Author's response to reviews

Title: Factors associated with nutritional status of infants and young children in Somali Region, Ethiopia: a cross-sectional study

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Dear Editor in Chief

BMC Public Health

We appreciate the comments forwarded by reviewers. We have addressed all the comment and we provide the rationale behind in point by point response letter.

Reviewer: Giorgio Bedogni

GENERAL COMMENT

1. Abstract and elsewhere: please, report 95% confidence intervals (95% CI) for prevalence estimates.
Response: comment accepted and treated accordingly. We have reported the prevalence estimates of stunting, wasting and underweight with 95% CI in the revised manuscript.

2. Abstract and elsewhere*: please, consider *and discuss* that some predictors are very imprecise, e.g. the adjusted odds ratio of wasting is 0.38 (95% CI 0.14 to 0.99) for breastfed vs. not-breastfed infants. This corresponds to a reduction of the odds anywhere between 1% and 86%. See also comments below.
Response: As you have seen the 95% CI for breastfeed and non breastfed infants was not precise. We tried to explain the justification for less precision of 95% CI between wasting and current breastfeeding.

3. Abstract and elsewhere: please, spell out the acronyms AOR (adjusted odds ratio) and COR (crude odds ratio). Also, explain the "correction" underlying CORs in the abstract (but see comment on selection of predictors below).
Response: comment accepted and treated accordingly. We have write the full word of the acronyms in our first use.

4. Study design and sampling: what was the number of children potentially
available for the study (N)? Which fraction of that number was sampled (n = 214; % of N)? Why? Please, explain how the size of the kebeles was taken into account by sampling (n = n1 + n2 + n3).

Response: There were totally 781 eligible study subjects in the town. When we divided 214 per 781 it gives 27.4%. The kebeles were demarcated for administration issues. We have identified the number of eligible study subjects in each Kebele and allocate the calculated sample size based on the number of the eligible study subjects proportionally to each kebele.

5. Statistical analysis: the selection of covariates for multivariable analysis on the basis of their statistical significance at univariable analysis has many problems. I suggest to include in multivariable analysis also the variables that are already known to be risk factors, *independently* of how they performed at univariable analysis,

Response: The criteria for inclusion of a variable in the model vary between problems and disciplines. The common approach to statistical model building is minimization of variables until the most parsimonious model that describes the data is found which also results in numerical stability and generalizability of the results. Some methodologists suggest inclusion of all clinical and other relevant variables in the model regardless of their significance in order to control for confounding. This approach, however, can lead to numerically unstable estimates and large standard errors. There are different recommendations to choose the candidate variables for the multivariable model. However the basic principle in choosing candidates for multivariable model is reducing error and having a good fitness. Just fitting many variables in the multivariable model increases the error we introduced to the model. In this study we excluded those variables with larger p value (>0.05) from the multivariable model. As you saw on the tables most of the variables we included in the model were not consistent predictors of nutritional status. So that we prefer our models on what you believe to be the factors of interest. In this study we chose those variables which are statistically significant at P value 0.05 in the binary logistic regression model as candidate variables for the multivariable model to be included.

6. Results: I would argue that the fact that bottle feeding had no "statistically significant effect" on the risk of wasting is irrelevant because the 95%CI of this effect (0.98 to 4.22) is compatible with anything from a 2% reduction to a 4-fold increase of the risk. Please, see major comments above on wide CIs and selection of predictors.

Response: We agree with this comment. It is not much relevant to talk about bottle feeding and wasting because of non significant result. We have deleted this sentence in this version of the manuscript.

7. Results: please, avoid focusing on factors "significantly associated" (e.g. Page 9 para 3) with the outcome of interest. Consider instead the precision of the effect sizes as evaluated by the 95%CI of the odds ratios

Response: The additional advantage of using CI instead of p value because of its importance n showing the precision level. In this study there are AORs which had less precision in the 95% CI. This could be resulted from the small sample size of
this study. However since the main objective of this study was to identify the factors associated with nutritional status, we need to focus on those factors significantly associated with outcome variable (nutritional status). That is why we focused on "significantly associated" findings, though the 95% CI precision is questionable.

8. Tables: please, add a column with the number of subjects with the given risk factor; remove the reference group (make it clear that it is "high" for the wealth index); explain the COR and AOR acronyms.
Response: Comment accepted. It is treated accordingly.

9. General: please, give the operational definition of breastfeeding and bottlefeeding (from the "yesterday" of Table 4 one infers that bottle feeding was ascertained from the 24 hour recall. Is this so?).
Response: Bottle feeding was assessed by 24 hour recall. We included how we measured bottle feeding and breastfeeding in the method section of this version of the manuscript under the subtitle measurement. When we say yesterday we infer to the last 24 hour practice.

