Author’s response to reviews

Title: Women’s empowerment and fertility preferences in high fertility countries in Sub-Saharan Africa

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Author’s response to reviews:

We are very grateful to the editors for their appropriate and constructive suggestions and for their proposed corrections to improve the paper. We have addressed all the issues raised and have modified the paper accordingly. Below is a summary of the changes we performed and our responses to the editors’ comments and recommendations.

Technical Comments:

Editor Comments:

1. Background

c) Third paragraph, second and third statements (page 4, lines 2-7): Are the findings from existing studies referred to here not counter-intuitive? Or what do the authors exactly mean by household decision making, positive attitudes towards women’s right to refuse sex, or negative attitudes such as wife beating? Does it mean that the studies show that women who had some decision-making power in the household and those who believed that women can refuse to have sex with the husband if she did not feel like were more likely to have more children than desired (second statement) and that those who supported wife beating were more likely to desire fewer children? If so, did the studies provide any potential explanations for the patterns so that the authors can also briefly cite those here?

Obviously, these findings are counter-intuitive. The authors stated that “it may be that more empowered women fulfilled social expectations of high fertility, although they personally desired smaller families. Alternatively, the findings could reflect a flaw in the measures of empowerment.”

R: Absolutely right. The authors argued that the findings could reflect a flaw in the measures of empowerment. We have remove these counter-intuitive results in the revised manuscript.

e) Third paragraph, fifth statement (page 4, lines 11-12): The authors argue that the relationship between empowerment and fertility preferences can be viewed from the demographic transition theory. They need to explain how exactly the demographic transition theory can explain that relationship.
R: Theories of demographic transitions consider female labor force participation one of the causes for actual fertility and fertility preference to decline. Please, refer to page 4.

i) Fifth paragraph, first statement (page 5, lines 5-6): Change “benefit” to “contribution” and provide the justification for why focusing on Francophone sub-Saharan Africa is considered a contribution of the paper. Is it because there are no studies focusing on the region or there are gaps in existing studies in the region?

R: Birth control remains a big challenge in FSSA countries. However, very little is known about the association between women’s empowerment and fertility preferences in the region.

q) Last paragraph, part (ii) of last statement (page 6, lines 3-5): The direction of association—i.e. how the factors mentioned are hypothesized to be associated with fertility preferences—should be clear.

R: The aim of this study was to examine the association between women’s empowerment and fertility preferences in high fertility FSSA countries, controlling for socio-economic and demographic characteristics. It specifically answers the following research questions: is women’s empowerment associated with achieving the desired family size in FSSA? Which dimension of empowerment matters more in influencing women’s ability to achieve the desired number of children? We hypothesize that (i) an increase in women empowerment is associated with small family norms; (ii) economic empowerment matters more than other dimensions of empowerment in influencing women’s ability to achieve the desired number of children. Please, refer to page 5, last para.

5) Econometric estimation:

a) First paragraph (page 9, line 7-8): As previously noted, it is not appropriate to talk about analyzing the effects of women’s empowerment on fertility given that we are dealing with cross-sectional data. The authors should better talk of “association” rather than “effects”.

R: Thank you very much. In this paper, we examine the association between women’s empowerment and fertility preferences. Please, refer to page 9.

b) Second paragraph, first statement (page 9, lines 9-10): It is not clear what form of linear regression model the authors estimated. Was it ordinary least squares (OLS) regression model? If so, how did the authors account for the fact that the dependent variable—the ideal number of children—cannot go below zero, and hence violates one of the OLS assumptions? Why did the authors not consider Poisson or negative binomial regression models which are appropriate for such dependent variables i.e. counts that cannot go below zero?

R: The first model analyses the association between empowerment and ideal number of children. In this regression model the dependent variable is ideal number of children for each married woman. In this situation, Poisson Regression Model and Negative Binomial Regression Model have statistical advantages over OLS. In this study, we used Negative Binomial Regression Model. “Negative binomial regression models do not assume an equal mean and variance and particularly correct for overdispersion in the data, which is when the variance is greater than the conditional mean. Please, refer to page 9.
R: In order to facilitate the analysis of data, DHS has developed the concept of recode files. There are seven common types of recode data files associated with the core questionnaires (Births Recode, Couples' Recode, Household Recode, Individual Recode, Children's Recode, Men's Recode, and Household Member Recode). Birth Recode presents the full birth history of all women interviewed including its information on pregnancy and postnatal care as well as immunization and health for children born in the last 5 years. This file can be used to calculate health indicators as well as fertility and mortality rates. It contains all data needed for our study. Please, refer to this link: https://dhsprogram.com/data/dataset-types.cfm. Please, refer to page 10.

7) Results: Descriptive statistics

h) What do “Observations” at the bottom of the table refer to? Are they the number of women or the number of births given that there was mention of use of birth recode files? The authors should make that clear i.e. whether the observations are the number of women or number of births.

R: The “Observations” are the number of women aged 35 and over.

8) Results: Empowerment and preferences regarding fertility:

d) Besides the suggested edits, it is not clear how one can determine this from Table 3. What is the criterion for determining which factor is important for women’ empowerment based on the numbers presented in Table 3?

R: Negative values imply lack of empowerment while positive values indicate some degree of empowerment. Countries with a positive empowerment index are the best positioned in terms of empowerment. Mali is the best positioned in terms of socio-cultural empowerment while Chad is the best positioned in terms of economic empowerment. Likewise, Burkina Faso, Mali and Chad are the best positioned in terms of familial empowerment. Niger is the worst positioned for all dimension. Please, refer to page 12.

i) Third paragraph, second statement (page 13, lines 4-5): What then does this mean in simple terms? The authors should interpret it for the reader e.g. that more empowered women desire significantly fewer children compared with their less empowered counterparts.

R: Generally speaking and regardless of the country, the number of children considered ideal by women decreases as the empowerment index increases. More empowered women desire significantly fewer children compared with their less empowered counterparts. Please, refer to page 13.

k) Third paragraph, last statement (page 13, lines 8-10): Rephrase to read: “In addition, a woman’s living environment, household socio-economic status, the spouse’s level of education … desired number of children.” The suggested edits aside, the authors should summarize the direction of association between these indicators and the outcome.

R: Our findings showed that the number of children considered ideal by women decreases as the spouse’s level of education increases, regardless of the country. The number of children considered ideal by women decreases as household socio-economic status increases in Burkina Faso and Chad while more economically household status in Mali and Niger increases significantly the desire for more
children. Surprisingly, women from large households significantly desire more children in most of the countries considered. Please, refer to page 14, last para.

I) Table 4 in the appendix: Under the categories for household size, what does “10 – “ refer to?

R: 10 and more

I) Also, what would one make of the statistically significant positive coefficient estimates? It is, for instance, evident that women from large households significantly desire more children in most of the countries considered.

R: It is counter-intuitive that women from large households significantly desire more children in most of the countries considered. Please, refer to page 18 (last para) for the discussion.

I) In addition, more economically empowered women in Chad significantly desire more children. Is there anything that the reader can take home from these patterns?

R: It is counter-intuitive that in Chad women who are empowered economically are more likely to have more children. We hypothesized that in Chad if parents view children as more likely to take paid work or earn market wages, they may be more inclined to have more children. Child labor remains a problem in Chad [50]. In 2017, approximately 53% of children in Chad were engaged in child labor [50]. Despite the economic empowerment of women, the existence of child labor can explain the high level of the ideal number of children [50]. Child labor also can explain the fact that an improvement of household’s standard of living increases significantly the desire for more children in Niger and Mali. Please, refer to page 16 (para 2).

p) Last paragraph, last statement (page 13, lines 22-25): Change “the household’s standard of living” to “household socio-economic status”. Also, briefly mention the direction of association between these indicators and women’s ability to have the desired number of children so that readers can have a sense of what is going on.

R: Our findings showed that rural environment influences negatively women ability to have the desired number of children in Niger while it is not statistically significant in the others studied countries. Woman ability to have the desired number of children increase as household socio-economic status and husband’s level of education increase. In addition women from large households are more likely to have the desired number of children. Please, refer to page 14, last para.

r) Table 5 in the appendix: It is evident from the table that what the authors presented are not odds ratios but coefficient estimates. Odds ratios can never have negative values since they are exponentiated coefficients. The authors may have estimated logistic regression models, but if they did not specify that the output be presented as odds ratios, then what they obtained were simply coefficient estimates.

R: We have estimated logistic regression model. We have made all necessary changes. Thank you very much.

9) Discussion
a) First paragraph, first statement (page 14, lines 7-8): Of course the association is there but what the reader wants to know is whether it is statistically significant and in what direction. That needs to be clear in the statement.

R: Please, the second statement shows the direction. Please, refer to page 15, Para 1.

c) First paragraph, third statement (page 14, lines 9-10): The authors state that their findings showed that fertility decline is a result of progress in women’s empowerment. This is not true. The authors did not examine whether women’s empowerment contributed to fertility decline. Rather, they simply examined the association between women’s empowerment and desired family size using cross-sectional data which cannot show us whether fertility has declined or not.

R: Thank you. We revised the statement according to your suggestion.

e) First paragraph, fifth statement (page 14, lines 12-14): The comparison being alluded to here has not been presented in the paper. The finding that women’s empowerment is significantly associated with desired family size does not necessarily mean that improving empowerment will greatly impact on fertility reduction and provision of family planning unless we provide evidence to that effect.

R: Thank you very much. We revised the statement according to your suggestion.

h) Second paragraph, first statement (page 14, lines 23-24): Change “creating policies” to “formulating policies”. Also, why is it just policies? Why not programs given that policies alone without appropriate programs cannot achieve much?

R: We take into account your suggestion. Refer to page 15, last para.

l) Second paragraph, fifth statement (page 15, lines 6-8): Change “once improved” to “if improved upon”. Also, it is not clear why in only two countries—Burkina Faso and Mali.

R: We take into account your suggestion.

Our result suggests that the first step to have fewer children is formulating programs to improve economic empowerment of women. Please, refer to page 15, last para.

s) Third paragraph, sixth statement (page 15, lines 24-25): What is the basis for this argument based on the paper’s findings? In other words, which findings in the paper support the need for what is being suggested here?

R: Thank you very much. We remove this suggestion.

t) Third paragraph, seventh statement (page 16, lines 1-2): The authors state that “the level of education of the spouse was found…” By who? Other studies or the present study? The authors should use active voice so that it is clear the source of findings e.g. “the findings of this paper show that …” or “other studies have shown that …”

R: In addition, the findings of this paper show that the level of education of the spouse affect significantly the woman’s ideal number of children.
aa) Fourth paragraph, fifth statement (page 16, lines 15-16): It is not clear which findings in the paper support the argument here given that the authors did not look at fertility per se, but fertility preferences?

R: Thank you. We remove this suggestion.

ff) Fifth paragraph, fifth statement (page 17, lines 2-4): What is the basis for the argument here i.e. which findings support the argument that empowered women in Burkina Faso and Chad have more bargaining power in marriage?

R: Thank you. We remove this suggestion.

gg) Fifth paragraph, sixth statement (page 17, lines 4-6): Rephrase to read: “Findings from Mali and Niger are not consistent with those of previous research …” The suggested edits aside, is the previous research from the same countries or from different countries?

R: Findings from Mali and Niger are not consistent with those of Nigeria which found significant positive associations between women’s empowerment and ability to make fertility decisions. Please, refer to page 17, last para.

jj) Sixth paragraph, first statement (page 17, lines 13-14): It is not exactly clear what the authors mean by the statement. Which findings emphasize the importance of the ability to have the desired number of children, given that the subsequent statement only gives examples of the dimensions of empowerment that are significantly associated with desired family size and ability to achieve the same?

R: Interestingly, in Burkina Faso, economic empowerment is significantly associated with desired number of children but not with the ability to achieve the same. Please, refer to page 18, last para.

pp) Sixth paragraph, last statement (page 18, lines 3-5): Change “between women empowerment and women’s ability” to “between women’s empowerment and their ability”. The suggested edits aside, how would we gain from such research and what exactly should such research be exploring?

R: Thank you very much. We remove this suggestion.

f) Although the authors limited the analysis to women aged 35 years and above to account for those who had completed childbearing, there could be some women in that age group who could still give birth in the future thereby leading to bias in the measurement of ability to have the desired number of children. This limitation also needs to be acknowledged.

Thank you very much.

R: We take into account your suggestion. Please, refer to page 19, last para.

11) Conclusion:

We revised significantly the conclusion according to your suggestions. Thank you very much. Please, refer to page 20.
12) Abstract:

We revised significantly the abstract according to your suggestions. Thank you very much. Please, refer to page 20.

All spelling and grammatical errors as well as suggested rephrasings pointed out have been corrected.