catastrophic household expenditure’ is one of the key terms of the article.*

3. **Abstracts**:
   - 2. sentence: "household poverty on ...": add.
     - *Unfortunately the reviewer’s suggestion is unclear. We have however, made the following revision to the first sentence of the abstract; “…to better understand the impact of spending on household poverty.”*
   - methods: this formula is unusual for an abstract. Better explain your methods in words.
     - *The formula has been removed from the abstract and replaced with a verbal explanation of the analysis.*
   - when you use the term "catastrophic" first time, you should also explain what it is, not later.
     - *It is unconventional to provide definitions of key terms within an abstract. The first time the term is used in the main body of the manuscript, a definition is provided (see page 4).*

4. **Background**: 
- add some references about similar papers on costing of health services in India and of maternal health care in developing countries. You reference only papers on catastrophic health care expenditure.
  - We believe that a comprehensive review of the cost of all health services in India and of maternal health care in all developing countries would be inappropriate for a paper with a much narrower focus, such as this. As this paper is focussed primarily on maternal health expenditure in Mumbai, the literature currently cited focuses primarily on that topic. That said, we have inserted two new paragraphs at the start of the Background section (see new paragraph 1 and 2, page 3). These paragraphs more effectively locate the paper within global calls to stimulate demand for maternal care and provide greater insight into the context of maternal health seeking in Mumbai.

- correct some spelling errors which WORD does not find (e.g. "and determined the rick factors" - risk!!!)
  - The document has been given another thorough copy-edit to reduce the chance of typing errors remaining.

- several times no space between a word and "[", e.g. "coverage[5]".
  - Spaces have been inserted between the text and references.

5. Methods:
- the section on data analysis is too short. For instance, we do knot know how you did the PCA and how you did the tests.
  - The first paragraph of the ‘Data analysis’ section has been revised to provide this detail (see page 8):

- The study is from 2005, but you use a conversion rate of 2010. Did you inflation adjust?
  - We had not inflation adjusted, thank you for identifying this problem. This has been corrected and the data revised according.

- you should discuss briefly the quality of your data. From my experience these kind of interviews lead to a strong bias as the poorer quintile does not have the intellectual capacity to re-call all this data.
We find the suggestion that poorer respondents might have more difficulty either interpreting questions or estimating costs interesting. For poor people in Mumbai, life is intensely monetized and it is our experience that poorer women in this context have a more exact idea of what they had to pay for various services. We do not feel that the reviewer's suggestion of 'diminished intellectual capacity' applies in the case of our study; however we have significantly expanded the description of our data collection methods to allay any residual concerns about quality (see page 6-7).

6. Results:

- what about those who do not even come to any kind of health care services and to your interviews? In other words: do you really cover the poorest of the poor?

  • The survey was not conducted at facilities, it was conducted within the homes of anyone who had given birth during the surveillance period. Use of health services was not a criterion for inclusion in the study.

  • The study did not cover the poorest of the poor. In order to conduct the cluster randomised controlled trial in 48 urban slums, we randomly selected areas of at least 1000 households. This means that the sample frame did not include pavement-dwellers and ultra-transient individuals, who are the poorest of the poor. Many of the residents of informal settlements are relatively mobile (annual turnover is about 25% by our estimates), but in order to be interviewed, women needed to be living in a given household for long enough to be identified as having given birth and to be visited for interview. The sample is representative of Mumbai’s lower socioeconomic status residents who have a roof over their head. Births were identified by local residents and we think that the dataset is reasonably complete. Participants did not have to come to interviews: they were visited at home at their convenience, with multiple visits to achieve successful meetings in many cases. Participants did not necessarily access any health care: this was the point of the community-based data collection. For example, unattended home births would not normally be considered as instances of access to health care, and the paper presents cost data for them.

- The argument on page 10 on the incidence of cata. spending across wealth quintiles does not convince me. I would expect that the poorest have a higher incidence, but it seems to be not the case. Why?
• We believe that our explanation is based on a reasonable hypothesis and that our finding reflects behaviour observed in at least two other studies conducted in Mumbai i.e. Shah More et al 2009 and Griffiths et al 2001. In short, poorer people have no safety net and lack flexibility and confidence in future income. The other issue is one of 'culture', urban communities are aspirational and one of the common aspirations is to achieve 'modernity' in health care (Shah More et al 2009). Depending on socioeconomic status, maternity care steps up through a sequence from home delivery, via public sector antenatal care, to public sector delivery, to private sector delivery (the highest aspiration). Identification with a higher socioeconomic stratum is also aspirational and may lead to uptake of health care services that prove more catastrophic than anticipated.

• We have added references to these two other studies to the exposition of the findings (see page 14). We have also added a longer discussion of this finding into the revised conclusions section. This discussion draws on the points made above (see page 15).

7. Conclusions:
- these are no conclusions but merely a summary. There is much to learn from your data!
  Explain more!
  • The conclusion section has been expanded to better highlight the findings.

- add a few sentences about the limitations of your study.
  • We have extended our statement about the limitations of the study (please see paragraph 1, page 16)

8. table 1: add year of study and year of US$ (2005US$ or 2010US$)?
  • Table 1 has been relabelled as follows: “Table 1: Total expenditures for antenatal, delivery, postnatal and neonatal care (in 2010 USD, inflation adjusted)”

9. Figure 2: a linear function might not be appropriate. It looks more like an U-shape.
  • This data is not expressed as a function, it is merely a presentation of means for different groups.

