Author’s response to reviews

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

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Prevalence of child marriage and its impact on fertility outcomes in 34 Sub-Saharan African countries
Sanni Yaya; Emmanuel Kolawole Odusina; Ghose Bishwajit
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Dear Editor,

This letter is in reference to your email dated June 10, 2019 with reviewer’s comments.

We appreciate the positive and constructive feedback provided by the reviewers. They have signaled the strengths and importance of our study, together with valuable insights to better frame and clarify the message of our manuscript. We believe the revised manuscript has been significantly improved and the reviewers’ comments have been addressed adequately.

Please find for your kind consideration the followings:

• A section-by-section response to the comments and suggestions of the reviewers (below).
• A new revised version of the manuscript with altered text underlined.

We hope that these changes meet with your favourable consideration. Please do not hesitate to get in touch if you require any further information.

Sanni Yaya, PhD
Corresponding author.
Reviewer reports:

Editor Comments:
I have received the reviewer reports and assessed your article. Both reviewer’s make substantial suggestions to strengthen the paper and make a valuable contribution to the literature regarding child marriage. Particularly author 1 suggests why not include data for boys, and potentially compare to girls citing the recent UNICEF paper on child marriage among boys. As well reviewer 2 has made good points in relation to your use of DHS data in the feedback on Methods that need to be addressed. I support both reviewer’s assertions that this manuscript needs to be better situated in the current literature on child marriage, human rights, and interpreted in a way that brings home the ‘so what’ message that goes beyond what we currently know to potentially make a meaningful contribution.
Response: We thank the reviewer for this valuable comment and agree with the suggestion. We did not consider child marriage among boys since this was not the focus of the current paper but we intend to explore this in a separate paper in the near future.

I also have a few comments that I would request you respond to:

Analytic procedure
Pg. 8 lines 46-49
Please provide reasoning behind the co-variates you’ve adjusted for in your models. I am not convinced of their potential use in the model in relation to fertility outcomes. Particularly watching television, I imagine reading the newspaper may be a proxy for education / access to information, however, please state the rationale.
Response: The co-variates were considered after literature review and also due to their inclusion in similar previous studies. Please consider these:


Results
Pg. 9 line 47 – what’s the reasoning behind looking at television watching and child marriage?

Discussion
Pg 14 re: fertility outcomes – situate these outcomes and what it means for women’s fertility and sexual and reproductive health if for instance women who experience child marriage are less likely to have childbirth in the first year after marriage? Ok, so what does that mean for women? What does it mean for sexual and reproductive health of women. All of the outcomes need to be interpreted better and situated within the literature in a meaningful way that provides insight into what these results mean and how then it relates to providing sexual and reproductive health rights to women.
Response: Reviewed and situated in literature. For instance, child marriage may have great adverse effect on women’s health and social development. Child marriage has been associated with increased incidence of poor health. Child brides are exposed and forced to engage in marital issues, chores and to take up adult responsibility they have not really prepared to undertake and are not matured enough to undertake. Immaturity of child brides socially, psychologically and physiologically may lead to adverse reproductive outcomes. High fertility and abortion are inimical to sound sexual and reproductive health of women. Child marriage put women at increasing risk of pregnancy complications and maternal mortality. Complications due to child births and pregnancies are part of the leading factors in maternal mortality among women aged 15 –19 and 20-24 in the world. It has both long and short terms consequences most especially in sub Saharan African countries where there is high level of poverty, poor health facilities (also antenatal and postnatal facilities), low prevalence of contraceptive use, sexual and reproductive education. Negative consequences of child marriage include poor health, low birthweight, premature births and nutritional deficiencies. Child marriage has been associated with increased incidence of poor health. Child brides are exposed and forced to engage in marital issues, chores and to take up adult responsibility they have not really prepared to undertake and are not matured enough to undertake. Immaturity of child brides socially, psychologically and physiologically may lead to adverse reproductive outcomes.

Lastly, I suggest having someone copyedit your manuscript for language issues as it has typos and grammatical errors that need to be corrected as well could be improved in relation to flow and arguments presented in the text to make it more readable. Should you be able to respond to the reviewer comments in a detailed and thoughtful rebuttal and provide revisions I invite you to resubmit your manuscript.

Response: The manuscript was revised for language issues, grammatical errors were corrected and arguments presented in more readable form.

Reviewer reports:
(Reviewer 1): 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.

Response: Thank you for this important point. The manuscript was reviewed in line with the paper mentioned. Other recent papers on child marriage were also reviewed:


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.

Response: We thank the Reviewer for their comment. Introduction was reviewed and relevant references were included. Among other statements included were: “Child marriage also known as early marriage measured typically by the proportion of women age 20 to 24 who married, in union or entered into marital relationship when either or both individuals are less than 18 years, has been experienced by large number of women globally [1]. Child marriage is rooted in sociocultural practice and an act of human rights violations. To attain Sustainable Development Goal 5 in Africa, much needs to be done to reduce prevalence of child marriage especially in sub Saharan Africa”.

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.

Response: Thank you for your comment. The portion was reviewed and substantiated with reference. In addition, primary human rights documents on child marriage were considered and cited. Child brides are prone to domestic violence and are less likely to participate in family decision making due to immaturity and lower socioeconomic status. International agreements to protect the rights of young women in child marriage include the 1989 United Nations Convention on the Rights of the Child (CRC), the 1990 African Charter on the Rights and Welfare of the Child (ACRWC], the Programme of Action adopted by the International Conference on Population and Development (ICPD) in 1994 and Article 16(2) of the Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW), which states that “women should have the same right as men to freely choose a spouse and to enter into marriage only with their free and full consent” and that the “betrothal and marriage of a child shall have no legal effect. In 2010, about 158 countries confirmed that 18 years was the minimum legal age for marriage. However, in 146 countries, state or customary law allows girls younger than 18 to marry with the consent of parents or other authorities; while in 52 countries, girls under age 15 can marry with parental consent. In 2014, almost all African Union member countries had signed some of these laws which emphasize that the minimum age for marriage is 18 years.

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 pointing toward perceptions, from women themselves, of benefits or advantages of child marriage and that girls themselves may have more autonomy in partner selection in African contexts (see, for example, Petroni, S., Steinhaus, M., Fenn, N. S., Stoebenau, K., & Gregowski, A. (2017). New findings on child marriage in sub-Saharan Africa. Annals of global health, 83(5-6), 781-790. http://www.riatt-esa.org/s/Child-Marriage.pdf; Efevbera, Y. (2019) Why do young girls marry? A qualitative study on drivers of girl child marriage in Conakry, Guinea. Women Deliver. https://www.morressier.com/article/why-young-girls-marry-qualitative-study-drivers-girl-child-marriage-conakry-guinea/5c7f9e3fb3003b000f4cf987)

Response: We thank the reviewer for this valuable comment and agree with the suggestion. The concerned statements were reframed and examples and emerging evidences were considered. For instance, these statements were included: “Emerging evidence also reveals drivers of child marriage are complex especially if it is viewed from the perception of those impacted. Not all girl child marriages are arranged, many girl brides may be interested in the relationship. In addition, low investment on girls’ education, social norms, sexual relations, unplanned pregnancy, school dropout, poverty and unemployment among girls have been identified as factors promoting child marriage”.

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/).

Response: Thank you for this. This portion was reviewed in line with evidence from literature. The following were cited:


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?
Response: They were the most recent in different countries. However, nine-year gap was acknowledged as a limitation of the study.

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.
Response: Yes, it will ensure comparison with other similar studies; also evidence from literature indicated age 20 to 24 years old is the typical age group for the study of child marriage among ever-married women.


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.
Response: Thank you for your comment. This is the focus of another study in the near future. This suggestion will be considered and discussed exhaustively. This study considered age 20 to 24 years old being a typical age group for the study of child marriage among ever-married women.
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?
Response: So many covariates were considered in order to align with similar studies and to enhance comparison of findings. Definitions and measurements of variables were revised and formatted into sentences during from recent literature on child marriage. As explained above, these factors would be the focus of the paper in the near future.

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?
Response: We thank the reviewer for this comment. The University of Ottawa did not need to be consulted for this analysis of secondary data, therefore no exemption was sought. Given that the de-identified data used for the analysis consisted of the publicly-available Demographic and Health Surveys (DHS), ethical approval lies on the institutions that collect the data and make it publicly available (USAID for the DHS).

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?
Response: Thank you. This has now been included as a supplementary file.

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).
Response: Thank you for this valuable advice. The conclusion was reviewed and the authors focused on the contributions of the study. The statements on p. 14 lines 20-33 were revised to remove erroneous claims and spurious conclusions. The revised conclusion reads as follows: “In this study, we show that child marriage remains highly prevalent in many sub-Saharan Africa countries. Improved family-planning interventions geared towards married adolescents would help a great deal to tackle the occurrence of child marriage and its outcomes. Prominent factors of child marriage such as poverty and lack of education should be addressed to promote personal development among the girl-child to prevent early marriage and its adverse fertility outcomes. The findings of the study further suggest that Health Programmes for innovative interventions aimed at delaying marriage should be formulated to educate young girls about the negative outcomes of early motherhood. Furthermore, modern contraceptive methods could help reduce child marriage especially among women who enter marriage due to unwanted pregnancy. Overall, global consensus points to laws regarding the minimum marriage age at 18 years are essential and considerable evidence has associated child marriage to adolescent sexual and reproductive health problems. Passing direct and unconditional laws against child marriage to
arrest the socio-cultural forces that perpetuate it remains a key approach in curbing the practice in sub-Saharan Africa. Social change programmes on child-marriage, targeting unmarried young women should also be broadened to accommodate interventions for men who are pursing children for marriage”.

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.
Response: The statement was considered and reviewed to reflect the outcome of the study.

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).
Response: We thank the reviewer for this comment and agree with the suggestion made. The word “ubiquitous” was removed and the statement was reviewed.

13. p. 4 ln 21-23 - Were these two sentences meant to be one?
Response: Thank you. The two sentences were considered; better one was reviewed while the other one “Childhood pregnancy put both the mother and her baby at high risk of adverse outcomes [2,18]” was deleted.

14. The background information provided on DHS data sets and the measures could be shortened.
Response: The background information provided on DHS data sets and the measures was considered, reviewed and 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"?
Response: Thank you. We did correct spelling errors, improve punctuation, and generally enhance the quality of the paper.

16. Double check to make sure all titles are correct in references (for example, #33 is missing the word "between"
Response: The references were revised and corrected

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:


Response: Thank you for these valuable suggestions. The references were considered and reviewed.

(Reviewer 2): Introduction

1. Some of the preliminary comments require greater critical engagement. Take, for instance, the sentence that child marriage undermines women's rights to autonomy. What do the authors mean by "rights to autonomy"? Where does such a right come from? Are you referring to the right autonomy in clinical treatment? And why would autonomy in itself be a positive goal? Several commentators have criticised the over-emphasis on autonomy as it's not only impossible (nobody can be 'independent'), but also harmful - the latter as it drives interventions that threaten the interdependent social fabric human relations.

Response: The statement was reviewed. The suggestions of the reviewer were considered.

2. Similarly, this reference to autonomy underplays the role that girls themselves play in child marriage. How would the authors reconcile their affirmation with the fact that in several cases girls themselves are initiating marriage? The reference 6 - used to support this statement - is not helpful and should be change. Their initial statements seem to hide biases in what child marriage is and how it affects girls, and requires greater engagement with the topic. A few articles that I would recommend looking at include:

Response: Thank you for these suggestions. The statement and the reference 6 were considered and reviewed as suggested.

