Reviewer’s report

Title: Assessing medical impoverishment and associated factors in health care in Ethiopia

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Reviewer: Jacob Mazalale

Reviewer's report:

The is an interesting article touching on an interesting subject in public health. It assess the impverishing effects of OOP expenditures in Ethiopia. Below are my comments by paper sections.

Abstract:

1. Authors should know that grammatically, "on the other hand" must always preceded by "on the one hand". In addition to this, the manuscript should have the language (i.e. English) reviewed.

2. In the conclusion (of the abstract, and therefore, by extension, the discussion and conclusion of the main text), it would be interesting for the authors briefly discuss the implications of the results on the most poor i.e. those who did not cross the poverty line because they were already below the line because the waiver systems and the community -based health insurance reforms mentioned would likely target these.

Background:

1. In the second paragraph of page 3, one beginning with "Ethiopia, like most..." line 12, it is importants that the authors provide a brief description of the Ethiopian healthcare system. For example, , is one generally expected to pay public healthcare providers? What is the proportion of private providers? If free of charge, how do they justify the study? There is need for that motivation. Two sentences would be enough to inform the reader. This would help to contextualise the study.

2. Line 14 of page 3 (second paragraph) talks of "different health financing reforms". The authors should provide examples.

3. In line 14, the sentence beginning with "For example, OOP..." does not properly connect with the previous sentences. The English needed some improvements.

4. Last phrase of background (more recent data) does not explain how 2011 data can be defined as "most recent data".
Methods:

1. The formula in line 26 of page 4 only gives one the total adult equivalent (household size) for each household. However, in line 21, the authors states in line 21 that "Total household expenditure was converted into an adult equivalent household expenditure to account for household size and composition..." Can they please explain how they used the formula to come up with "adult equivalent household expenditure"? How does the expenditure come into play?

2. In the same formula, the authors do not justify the values of alpha and theta.

3. In line 9 of page 5 under the subsection "Analysis of the impoverishing impact of out-of-pocket payments", the authors state that "Impoverishing impact of OOP health spending is estimated by comparing poverty using total household consumption expenditure". This is confusing to the reader. In the previous section, you mentioned of using the adult equivalent household expenditure. Here you mention "household consumption expenditure". Are these one and the same thing? Which one did you use?

4. In line 22 of page 5, the authors define a situation in which 'an individual is poor'. It is not clear what the unit of analysis was. The authors should clearly define the unit of analysis.

5. Line 25 of page 6 state that the 25 $1.90/day international poverty line at the 2011 purchasing power parity (PPP) and the national poverty line (Birr 3,781 per person per year were used. For ease of comparison, please convert one to the other so that we understand the difference between the int'nal poverty line and the local one.

6. Line 4 of page 7 beginis by indicating that the authors used a probit model. It is likely that when they compute how much the OOP impoverishes people, they do not necessarily come up with a binary indicator. Authors should explain how they eventually use a Probit model? The binary outcome/dependent variable compares what and what?

7. Line 14 of page 7 state that the authors also measured economic activity of the head of household. What does this mean? Did each household head have one economic activity or they mean the main economic activity or what?

Results:

1. Line 19 of page 7 state 1.19%. This is a percentage point and not just a percentage. This mistake is repeated several times and should be corrected throughout the manuscript.

2. The authors do not state how they estimated that 877,000 people were sent into poverty by OOP. They do not explain how they came up with this estimate.

3. Footnote on page 7 state that the authors used a November 1 exchange rate. It is not clear why they chose that specific date for the exchange rate. They should explain.
4. Line 6 of page 8 state that one of the covariates was "having at least a child aged less than 5 years". They did not list this variable in the methods when describing the variables. The authors should.

5. Line 8 to 14 repeats what is already states in the immediate previous sentences. They authors should correct this.

6. Table 2: This table is prone to misleading the reader. When you inform the reader that the categorical variable were coded 1 & 0, please also inform the reader which category that was the reference category. In addition, the authors should take care of what is written is specific rows. For example, Does the coefficient for the variable Location: Highland stand for the 1 or the 0 category? I encourage the authors to review how other papers have presented similar data and borrow a leaf from there.

7. Table 2: I would strongly encourage the authors to use marginal effects of the probit model and interpret them as such other than "coefficients" of a probit model.

8. Table 2: In most cases, similar research presents findings at 5% level of significance. The authors present results at only 1% and 10%. Is there any specific reason why this is the case? Was there no result at 5% statistically significant?

Discussion:

1. The discussion section needs to engage with similar literature more than is the case at the moment.

2. The discussion section also needs to give a discussion of those who were already below the poverty line.

3. The discussion section can also discuss the date of the data and indicate some possible implications.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.
Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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