Reviewer’s report

Title: Proximate determinants of infant mortality in Ethiopia, 2016 Ethiopian Demographic and Health Surveys: Results of Survival Analysis

Version: 2 Date: 20 Sep 2019

Reviewer: M. Delnord

Reviewer's report:

Review

Main Comments:

- please check language/wording throughout the main manuscript. Unfortunately language edits are not the main issue in a scientific article, but this is really necessary to improve the paper. As it stands, the text is not ready for publication.

- The authors should give a clearer explanation on how missing data were handled during data collection, and for their analysis (was there any recoding? What about the 'don't know' category) - revise/add more detail in the flow chart per variable not just overall for the number of mothers/infants included in the survey.

- I have trouble with the focus on "the size of the infant at birth" and reporting of the results for this variable. Although I fully understand that a smaller child is more at risk of adverse perinatal events, in order for the results of this study to be leveraged into practice, the authors would need to be more precise and give a better explanation on how this variable was defined, collected and categorized. If recommendations from this study are to influence antenatal care/screening policies, decision makers will need targeted information based on gestational age and birth weight criteria. This information may not be available perhaps, but in any case this should be more clear in the text (already mentioned in the first review).

- In general, the manuscript has improved compared to the first version. However, it would be good to be more precise in the reporting of the results/discussion.

Other suggestions reading linearly,

* Full title: Please amend to "Results of a survival analysis"

* Abstract:

- first line amend to "the highest number of infant deaths".
"and declined" instead of "declining.
- Remove " Approximately, about "
- Edit to: "Using the Cox proportional hazard model, we found that: mothers' level of education, preceding birth interval…"
- Amend " type of births" to plurality if this is what you mean (i.e. singletons vs multiples)
- The original sentence was too long + other edits: " Using the Cox proportional (…) predictors of infant mortality" . " The risk of dying in infancy was lower for babies of mothers with secondary education (…) for very small size of infants including smaller than average size of infants compared to the reference group."
- Mothers not "Mother's"
- Smaller than average size infants not "smaller than average size of infants"
- In the conclusion, what do you mean by " scaling up of the dietary practice of pregnant mothers are should be emphasized"? perhaps there is a word missing, please rephrase.
- " Moreover, conducting Interventional study on male infants may reduce the infant mortality through bringing more evidence". I'm not sure I understand/agree with this statement. Please check: how could you conduct "an interventional vs. observational study" on male sex as a risk factor for infant mortality - is this really the key message from this study? If not, I would remove.
- Title page: If available, add institutional email addresses instead
- Background:
- Line9-11, word missing ? " The coverage of child(…) nations"
- Line 14: edit: The number of infants whom
- Line 20: 4.2 mission ' deaths" (word missing)
- Line 22: the infant mortality rate WAS 30.5

Third paragraph in background section: please include more information on the share of the population living in urban v rural settings as this variable is included in your study as well.

- Line 43: write the full name for EDHS.
- p.4 cite previous studies on trends or identified risk factors for infant mortality specifically in Ethiopia if available.

- P4 line 6 Given the new framework of analysis in the revised paper, amend the text to include also the distal and intermediate factors. Also, it would help the reader to have more information on the regions to understand what may be driving some of the associations (deprivation? Urban vs rural setting? Other…)

* Methods section

What about loss to follow-up? Add N for these infants and explain in the text. Please discuss if there are missing data for some of the categories, and if the denominator is different for some of the variables.

Wording: I though the standard term was "interpregnancy interval", please check and use term accordingly. I am not sure about "prevedine birth interval" although I understand what you mean.

I have a problem with the "size of child at birth" variable. Please explain what is the measurement scale for this variable, and give the definition. If it is based on the mother's estimation, this variable will be subject to reporting/recall bias and confounded by the mother's age/level of education. If this is based on birthweight and/or gestational age, this is important information you should give the reader including the grams/weeks thresholds used in the analysis.

"Type of birth" -&gt; change label to "Plurality"

Household wealth - Give a more precise description of the quintiles that were used.

* Results
Table 1: Add Total number of infants included in the analysis (the denominator).

Table 2: Add information in the text on the fit of the multivariate model (report statistic).

Add scale for "household wealth", "preceding birth interval" i.e. "in months" in the rows, + scale for "maternal age" (in years).

Figure 3: Please check reporting standards for Kaplan Meir Survival Analysis (http://sphweb.bumc.bu.edu/otlt/MPH-Modules/BS/BS704_Survival/BS704_Survival_print.html). Label for Y axis is missing. Add information on median survival time for instance.

Also, would it be possible to add the survival curves of some of the key risk factors in Fig 3 and adjust discussion accordingly?

This would strengthen the reporting of the results. It would give an indication of the survival gap, between urban vs. rural for instance, and give indications of what could be the gains for prevention. Alternatively, please add CIs for the overall curve.

* Discussion

The authors have addressed some of the points from the previous review. I would still add more in the limitations section still. The methodological limitations in this study are not only due to recall bias (i.e. limitation from the survey design) but also due to the type of analyses the authors conducted, as well as the variables themselves + missing data if any. Please check if all comments from the reviewers have been addressed in the discussion.

In the discussion, please report results using "early v Late neonatal period" if this distinction was made in the analysis.

Minor: Amend the discussion to include the distal and intermediate factors line 37, p12
Please change "findings in other settings "p12 line 49, by being more precise and mentioning which setting and based on what categories/thresholds/definitions in those studies. Readers should be able to know how the results from this study compare to specific geographic settings and/or time trends. Especially as the main objective in the Background section is to give the latest available evidence.

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An article whose findings are important to those with closely related research interests

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Please indicate the quality of language in the manuscript:

Not suitable for publication unless extensively edited

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