Reviewer’s report

Title: Next wave of interventions to reduce under-five mortality in Rwanda: A cross-sectional analysis of Demographic and Health Survey data

Version: 0 Date: 26 Mar 2017

Reviewer: Rajiv Sarkar

Reviewer’s report:

In this study, Amoroso and colleagues utilize data from the Rwanda Demographic and Health Survey to evaluate the factors associated with under-five (U5) mortality in Rwanda with the aim of identifying areas that can be targeted for potential interventions. This is a well-written manuscript on an important public health topic. I have a few comments that the authors’ may find helpful:

(1) Despite almost half of the reported deaths occurring during the neonatal period, the factors associated with neonatal mortality could not be examined separately. Also, most of the factors identified as determinants of U5 mortality were associated with only childhood and not infant mortality. As the factors associated with childhood mortality differ from those associated with neonatal and infant mortalities, it is likely that interventions targeted towards the factors identified in this study will be able to reduce only a small proportion of the overall U5 mortality. This is a major limitation, which should be acknowledged and discussed.

(2) Assessment of domestic violence and HIV status were conducted in a subset of participants. However, in the logistic regression analysis, those not interviewed or tested are included as a separate category. I’m not sure if this is the correct analytic approach as including them in the survey would have resulted in them being categorized into one of the other categories. For example, testing the "not tested" participants for their HIV status would have resulted in them having either a "positive" or a "negative" HIV status. I suggest the authors' consult a statistician to determine the best analytical approach for such cases. Using advanced statistical methods, such as multiple imputation, may be a better approach. Also, it will be helpful if the authors presented some information regarding the representativeness of the subsamples interviewed for the study on domestic violence and HIV status.

(3) In the Methods section, the authors' mention that the urban areas were oversampled. Was this oversampling accounted for in the analysis? If not, it can affect the generalizability of the findings.

(4) The authors' may consider presenting population attributable fraction (PAF) estimates, in addition to odds ratios, for the significant risk and protective factors as PAF has a more practical public health implication.

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

**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 recommend additional statistical review

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.
I declare that I have no competing interests.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal.