Author’s response to reviews

Title: Proximate determinants of fertility in Ethiopia; an application of revised Bongaarts model

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Author’s response to reviewers:

Dear, Karen Schlep, thank you for your comments on research entitled “proximate determinants of fertility in Ethiopia; an application of revised Bongaarts model (REPH-D-18-00421). The reviewers’ / referees’ suggestions will much improve our manuscript’s quality. We have made “to the best of our ability” efforts to consider the comments. All of the revisions suggested are explained point by point on the following pages.

Best regards

Samuel Yohannes

Corresponding author

Authors’ response to reviewers

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Authors’ response to reviewers: see over

Proximate determinants of fertility in Ethiopia; an application of revised Bongaarts model (REPH-D-18-00421).

Reviewer reports:

Reviewer #1: General Comments: This paper has tried to generate evidences on the role of proximal determinants on fertility which is vital for developing strategies to manage the population growth. However, the authors did not describe whether the analysis is descriptive type or inferential analysis. Using formula to calculate may not make the analysis inferential. The term determinants suggest the authors shall use inferential analysis in which they show the background variables on fertility through the proximal determinants.

Bongaarts- demonstrated that only 4 proximate variables explain nearly all (96%) of the variation in fertility levels among populations. He made a pioneering work in quantifying the link b/n a set of intermediate fertility variables & the level of fertility. He developed a simple mathematical model to quantify the effects of the proximate determinants on fertility. We used the John Bogart framework for analyzing proximate determinants of fertility model. As a result the authors used proximate but not based on inferential analysis.

Abstract

Background: The background section of the abstract shall describe the study gap and the justification of the study in brief.

The study gap and justification is given (Abstract, line 3-6, page 2)

Method: The method section shall describe the inclusion and exclusion criteria, and the specific data analysis methods.

John Bogart framework for analyzing proximate determinants of fertility model was used. As we used this mathematical model to quantify the effect of proximate determinants on fertility there is no inclusion and exclusion criteria. The data analysis was done by using the John Bongart mathematical model and this was done using excel (methods, line 11-13, page 10)

It is also better to justify why the authors preferred to use only the four variables: region of residence, educational status, wealth index and place of residence.
This is justified (background, line 1-3, page 7).

Result: The result of the study/analysis should also be reported in light of the selected variables. For example, what was the relationship between the selected variables for analysis and the outcome variable i.e. fertility. The authors shall also interpret the association between variables.

Corrected (see result section)

Conclusion: The conclusion shall be written/ concluded based on the findings of the study. It is not repeating the result which is described in the result section. It is better to say the contribution of determinants is high or medium or low.

This part is modified (Conclusion page 25 line 12, 22 and page 26 line 1 &2) and abstract section)

Keywords: Please use specific terms of background variables.

Key words are modified (key words)

Background: The background section lacks synthesis of evidences. It simply reports the evidences independently. As background includes review of literature, the authors are expected to search for sufficient evidences most importantly recent ones; and comprehend and synthesize the evidences.

In background literature review is done and modification is made (background, page 4-7).

The authors also need to describe the role of background variables on influencing the proximal determinants, and thereby their influence on fertility.

The role of background variable on influencing proximal determinate is identified (background, line, 15-23, 1-9, and page 5-6).

Page 4 (Paragraph 3, line 24): It is worth mentioning why the revised version of Bongaart's model in use.

This is mentioned (background, line 16-18, page 6).

Page 6 (Paragraph 7, line 8)... the author described that "An estimated 620, 300 induced abortions were performed in Ethiopia in 2010". Why did not you use recent figure? It is almost more than 8 years and things might have changed since 2010.

We used revised Bongart model because current data on abortion is not available. The figure is removed.
Methods: The method section well describes the formula/model to estimate proximal determinants. However it does not describe the details of analysis. For example, the authors did not explain how they estimated the effect of proximal determinants on fertility, and how they interpret the findings.

This part is modified in method part (method, line 19-23, page 10, 11 line 14, page 12, and line 14-15).

The authors also should state the assumptions used and the ways to treat confounders. Because the background information/variables, and proximal determinants could also be affected by other unobserved/unmeasured variables i.e., omitted variables which could bias the result.

The assumption used was described now [method, line 19-23, page 10, page 11 line 1-2).

We have used four proximate determinants to calculate total fertility. We have also used four background variables to see the changes they can cause on proximate determinant of fertility and total fertility. John Bongart framework for analyzing proximate determinants of fertility model was used. We have followed the procedure of John Bongart mathematical model, as a result bias cannot be caused. The proximate determinants was calculated for example every background variables. Total fertility rate was calculated by using the four proximate determinants of fertility. Omission or adding variables cannot cause any bias in this model.

Results:

Page 11 (Paragraph 1, line 20): It is better to describe the value for biological maximum.

Biological maximum is added (introduction, line 19-20, page 14)

Page 12 (line 10): The analysis should be described in the method section in detail.

This comment is addressed (result, line 6-9, page 15).

Page 13 (line 8): The question is how you determined the index of marriage was high or low based on the background variables. This should be described in the method section.

It is described in method section (methods)

Discussion

The discussion should address the background variables as well as the proximal determinants of fertility, and the fertility level itself.
Background variables as well as the proximal determinants of fertility, and the fertility level itself are addressed (discussion, line 8-13, page 22, page 22, line 20-22, page 23, line 12-17, page 24, line 13-23, page 24, line 1-5).

The discussion has not been well written.

This part is revised (discussion).

The authors shall discuss their findings in light of previous theoretical and empirical evidences, especially focusing on background variables and proximal determinants. They shall cite references in comparing and contrasting their findings with other findings.

Previous studies are cited in discussion (discussion, line 8-13, page 22, page 22, line 20-22, page 23, line 12-17, page 24, line 13-23, page 24, and line 1-5).