Reviewer #2: Priyanka Saksena
Major revisions:

Background:
1) The Background section of the paper is almost all focused on the measurement of catastrophic health expenditure and its theoretical basis. Whereas the section does this well, it does not provide an adequate introduction to the actual topic of research - the financial burden related to maternal health. The focus of the section needs to be reoriented to discuss problems related to out-of-pocket and maternal care more than the measurement of catastrophic health expenditure. Health financing, financing of maternal care as well as the situation of maternal care in the Indian context needs to be discussed. If additional data is available from Mumbai, that would improve the section as well.

- The Background section has been significantly revised in accordance with this suggestion and those of Reviewer 1. The new paragraphs 1 and 2 (page 3) should provide sufficient additional detail.

Methodology
2) As mentioned in previously, I think the data collected may not be suited to the measurement of catastrophic health expenditure. Imputation of expenditure from a different source is not ideal in any situation. In addition, catastrophic health expenditure is often sensitive to the threshold used. As such the results presented for catastrophic health expenditure may be "doubly" sensitive. I would strongly recommend not presenting catastrophic health expenditure data in this context.

- As the other reviewer expressed no concerns about our measurement of catastrophic spending, our calculation of catastrophic spending is based on a published methodology, and we have been explicit about the limitations of this analysis - we have chosen to retain the measurement of catastrophic health expenditure.

3) If there is data on indirect and direct expenditure, as well as an asset index, then concentration index type measure can be used quite conveniently to measure concepts such as regressivity. For example, these will be further grounded in previous literature than a comparison of quintile 1 and quintile 5 or the use of catastrophic health expenditure in this context. As such it may be useful to consider presenting these types of measure instead.
• Although we have retained the analysis of catastrophic spending (see note above), we have added the calculation and presentation of a Kakwani Index (see Table 3). The method used to calculate the Kakwani Index is now explained in a new paragraph in the Methods section (see page 9).

3) That being said, if catastrophic health expenditure is retained, its calculation needs to be more clearly presented in the methodology. For example, what imputation techniques were used? In fact, imputation statistics should be presented in an Annex.

• A new paragraph has been added on pages 9 and 10 to more clearly explain the imputation technique used. Previously published papers using this technique have not published their imputation statistics in an Annex (see for example Flores et al 2008), and we do not see how such an annex would add significant new insights or information. We can however provide these statistics if the Editors feel that they would like to publish such an annex.

4) Additionally, was the measure of catastrophic health expenditure sensitive to the threshold chosen (e.g. 40% vs. 20%)?

• The number of households spending catastrophically will change if the measure of catastrophic expenditure is changed. However, please note the following observation within the paper’s conclusion: “…the incidence of catastrophic spending in this setting was so high that even quite large changes in the exact measure would not change the fact that a significant percentage of households were being impoverished by maternal health spending.”

5) The methodology should also explain the sampling strategy for the subsample for whom expenditure information is available.

• In response to concerns about data quality from Reviewer 1, we have expanded the explanation of data collection, including the sampling strategy for the subsample for which expenditure information is available.

6) The format of expenditure questions should also be discussed. Were direct expenditure categories broken down further (e.g. drugs vs. consultation costs)? Information about the time
periods for expenditure information should also be reported (this will play a role in the understanding of short-term vs. long-term effects of expenditure, for example).

- **Direct and indirect expenditure data have been disaggregated as far as possible in the paper. Direct spending cannot be disaggregated by drug costs versus consultation spending. Indirect costs are disaggregated in Figures 1 and 2.**
- **Discussing the format of expenditure questions further is not feasible as this would require discussing the wording of all questions within a lengthy questionnaire.**
- **The periods covered by the data collection encompassed women's experience in index pregnancies. Since data were collected prospectively, with interviews at about six weeks postpartum, the data represent a period for each respondent of approximately nine months and six weeks: the duration of pregnancy and the postpartum period. The time periods for expenditure are thus determined by the duration of pregnancy and the data collection methodology, which is now more clearly explained in the paper. Data on the time period of spending was not collected within the survey and as such, expenditure cannot be explicitly analysed over time.**

Results

In general, the expenditure information should be accompanied by utilization information. For example, for many women in quintile 1 were using antenatal care or were using private facilities as compared to women in quintile 5. In the current format, it seems to only appear at the end of the section in regards to home/institutional deliveries. Data on the use/expenditure at public/private facilities should also be presented in Figures or Tables.

- **The section entitled 'Relative differences in expenditure' already includes a discussion of spending by care category and by sector, comparing across quintiles.**
- **Figures 1 and 2 have been revised to show spending by sector**
- **A Kakwani Index has been calculated for spending on different categories of care and for spending in each sector (i.e. Public and Private). Please see Table 3**

**Minor revisions:**

**Background**

It is not quite valid to list 40% as the usual threshold for catastrophic health expenditure. This very much depends on what the denominator (and the numerator) contains. I would recommend removing it.
• We would disagree that a threshold of 40% of total household expenditure is invalid. We clearly define both the numerator and the denominator when calculating catastrophic spending and cite a number of papers that recommend this threshold when using the same denominator and numerator. We can add additional references to further strengthen the case if necessary but do not expect the use of a 40% threshold to be controversial.

Discretionary revisions:

Results

It would be useful to define an inferior good.

• An inferior good is already defined on page 12 as follows: “…an inferior good, i.e. as income increased less of the good was demanded.”

In addition, as income elasticity may be a foreign concept to some of the readership of the journal, it may be worth reconsidering if it adds anything to present it here.

• This term is not used in the paper.

In addition to the absolute values of expenditure being considered across quintiles, shares of indirect vs. direct expenditure could also be presented in the Tables/Figures. (The same could apply to components of indirect/direct expenditure). These may fit in well with the concentration index type measures.

• The Kakwani Index (Table 3) now provides this data.