Author’s response to reviews

Title: Anemia and its associated factors among school-age children living in different climatic zones of Arba Minch Zuria District, Southern Ethiopia

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Author’s response to reviews:

Response letter
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Dear Editor reviewers,

Here below, we have provided a detailed response to each reviewer/editorial point raised during the review process; outlining amendments we have made to the manuscript text and as well as the suggestions we have not incorporated into the paper (with the reason why). All changes to the manuscript are indicated in the text by using tracked changed.

1. Reply to the peer reviewers points

Reviewer I Evaluation:
1. Abstract - the authors state that the "prevalence of anemia was 146. Prevalence is a
proportion/rate and should be reported as a percentage or proportion and not as absolute numbers. In
the same sentence, the authors state that 146 had anemia and that 110 had mild and 35 had moderate
anemia. Did one child have severe anemia? It would also be helpful here to define moderate and mild
anemia in parenthesis. For example XX children had mild (Hb XX-XX g/dL) and XX had moderate
(Hb XX-XX g/dL) anemia.

- Response: Noted and:
  o We have reported only proportions in the current revised manuscript (line 33).
  o Yes, one child had severe anemia and we have already mentioned it (Line 36)
  o We have included the parenthesis for all forms of anemia (Line 34 - 36)

2. In the first line of the introduction, the authors state that under-nutrition is a cause of high child
mortality. The authors should supply a reference. Also, for a paper about anemia, it makes most sense
to begin the paper with a comment about anemia rather than under-nutrition. In fact, this whole first
paragraph does not flow well going from under nutrition to overall mortality to school enrollment
without discussion of anemia. The authors should consider revising the Background section to flow
more naturally.

- Response: Noted and we have made modifications
  o The first statement of the introduction (line 49) and the next statement (line 50 & 51) are
    supplementing each other and we have already provided a reference for them.
  o With regard to the whole message of the first paragraph of the introduction, as far as anemia is
    one form of under-nutrition (the micro-nutrient deficiency), we found that it will have merit to talk
    about this issue first to provide an insight of nutritional problems for readers. Then, we have provided
detail about anemia starting from the second paragraph.

3. In the second paragraph of the introduction, the authors state that "more than 40% of SAC in
developing countries suffer from anemia," but then state later that "the prevalence of anemia in SAC in
Ethiopia is 23-38%." These do not seem to make sense when put in the same paragraph.

- Response: Well noted and we have separated the messages with different paragraphs (line 59).

4. The authors state that anemia can cause "reduced muscle function" but not mention the effects
of anemia upon growth, development, and energy level, which are likely more important in children
than muscle function.

- Response: Well noted and we have addressed this concern in the revised manuscript (line 63).

5. The authors state that iron deficiency and hookworm are contributors of anemia, but do not
mention that hookworm can lead to iron deficiency and that the type of anemia seen in hookworm
infection is actually iron deficiency anemia.

- Response: Noted and we have made amendments (line 67 & 68)

6. There remain many grammatical and spelling errors that affect the overall "flow" of reading the
manuscript. A careful evaluation of the manuscript, ideally by a primary English speaker, would be
suggested to improve the overall wording of the manuscript.

- Response: Well noted and we have carefully revised the overall manuscript for grammatical and
spelling errors and we took corrective measures.

7. The sample size description is still not clear. Sample sizes are selected to achieve what outcome
or to detect what? The 95% confidence interval and 5% margin of error is mentioned but it is not clear
what the CI or margin of error are in reference to.

- Response: here is further clarifications on the sample size determination.
As we have tried to mention on line 101 of the method section, the sample size was calculated to detect the prevalence of anemia (the outcome variable for this manuscript).

The required sample size of this study was calculated using a single population proportion formula through the assumption of 37.6% prevalence of anemia at 95% confidence interval and 5% margin of error.

Thus, where; \( Z = 1.96 \) with 95% of confidence internal

\( p = \) an estimated level of anemia among SAC in Jimma, Ethiopia = 37.6 %.

\( q = 1-p \)

\( d = \) margin of sampling error tolerated (0.05)

\( n = \) the required sample size

8. As the authors describe the definitions of anemia (page 8, lines 155-158, the reference #28 is not appropriate and in reviewing the references, ref 28 is identical to ref 30. It is suggested that the authors verify that all references are accurate and update with the current version of the manuscript.

Response: well noted and we are sorry for the inconveniences.

We have replaced reference # 28 with an appropriate reference that we were using during data analysis.

The issue of identical reference (ref # 30) is also resolved together with the correction of ref #28.

In addition, we have re-checked all references and updated the citations accordingly.

9. In the same lines (page 8, lines 155-158), the authors appear to use standard WHO definitions of anemia but not do so entirely. For example, Hb<11.5 is considered anemia for age 5-11 and Hb <12 is anemia for children 12-14 years. But for the classification of anemia, WHO uses Hb 11-11.4 as mild, 8-10.9 g/dL as moderate, and Hb<7 as severe anemia. The authors choose different numbers with unclear reasons/references for this categorization.

Response: Well noted and again we are sorry for the inconveniences.

We used the standard WHO definition of anemia in the analysis of the data.

I.e. For children 6 to 11 year; 11.5 g/dl and above normal, 11.0–11.4 g/dl mild anemia, 8.0–10.9 moderate, and < 8.0 g/dl severe anemia.

For children 12 to 14 year; 12 g/dl and above normal, 11.0–11.9 g/dl mild anemia, 8.0– 10.9 moderate, and < 8.0 g/dl severe anemia.

We have corrected this issue in this revised manuscript as shown with tracked changed.

10. It is not clear how the authors define school age. The standard definition is age 6-12, but in the Results, the authors state that 65% of respondents were 6-11. The title of the manuscript and the emphasis of the discussion is on school age children but 35% of samples were from non-school age children. It is not clear if the analysis focused only on these 6-11 aged children or also included the children outside of this range. It appears that all participants were evaluated, which makes extrapolation of data to only the school aged children difficult. If the focus is not entirely on school aged children, the title and overall message of the manuscript should be changed.

Response:

With regard to the definition of the school-age period, we have noted that different organizations provided different age groups and the standard definition varied across different countries (especially developed VS developing countries).

Even though we fail to find the standard definition of school age in Ethiopia, we identified different published articles; some are cited in our manuscript, which defined the school age as the
period between 5 (6) - 14 years of age.  

The national survey in Ethiopia also considered this age group as a school-age period.  

In addition, Arba Minch health and demographic surveillance system (AM-HDSS), from where we took the sampling frame, also considered the classification 6-14 years old as a school-age children. Therefore, considering this all contexts, in our manuscript, when we say school age, it is to mean the period between 6- 14 years of age.

11. To follow-up on the above point, the data is very confusing to analyze in relation to SAC or not. For example, the authors state that 65% of the 391 respondents were aged 6-11 (by definition, SAC). This would be 254 children. Then in the discussion of anemia (line 200-201), the authors state "the overall prevalence of anemia among SAC was 37.3% (146)." If there are 254 SAC, 146/254=57%. Thus, the reported data is not anemia among SAC but anemia among the entire cohort, 146/391=37.3%. This clarification of the definition of SAC affects the entire manuscript and needs to be resolved with possible repeated data analysis to make the conclusions more clear.

Response:

We have noted that the confusion is related to the definition of SAC. Since we were considered all study participants as SAC the analysis was done for all children (the entire cohort).

Reviewer 2 Evaluation:

1. Title - Use small letters at the start of each words and capital letters when appropriate  
   Noted and corrected accordingly.
2. Abstract  
   Result -First sentence needs re writing. Prevalence need to be described as percentage (n=146)  
   Noted and corrected as shown with tracked changed  
   The newly added three statements need to be rewritten in one sentence. Eg. Anemia was higher in children.........  
   Noted and modified (line 37-39)
3. Conclusion - Hyphen is missed in SAC  
   Noted and corrected
4. Main Part  
   Result - % (n=..) is not consistently documented. Better to use %%(n=..) in all statements on the prevalence  
   Noted and we have documented consistently
   Discussion - Use consistently one decimal place (Correct on second paragraph)  
   Noted and corrected
   Conclusion - Second sentence needs rewriting  
   Noted and revised

We hope we have tried to address all concerns raised by reviewers and also tried to address concerns raised by the academic editor. We look forward to hearing from you regarding our submission and we would be glad to respond to any further questions and comments that you may have to make further changes if required.

With kind regards,