Reviewer’s report

Title: Inputs for universal health coverage: a methodological contribution to finding proxy indicators for financial hardship due to health expenditure

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Reviewer: Jonathan Cylus

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My only real concerns are #2 and #5, which I think it would be good for the authors to address prior to publication.

1. Is the question posed by the authors well defined?

Yes. Due to the fact that data to calculate measures of financial hardship (e.g. household budget data) is not often available in all years, the authors investigate whether other, potentially more readily available data can serve as proxies. They find OOP/THE is the only national level indicator that is associated with financial hardship, and therefore conclude that there is no replacement for regular collection of household budget survey data. I agree with the importance of the question as well as the conclusion.

2. Are the methods appropriate and well described?

This is the only area of the paper that I am a bit unsure of. I agree with the authors' assertion that the results from this study reinforce previous findings that both household characteristics and health system indicators are associated with the risk of financial hardship. If that was the research question, then I think the paper is well conceived and have no concerns. However the authors indicate that they are in search of national level proxies of financial hardship to monitor country UHC progress. What I can't understand is the benefit of constructing a mixed effects model to answer this question. The mixed effects model is controlling for household characteristics (which vary by country), so the estimated effect of a national level variable is conditional on those household characteristics (as well as the other national level variables included simultaneously in the model). Therefore, if a national level indicator X is statistically significant in the model, the authors could still not conclude that researchers should in the future “just look at the national level indicator” because the national level indicator X was shown to be significant conditional on the household variables, which as the authors state, are not readily available each year to conduct similar analysis.

Additionally, with only cross-sectional data it would not be possible to conclude that changes in OOP/THE cause changes in the risk of financial hardship, which as I understand it is the goal of the study, since there are many other potential confounders that are not included in the analysis.
Perhaps I am mistaken... but could the authors please clarify how their approach addresses their particular research question?

The rationale for tax-based and social insurance based covariates also is unclear to me.

3. Are the data sound?
   Yes.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
   Yes.

5. Are the discussion and conclusions well balanced and adequately supported by the data?
   Mostly. I agree with the conclusion that national level indicators cannot replace financial protection indicators calculated from household budget surveys. But does the analysis also support this (assuming the methodology used can in fact answer the research question)? For example, OOP/THE is statistically significant in every model.

6. Are limitations of the work clearly stated?
   Yes.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
   Yes.

8. Do the title and abstract accurately convey what has been found?
   Yes.

9. Is the writing acceptable?
   Yes.

**Declaration of competing interests:**

I have no competing interests.