Reviewer’s report

Title: An outline of anemia among adolescent girls in Bangladesh: findings from a cross-sectional study

Version: 0 Date: 21 Feb 2017

Reviewer: Crystal Karakochuk

Reviewer's report:

Comments:

Line 55-56 (and abstract): "anemia represents the status of both poor nutrition and poor health." Suggest revision here. It is simply low hemoglobin concentration and has many different causes not only related to poor nutrition and health.

Line 57: "It is defined as a common blood disorders in which number and size of red blood cells…” Suggest revision here. It is not related to size of RBCs.

Line 65: "It primarily results from iron deficiency”. Perhaps refer to a paper by Merrill et al. in Bangladesh indicating a very low prevalence of IDA: https://www.ncbi.nlm.nih.gov/pubmed/22705433

Line 72: What do the authors mean by "acquired hemoglobin disorders"

Line 72-73: Would benefit reader to indicate how prevalent these genetic disorders are in Bangladesh.

Line 75: Regarding referene 12 - this reference to Kaur et al appears incorrect as this paper refers tot the impact of nutrition eduction on nutrition adequacy in the diet. Please double check if this is the one you mean to refer to.

Line 76: Same comment regarding reference 13 - is this the correct citation?

Line 97: "Carbohydrate based diet". Do the authors mean a lack of iron rich animal sources in the diet? Otherwise I am not sure what they are referring to.

Line 101-2: Would deter from stating this is the first study of its kind that studied anemia among adolescents in Bangladesh. Please remove.

Lines 103-4: The ability to "provide direction about the future public health interventions" is very limited from the data generated in this study.

Lines 109-116. It is not clear how sampling was conducted. Were adolescent girls randomly selected? Were numbers from each province/district proportionate-to-size? What proportion of
girls refused to participate? Is this data generalizable to the larger population - at this point it is impossible to tell. Figure 1 is also not helpful as is.

Lines 134-135: "Considering the fact that the respondents were female, we recruited experienced female field enumerators for data collection to minimize bias". Please support this statement with a citation.

Lines 143-48. It is completely unclear how the PCA was conducted to determine wealth index - what socioeconomic variables were used? What method? Is it valid?

Line 151: Is it venous blood? I would assume capillary blood would be collected from a finger prick.

Line 153: "hemoglobin (the iron carrying part of the blood cell)" …. Should this read oxygen-carrying rather?

Line 154: What model of Hemocue? How many hemocues in total? Were Quality controls used? How were enumerators trained on blood collection?

Lines 150: Hematological assessment: were any areas of the survey at an elevation above 1,000 meters? Was altitude taken into consideration in Hb assessment? What about smoking - is it common among Bangladeshi adolescents?

Line 167: I have never seen the acronym BAZ for BMI-for-age. Is this standard?

Line 174-9: Why was Hb not assessed as a continuous variable? It would have been more rigorous? What other variables were included for the adjusted model? How were they included in the model?

Line 180: No need for an equation for this regression.

Table 1:Were the pregnant women consuming IFA tablets at the time of hemoglobin assessment?

Table 1: Percentage could be presented with no decimal places, or one at the most.

Lines 202-18: Here many comparisons are made suggesting Hb was 'higher' or lower' in different groups - were statistical tests conducted to know if these were significant differences? For example: Line 213 indicates anemia was "slightly higher" among girls in 'slums as compared to rural areas' - 53% vs. 51%.

Lines 220-1: Hb 110.1 +- 11.5 g/dl. I assume you mean g/L here?? Same for the other two values reported.

Table 2: This table presents way to much unnecessary data. Usually you would only present AOR for anemic women (no need to present each of the OR for each binary predictor either).
Table 2: Did you exclude pregnant women from the BMI-for-age assessment (not indicated for use in pregnant females)

Table 3: would be helpful to include in the table (as footnotes even) what variables were used for adjustments.

Lines 242-3: Many other variables exist that are associated with anemia were not assessed in this model - parity, presence of inflammation or disease, other micronutrients, etc. Should be noted.

Figure 2 is not needed - adds no additional information that the text.

Discussion: overall is repetitive about anemia prevalence. Could be shortened by 2/3 and focused on the results on hand. Remove the assumptions from the discussion - lines 303-4 and 306-8.

Line 310: If there was a "rigorous sampling method" it needs to be further detailed.

Lines 311-2: "blood hemoglobin level is the most effective method of measuring anemia" - Sure, but there are limitations to the use of HemoCue as a device (as compared to hematology analyzers that use venous blood).

Lines 313-5: Unclear what the advantage is here please clarify or remove.

Lines 322-3: Other research has showed very low IDA prevalence in Bangladesh, e.g. Merrill et al. mentioned earlier.

Lines 335-7. Difficult to make these conclusions about policy change - when you actually do not know WHY women are anemic. Suggest to mention that more work is needed to determine the cause of anemia in these adolescent girls to determine what effective interventions are warranted.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

No

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No
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I am able to assess the statistics

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