Kenny L et al. (2019); Adolescent-led marriage in Somaliland and Puntland: A surprising interaction of agency and social norms. Journal of Adolescence, 72, p. 101-11. "Parents were concerned by these elopements: they thought they were rushed and not thought through enough. For example, a woman from Somaliland explained, "now the young people meet on social [media] and then say 'I like you' and 'I like you too' and then get married without planning for lasting marriage".

Response: This valuable reference was considered and included.

Boyden, J et al. (2013). Harmful traditional practices and child protection: contested understandings and practices of female child marriage and circumcision in Ethiopia. Young
Lives. "There was considerable unease about an increase in elopements. It was emphasised that parents of the girl frequently oppose unions that arise through elopement, and many take the groom and his family to court, although apparently the courts are reluctant to investigate consensual marriages. Elopement also adversely affects bridewealth. The bridegroom's family is expected to give the bride's family a sum of around 1,200 birr (£44) in compensation for violating the norms of their clan, 1,000 of this being for the girl's parents and 200 for the clan".

Response: Thank you. The reference was reviewed for its contributions and considered.

3. I am not sure reference 13 supports adequately the authors' claim that "Further, social norms and the need to reinforce social ties are among the leading causes, as some parents believe that they can improve their social status by marrying their daughters to a well-off family". For links between social norms and child marriage the authors could consult:


Response: The reference was reviewed for its contributions and considered.

4. The claim that "some parents also think that by marrying their daughters at young age, she will be safe from sexual adversity" requires substantiation. If all parents were that wrong, they would probably not engage in child marriage to begin with. The authors' approach here seems to suggest a one-way interpretation of child marriage as harmful. Some commentators suggest that some parents - even though they are poor and uneducated - do love their daughters and are trying to do what they think it's best for them. This is why tackling child marriage is complicated: it actually does serve a purpose, it's not just a random glitch in the system that can be corrected without addressing the structural factors around it.

Response: Thank you. These statements were reviewed. Other views on child marriage were also considered. The revised paragraph reads as follows: “Emerging evidence also reveals drivers of child marriage are complex especially if it is viewed from the perception of those impacted. Not all girl child marriages are arranged, many girl brides may be interested in the relationship. In addition, low investment on girls’ education, social norms, sexual relations, unplanned pregnancy, school dropout, poverty and unemployment among girls have been identified as factors promoting child marriage”.

5. Despite series of efforts… etc - this sentence and the whole paragraph would benefit from a revision. Adverse consequences of child marriage should have been mentioned earlier on.

Response: The paragraph was reviewed and moved to earlier part.

Results

1. Results only explore results for girls - do the authors think it would be worth including results for boys? A recent article from UNICEF just came out that look at child marriage for boys and it
would be interesting to know whether the authors would consider carrying out a similar analysis for boys too.
Response: This is a good suggestion. We did not consider child marriage among boys since this was not the focus of the current paper but we intend to explore this in a separate paper in the near future.

2. This associations are interesting but limited in what they tell us about country differences. Is there anything that the authors can do to help understand how contextual differences are affecting the association between child marriage and negative health outcomes?
Response: Thank you for these valuable suggestions. This is one of the limitations of the study. This will be considered, explored and exhaustively discussed in a separate study.

3. Table 2 needs greater discussion. Presently is only referred to in the text with little interpretation.
Response: More explanation and interpretation provided on discussions of findings.

Discussion

1. As mentioned above, table 2 would need greater interpretation. This section also needs to benefit from a previously-built conceptual framework, so you might want to create one more explicitly in your introduction so that here you can resurrect it and use it to interpret your findings.
Response: Thank you. Explanation provided. Concepts and findings discussed in introduction were considered and interpreted in line with the findings from study.

Conclusion

1. The suggestion that "the level (?) of child marriage indicates that it has become an acceptable act within several socio-cultural group" is not sufficiently supported by the data. To substantiate such a statement, you would need to ground your suggestion in the literature - this wouldn't be your finding though, it would only be part of the conceptual framework.
Response: The statement was reviewed to present finding from the study.