MINOR COMMENTS
10. Title and elsewhere: "determinants" suggest a cause-effect relationship. I suggest to use "risk factors" instead.
Response: comment accepted. We modified the title as “Factors associated with nutritional status among infants and young children in Somali Region, Ethiopia: a cross-sectional study”

11. Abstract: for coherency with the "multivariable" terminology you should use "univariable" to define "bivariate" analysis, e.g. https://books.google.it/books?id=bRoxQBIZRd4C&printsec=frontcover&dq=osmer+lemeshow+

Response: comment accepted and treated accordingly

12. Abstract: you can delete the phrase about statistical significance set at a p-value < 0.05. See instead the major comment on confidence intervals.
Response: comment accepted and treated accordingly

13. Keywords: spell out IYCF -> infant and young child feeding?
Response: comment accepted and treated accordingly in the revised version.

14. Background: the prevalence of wasting in the DHES study is reported to be 22.8%. However, it is said to be 17.8 in the discussion%. I suppose that this is because the first is a general estimate and the second an age-specific estimate. Is this so? Please, explain
Response: You are correct. We have describe that in background and discussion of this version to make it clear for readers.

15. Study design: Please report if validation data are available for the modified DHS questionnaire.
Response: We did not do validation study on the DHS questionnaire. In fact the original DHS questionnaire was adapted from model survey instruments
developed for the MEASURE DHS project to reflect the population and health issues relevant to Ethiopia. Besides that, issues were identified at a series of meetings with the various stakeholders in Ethiopia. During our study what we did is that, we have adapted the questionnaire in the context of the study objective and pretest it. Besides the DHS questionnaire, we have also included additional questions to our questionnaire based on the study objective. Then the questionnaire was translated to the local language by the fluent speaker of the language and English language. After that back translation of the questionnaire to English version was made by other individual who is fluent speaker of both English and local language. After we had pretested the somalic version (local language) of the questionnaire certain rearrangement was made based on the finding.

9. Study design: how many operators were involved in the collection of food data? Were they experienced operators?
Response: we have included the description about the quality of the data collection operators in this version of the manuscript under the subtitle data collection producers. We had three data collectors. The data collectors were diploma graduates of nursing, trained, and can speak the local language.

10. Results: dyads -> this are the first occurrence of the term. Please, explain what it refers to.
Response: This is to mean infant-mother pair. We revised it in this version.

11. Figure 4: I suggest removing it as it does not add anything to the text.
Response: comment accepted and revised accordingly

12. Results: uni- and multi-variable analyses are discussed for wasting while only multi-variable analysis is reported for stunting and underweight. Why?
Response: Thank you for your critical observation. We have interpreted those statistically significant variables either in the univariable or multivariable model. In fact in the previous version of the manuscript we did not interpret those variables which are statistically significant at the univariable model. In this version we have interpreted those statistically significant variables at univariable model for stunting. However since the variables which are significant at both univariable and multivariable model were similar for underweight, we interpreted only the adjusted odd ratio (AOR) from the multivariable logistic regression model for underweight.

13. Results: EDHS -> please spell it out the first time you quote the Ethiopian DHS.
Response: comment accepted and treated accordingly

14: Results: "The absence of association..." (last phrase in para 1): it is not clear to me what are you trying to say here.
Response: we revised the paragraph and elaborated more in this version to make it understandable by our readers.

15. Table 1 I would report the mean (SD) number of relatives in the text. (I suppose that it was normally distributed. If it is not, it would be better to report the
Response: The family size data was normally distributed and mean is the best measure of central tendency.
Reviewer: Rehana A Salam
Major Revisions:
1. The title of the study suggests that the study aims to evaluate the determinants of nutrition status, while the objective states “Therefore the objective of this study in Filtu town in the Somali region of Ethiopia was to assess the association between feeding practices of infants and young children and their nutritional status.” Please modify the title or objective to reflect what was actually done
Response: comment accepted and treated accordingly
2. Please specify the assumptions for sample size calculation?
Response: comment accepted. In this version of the manuscript, we have included how the sample size was calculated including the assumption.
3. The discussion sections appears to be hastily written. It needs flow and coherence
Response: we try to modify the discussion in the revised version to make more coherent.
Minor revision
In the second paragraph of introduction, it would be helpful to related undernutrition to infectious morbidity and mortality as well.
Response: comment accepted and treated accordingly in the revised version.
Please provide reference for “According to the current Ethiopian Demographic and Health Survey (DHS), in Somali region the prevalence of stunting, wasting and underweight were 33%, 22.2% and 33.5% respectively.”
Response: comment accepted