Author's response to reviews

Title: Factors associated with Haemoglobin levels among Bangladeshi pregnant women

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Author's response to reviews:

Replies to the reviewer’s comments:
Reviewer: Rakesh ps
Reviewer's report:
Major compulsory revisions
1. Description of methodology is grossly inadequate and by looking at this much, it seems weak.

Reply: Description has organized according to your suggestion.

2. Analysis was grossly inadequate to reach a conclusion

Reply: Modified and rewrite in the main text.

3. Conclusions are premature and are not supported by data and analysis.

Reply: Conclusions are rewrite in the main text.

4. There are lots of limitations in this study and none of them have been mentioned.

Reply: Limitations have mentioned in the modified manuscript.

5. Plenty of grammatical and language errors

Setting: The study is done among pregnant mothers attending a clinic. More details about the setting is required. “The subjects therefore, represent subgroups of Bangladeshi pregnant women” is not justified.

Reply: Details about the setting has mentioned in the main text.

Study population: are all the antenatal mothers attending the clinics were
included in the study? How many attended the clinic? How you selected the mothers? What were your inclusion criteria? Have you excluded anybody from this study?

Reply: All pregnant women were aged between 15-49 yrs with 2nd to 3rd trimester came for routine ante-natal check up were included in this study. Details are added in the main manuscript.

At what gestation were the hemoglobin checked. This is very important. Is it during first visit or any visit?

Reply: The hemoglobin was checked at the 2nd to 3rd trimester. Details are added in the main manuscript.

What method was used to detect hemoglobin?

Reply: Colorimetric method was used for the measurement of glycosylated hemoglobin.

It is premature to conclude by doing this analysis. Inferences were not appropriate.

Reply: Reanalysis has done.

Level of interest: An article of limited interest
Quality of written English: Needs some language corrections before being published
Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests:
I declare that I have no competing interests

Reviewer: Nuwan D Wickramasinghe
Reviewer's report:
- Major Compulsory Revisions

Overall
1. Throughout the article the importance of addressing the concept of “maternal anaemia” is highlighted and that is substantiated by relevant previous publications. Yet, the authors have discussed/analyzed on the variable “haemoglobin status”. It would be better if they could alter their study to find out about “maternal anaemia” rather than “haemoglobin status of pregnant women”.
Reply: Thanks for your comments. We considered the concept of “maternal anaemia” instead of “haemoglobin status of pregnant women”.

Title
2. The title of the article includes “Bangladeshi pregnant mothers”. But the study has been conducted in a selected area of Dhaka city. Hence the generalizability of the study findings to the whole country is questionable (in the absence of reasonable justification)

Reply: Thanks. Modification was done in the main text according to your suggestion.

3. As suggested earlier a more appropriate title would be “Factors Associated with Maternal Anaemia among Pregnant Women in Dhaka, Bangladesh”

Reply: Thank you. Modification was done in the main text according to your suggestion.

Introduction
4. The objective of the study is not clearly laid down. It was mentioned “The study was aimed to determine the hemoglobin status pregnant women who were attending antenatal hospital”, whereas the study was aimed at determining the associated factors for maternal anaemia among a group of pregnant mothers.

Reply: Thank you. Modification was done in the main text according to your suggestion.

Methods
5. Setting-In the last sentence though it was mentioned that “represents the subgroups of Bangladeshi pregnant women”, it is not clear as to how that setting represents the different subgroups.

Reply: Revised in the main text according to your suggestion.

6. Study Population-Study population was not clearly defined, which is a main drawback of this section. Whether any inclusion or exclusion criteria were used or not, was not mentioned. In this study it’s of utmost importance to describe the study population clearly in accordance with area of residence, parity, age, gestational age etc as these variables were regarded as associated factors in the literature.

Reply: Details in the main text.

7. Sample size calculation and sampling technique are very important aspects to consider in a descriptive cross sectional study of this nature. Yet, those aspects were not mentioned. For example the usage of a probability sampling technique is a requirement in the case of interpretation of study findings in case of the generalizability.

Reply: The selection of the pregnant women has described in main text and the
The sample size was determined based on the available information of the published literatures (Hyder SMZ et al, 2004). The prevalence of anaemia was 19% to 50% among pregnant women and the sample size were calculated using the following formula: \( n = \frac{z^2 q}{r^2 p} \). Thus, the sample size was 204. Considering the 10% non-response, the final sample size for this study was approximately 224.

Sample calculated by following formula
\[ n = \frac{z^2 q}{r^2 p} \]

Where,
\[ n = \text{desired sample size} \]
\[ z = 1.96 \text{ (95\% confidence interval)} \]
\[ P = \text{prevalence of anemia among pregnant mother} = 32\% \text{ [13]} \]
\[ q = 1-p \]
\[ r = \text{relative precision} = 20\% = 0.2 \]
\[ n = (1.96)^2 * 0.68 / (0.2)^2 * 0.32 \]
\[ n = 204 \]

Considering non-response of the 10\% the total sample size will be, \( n = 224 \).

8. Statistical Analysis-The statistical tests used in the assessment of the associated factors were not mentioned. (the fact that Chi squared test was used, was only mentioned in the table results). As all necessary data were available they could have calculated the odds ratios for each variable, which could have been more informative.

Reply: Corrected in the main text.

Results
9. When presenting the statistical significance, the \( p \) value for each variable was mentioned as less than (<) a certain value. In fact the absolute values have to be mentioned such as \( p = 0.031 \) etc.

Reply: Corrected in the main text.

10. The \( p \) values calculated (or either reported) for some variables are not correct, which is a major drawback in the results section. For example age. Hence, the calculations have to be made again and interpreted accordingly.

Reply: Re-analysis was done.

11. It was mentioned that raw variables such as age, education, living area as significant associated factors rather than mentioning about the direction of association. (eg: it would have been more informative if they could have come to the conclusion that “maternal anaemia(rather than haemoglobin status) is significantly associated with low income status”(rather than income))
limitation of interpretation was due to the application of Chi squared test as the
test of significance. If the authors had analyzed findings to calculate the measure
of association ie. Odds ratio for each variable, this limitation could have been
overcome.

Reply: Revised in the main text.

12. It was mentioned that “The distribution of iron supplements of pregnant
women was showed in Table 4.” But, in fact it was illustrated in Table 3. