Reviewer's report

Title: Inequalities in health status, health care use and expenditures: a prospective follow up study of newborns among urban poor in Lucknow, northern India

Version: 1 Date: 4 February 2009

Reviewer: Marcel Bilger

Reviewer's report:

The authors study neonatal health in Lucknow, the capital of Uttar Pradesh, India. They have collected data from two public hospitals in 2007 and gathered information on 510 neonates with a follow up between 4 and 8 weeks after their birth. They analyze the distributions of neonatal illnesses and health providers sought. The statistical analysis is complemented by conditional distributions: out-of-pocket expenditure according to type of illness and provider sought, and type illness and provider sought according to various income brackets. The authors find that half of the neonates developed at least one type of illness and that the burden of out-of-pocket expenditure often exceeds the family income, especially in the lowest income bracket. They conclude that income protection policies should be adopted and suggest introducing health insurance or subsidizing care for those who cannot afford it.

The rationale for studying neonatal health in Lucknow is very convincingly exposed by the authors and the paper is well situated in the existing bibliography. An obvious contribution of this work is the collection of sound data on this important topic. The limitations of the data used also clearly appear in the discussion. However, I find the title somehow misleading as this paper does not aim at computing inequality indexes. I would thus avoid using the word “inequality” in the title. Moreover, even though this paper is obviously carefully written, it sometimes lacks mentioning important details, especially about the statistical analysis. Finally, I think that it is important to improve the readability of Section “Results” which I find a bit confusing. My comments below provide guidance on what could easily be improved on.

Major Compulsory Revisions

1) p.8, line 7. The authors write that their income cut-off points represent quintile values. If this were the case, the number of observations should be the same in each group, which is clearly not the case here. These income classes should thus not be referred to as quintile values. However, they are still reasonably well balanced and it seems to me that they could be kept unchanged.

2) p.8, line 8. The authors mention having used Chi-square tests for comparison of categorical variables across income strata. In my opinion, they also should clarify what hypothesis they are checking. My understanding is that they do not test whether a given categorical variable is identically distributed across income
stratums as a whole but whether each of its categories is when considered independently from the others (which implies the creation of a binary variable relating to each category in order to perform the test). I would ask the authors to clarify this point.

3) p.9, line 12. The authors mention that only primary disease conditions are taken into account. Are there many neonates with multiple conditions, especially among IMNCI and non-IMNCI ones? How is the primary disease chosen in such cases? Finally, I understand that assigning each sick neonate to only one category of illness simplifies the analysis but it would a questionable solution if many neonates with multiple conditions were present in the sample.

4) p.14, line 7. I'm not convinced by the interpretations given here. First, the authors write that the cost of conveyance is significantly different between GPs and NGDs. To be convinced of this, I would like to see a finer measure of dispersion than the range, such as a standard deviation. Even though it still were statistically significant, this difference would still be very small relatively to the combined cost. On the other hand, the authors say that the combined cost of GPs and NGDs is not statistically different. This interpretation is based on a statistical test yielding a p-value of 0.07. However, the observed difference in cost is important: NGD services cost 77% more than GP ones. It might thus be the case that these costs are in fact different but that it is not possible to reject the hypothesis that they are the same based on the available sample. Indeed, the relatively small sample size combined with high dispersion might not provide sufficient statistical evidence. In short: the results do not show that the cost are the same, they simply cannot show that they are different. To conclude, the reverse interpretation seems more plausible to me: the cost of conveyance is about the same for both the GPs and NGDs but the combined cost is different due to higher consultation price and medicine. Does this reversed interpretation make sense to the authors based on their expertise of the Lucknow’s context?

Minor Essential Revisions

5) p.2, line 12. The description of the methods is incomplete as it only describes the sample used. I would suggest mentioning what kind of statistical analysis is performed in the study. Maybe the 4 last lines of the previous section (Background) could be moved here. The same comment applies to section (Methods, p.5) which I would rename “Data” as it exclusively describes the dataset. The methods used are in fact described in the next section (Data Analysis, p.8). I find however that this section is too short and that the paper would gain by adding a clear description of the statistical analysis performed in the study. Maybe the tables could be presented here, which would make the presentation of the results easier to read.

6) p.3, line 4. The rationale for recommending promotion of qualified medical care-seeking for sick neonates is missing in the conclusion. I would add it here to make this conclusion stand-alone.

7) p.6, line 3. Is there information on participation rate? Were most mothers
willing to come to the OPD on pre-specified dates?

8) pp. 8-9. The results presented here are not all presented in a table, which makes it hard to go through them independently from the text. I would add a column in table 1 giving the unconditional frequencies of the categorical variables and sample means of the quantitative ones.

9) p.9, line 9. I would mention here that we are now looking at table 2.

10) p.10. Lines 11-20. I recommend complementing table 3 by adding a line for all IMNCI illnesses and another for all non-IMNCI ones. This would make this part of the text easier to follow.

11) p.11, lines 3-10. I find confusing that table 3 presents out-of-pocket expenditure for non-hospitalized neonates in Indian rupees whereas the same information for hospitalized neonates is presented in US dollars. In addition, sample means are sometimes given without the unit of measurement and the reader is left wondering whether they relate to INR or US$. I strongly recommend to chose only one unit of measurement and to stick to it all over the text and tables as well.

12) p.14, line 2. I would note that neonatal morbidity seems to be significantly lower only in the richest income bracket.

Discretionary Revisions

13) p.7, line 10. I find the word “extract” rather strong. Maybe “get” or “obtain” would be more adequate.

14) p.8, line 10. I would define the abbreviation for Indian rupees (INR) the first time it is used (either on page 2., line 19 or p.5, line 10).

15) p.9, line 14. I would write “over all” in one word. This also appears later on in the text.

16) p.11, line 20. I would define the abbreviation “LBW” the first time it is used.

17) p.16. Considering that the conclusion is very short I would merge it with the discussion.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests.