Author’s response to reviews

Title: Delayed initiation of Antenatal Care and Associated Factors in Ethiopia: A systematic review and meta-analysis

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Version: 1 Date: 31 Oct 2017

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Version: 2, Date: October 17, 2017

Subject: Peer review comments incorporated
We are very grateful to the editor and all the peer reviewers who provided crucial comments and feedback on the manuscript which would definitely enrich the manuscript. We have revised the manuscript based on the peer review comments and provided a point-by-point description of the amendments made on the manuscript here below.

Reviewer 1:

1. Abstract

The manuscript's abstract is also good and provides the reader a quick clear idea about the rational for the study and the results before reading the rest of the manuscript. However, it is 7 words longer than the required journal's abstract words of 350. It should be revised accordingly.

Authors: Thanks, accepted and corrected

Other comments

2. The authors should provide more details on how the Cohen's Kappa (K) coefficient statistics was used to reach a consensus between the two reviewers of the articles.

Authors: Thanks, accepted and corrected

3. There are other formatting errors the authors should correct (e.g. page 3 line 5).

Authors: Thanks, we made the requested correction.

4. The referencing must be reviewed in accordance to the journal's style.

Authors: Thanks, accepted and corrected

5. Authors should provide appropriate reference for Endnote.

Authors: Thanks, accepted and corrected

6. The authors did not provide any information on participants' demographic characteristics.

Authors: Thanks, accepted and corrected. We provided brief summary of the demographic characteristics of the participants. The response categories of some of the variables being inconsistent across some of the reviewed studies makes it difficult to compose the overall percentage from all of the included studies, unlike the case with primary studies.
7. The choice of subgroups for analyses should be justified, based on literature, or the individual studies and a hypothesis stated for each subgroup. For example, why do the authors think factors leading to delayed antenatal care will differ by (≥12 weeks) and (≥16 weeks) or age? Authors should also consider citing papers in delayed initiation of antenatal care literature.

Authors: Thanks, accepted and corrected.

As the papers were already cited in the description table, we opt to leave citing them inside the forest plots and if that is still not acceptable, we are happy to make the citations inside the forest plot at the final stages of the paper, typically during galley proof.

8. Figure 1 (PRISMA flow diagram) is confusing regarding the total number of studies included in this review.

Authors: Thanks, accepted and corrected. The total number of included studies were 22, which were synthesized and described in the summary table. One study was excluded and the rest 21 studies were then included in the quantitative synthesis (meta-analysis).

Reviewer 2:

1. Evidence quality should be rigorously evaluated in the process of a typical systematic review. Normally, 6 frameworks are preferred (see Luoto, 2013 Plos Medicine)-GRADE, HASTE for example.

Authors: Thanks, we strongly agree with you. To this end, as one of the recommended instrument to assess quality of evidence in PRISMA, we used the Joanna Briggs-MAStARI instrument for quality assessment of the included studies.

2. The authors mentioned the three delay model, which is a useful framework. However, the authors failed to incorporate it into their analysis. Should I were you, I would classify all the factors according to the framework, in order to streamline the analysis.

Authors: Thank you for pointing us this. Accepted and corrected.

We grouped the factors into Delay one, two and three to present the analysis result, though the factors did not comprehensively fitted into the pre-defined three model classification.

3. All the studies selected in the review are based on cross-sectional surveys, I am not convinced that the effects could be synthesized, even by a random effect model.

Authors: The result of our search provided all cross-sectional studies, though we did not limit our search to this. Rather we intended to include all observational studies including cohort and case-control studies. To the best of the authors’ knowledge, in the PRIZMA-P, cross-sectional studies were among the type studies that could be considered meta-analysis using random effect model.
4. I would suggest the authors to clarify in table 1 which studies are based on DHS data. If many of them are DHS, systematic review should really be replaced by a pooled reanalysis of the original data.

Authors: Thanks, accepted and corrected. Only one study was based on DHS data (CSA, 2014), and also this was described in the first part of the result.

5. Figure 3-8 is not clear, which are the reference groups? And these figures seems abundant. I would prefer to report the data in a table and move these Forest plot to appendices.

Authors: Thanks, accepted and corrected. In the revised version, we have clearly indicated the reference category and usually the reference group is the category that was indicated on the right side of the forest plots. Also, the number of forest plots were reduced to four and reported in table 2.

Reviewer 3:

1. Why not to include case series?

Authors: Thanks, we excluded case series studies because they usually lack information on prevalence and the factors were usually presented in descriptive form than analytical. So, case series studies are not suitable for our review and thus excluded.

2. In the results:

   a) Page 9, line 40, remove the parentheses after CI.

   Authors: Thanks, accepted and corrected

   b) I would put "Family monthly income" before "Marital status" according to the order presented in table 2.

   Authors: Thanks, accepted and corrected.

3. The content presented within the discussion, between lines 45 and 54 on page 12, is already contained in the results. Therefore, I think it should be withdrawn.

Authors: Thanks, accepted and corrected.

4. In the same way, in my point of view, the content presented in the results on page 13 between lines 1 and 15 and on page 15, between lines 30 and 48, should be placed in the conclusion.
Authors: We attempted to find the content in the indicated pages/lines, and could not specifically located it.

5. I think it should be placed as another limitation the heterogeneity of the included studies.
Authors: Thanks, accepted and corrected.

6. In table 1, it would be better to show that 1006 studies were excluded by duplication (in the first part of the table) and 1 study was excluded because of poor methodological quality (at the end of the table).
Authors: Thanks, accepted and corrected

7. I would like to understand how the 32 excluded articles by duplication were not identified in the first phase where 1006 were excluded for the same reason.
Authors: During the initial screening of the studies for any duplication, the 32 studies were not detected in the reference manager (EndNote), and hence later excluded during full text assessment.

Reviewer 4:
1. The authors addressed the issue of delayed initiation of prenatal care in Ethiopia very well. The papers included addressed the review’s question and had the proper study design. Results were relevant and may be locally applied for improvement of obstetrical care in a low income country.
Authors: Thanks. We do believe the result of the study could be applicable to the improvement of maternal care in developing countries that have similar socioeconomic setting like Ethiopia.

Reviewer 5:
1. Method section, Sub-section quality assessment, at page 7, line 28 please explain how did you get information on unpublished literature?
Authors: Thanks, accepted and corrected.

2. In method section, Sub-section data extraction process, page 7, line 46, each variable is classified into two categories- exposed with outcome and non-exposed with outcome...........this is unclear...... Do you mean delayed initiation of ANC (≥12 weeks and ≥16 weeks) as 'exposed with outcome' category? Please clarify the term non-exposed with outcome.
Authors: Thanks. Accepted and corrected. The “non-exposed” category is by default the “reference category” for that particular variable. Example, for “Place of residence”, “Urban” is exposed and “Rural” is non-exposed category. If we have 200 women (50 rural and 150 urban) in the study, how many of the urban and rural women have actually had delayed initiation of ANC? That is what we mean by exposed with the outcome and non-exposed with the outcome.

3. Page 10, line 10 stated that nulliparous women were less likely to have delayed ANC initiation. But in method section, under 'Eligibility criteria' (page 6, line 21) you mentioned that you had selected women who had gave birth to at least one child. Clarification is needed in terms of selection criteria of study participants.

Authors: We included studies that studied reproductive aged women who were pregnant or gave birth at least once as can be clearly shown in the Method section, in (Eligibility criteria). All of the studies that appeared in the forest plot for “parity” were those which considered pregnant women as their eligible study subjects.

4. Result section, page 11, line 35, how you have categorized monthly income? Are these arbitrary groups?

Authors: The monthly income classification is based on the reported statistics from most of the included studies. They classify income as \( \leq 1000 \) ETB (50USD) and \( >1000 \) ETB (50USD). Hence, in our analysis, we considered the same categories.

5. Page 12, line 18........stated presence of pregnancy complication was significantly associated with delayed initiation of ANC for single group. Specify the single group, whether it was delayed of ANC \( \geq 16 \) weeks? Authors: Thanks, Accepted and corrected.

6. Discussion, page 13, line 26, I suggest to add few points on the role of cultural factors or traditional practices in Ethiopia that would contribute in late initiation of ANC.

Authors: Thanks. Accepted and corrected.

7. In discussion, page 14, line 37, you have mentioned financial constraints regarding initiation of ANC. It's my suggestion to add points in introduction section on financial burden associated with maternal health service in Ethiopia.

Authors: Thanks. Accepted and corrected.

Thank you
The authors