**Reviewer’s report**

**Title:** Prevalence of child marriage and its impact on fertility outcomes in 34 Sub-Saharan African countries

**Version:** 0  **Date:** 10 Jun 2019

**Reviewer:** Yvette Efevbera

**Reviewer's report:**

Overall, this paper is on an important topic and has a lot of potential to advance conversations on the harmful consequences of child marriage among girls. The authors have impressively sought to utilize existing DHS data, which provides a large data set with international data to analyze trends. The authors also gave attention toward a more robust introduction to the issues highlighted. The topic would certainly be of interest to readers.

However, while this paper presents an African perspective on some earlier foundation work on child marriage and fertility-related outcomes (see, for example, Godha, D., Hotchkiss, D. R., & Gage, A. J. (2013). Association between child marriage and reproductive health outcomes and service utilization: a multi-country study from South Asia. Journal of Adolescent Health, 52(5), 552-558.), there is an opportunity for the authors to innovate and push the field beyond where it was in 2013. I would be interested in stronger rationale from the authors why the paper, in this form, seems both important and timely. I would also encourage increased linkages to some of the more recent work coming out on child marriage in sub-Saharan Africa, which I include at the end of these comments.

Additional concerns with the paper in its current format that, if addressed, would greatly strengthen the final product center around: A) the introduction and framing of the research, B) clarity of methods, C) the conclusions that are drawn from the study, and D) minor comments. I believe these are all addressable. I have expanded in detail below, as I believe this paper has potential to make a meaningful contribution.

A) Introduction - The authors make several statements that align with advocacy language against child marriage yet have not been consistently supported in peer-review literature. A few examples are highlighted below.

1. The authors state that child marriage "is broadly recognized as a harmful sociocultural practice and an act of human rights violations" (p. 3 lines 21-23), however, this is not substantiated with the secondary reference cited. I would advise the authors cite a primary human rights document that calls against child marriage (e.g., African charter) or restate and cite, using a more current UN source, that child marriage creates a situation that violates girls’ rights across several domains.

2. As another example, the framing of the statements p. 3 lines 26-38 and p. 4 lines 8-19 are not conclusive in current literature. I would suggest reframing, as some there is emerging evidence

3. Another example of a statement that does not seem consistent with current literature is p. 4 line 35-37. If I understand correctly, the authors propose that early motherhood is associated with HIV/AIDS? This conclusion is not established in the literature, and in fact, a recent paper on associations between child marriage (closely related) and HIV/AIDS have suggested the relationship is not clear (see, for example, https://www.girlsnotbrides.org/resource-centre/advancing-the-evidence-base-on-child-marriage-and-hiv/).

B) Methods

4. Why was only the last wave of DHS data used? Do you have concerns over the nine-year gap in collection of the data?

5. The rationale for including data from only women 20-24 years was not clear: What do the authors mean by forward displacement of age? Is there any evidence that suggests that recall bias may be minimized by not exceeding 24 years of age? Also, while this may ensure comparison with other studies, I would like to see clear rationale for why this is the best way to utilize the data.

6. I also wonder if the authors considered other categorizations of age at marriage. This would be useful in the appendix to provide more nuance on if early and very early ages at marriage are associated with different outcomes.

7. While it is great to see that many other covariates were considered, I am unclear from the current section (p. 7-8) how each are defined and measured and why they were included. The section on other covariates should be formatted into sentences, rather than just a list. Drawing from recent studies on child marriage, did the authors also consider age gap with partner, women's education status, and polygamy/number of wives?

8. Some academic institutions require submission of a study protocol to receive exemption status, which may contradict p. 8 lines 38-30; was this not completed for your institution?

9. Could the authors include the tests for multicollinearity in the appendices, as readers may be surprised that these were not an issue for any variables?

Conclusions

10. For findings, I would recommend that the authors focus on the information which their study newly contributes, namely the focus on associations to fertility-related outcomes. I would also
advise the authors to be cautious in the interpretation of results, to avoid overstating. For example, in p. 14 lines 20-33, the authors suggest that they measured "impact of child marriage on fertility" (rather than associations) and that "women of child marriage had reduction in childbirth in the first year of marriage" (rather than reduced odds in comparison to the reference group).

11. Why do the authors believe that door-step delivery of services for modern contraceptive methods will address the gaps identified through their research? Please provide additional rationale for how the research contributes to this conclusion.

D) Minor comments:

12. p. 4 line 22 - I believe the word "an" is missing before "ubiquitous." I would also recommend removing "ubiquitous" because it is not necessarily a problem everywhere. (This should also be addressed p. 4 ln 21-23).

13. p. 4 ln 21-23 - Were these two sentences meant to be one?

14. The background information provided on DHS data sets and the measures could be shortened.

15. Please check spelling and edit for flow. For example:
   - P. 8 Line 36 - did you mean "response" rather than "reaponse"?
   - P. 8 line 37 - did you mean "multicollinearity" rather than "multcollinearity"?
   - p. 8 line 57 - Did you mean "women" rather than "woman"?

16. Double check to make sure all titles are correct in references (for example, #33 is missing the word "between"

Finally, I include below additional references the authors may want to consider on child marriage in sub-Saharan Africa; the first three may be particularly relevant:


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.

Unable to assess

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

No

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

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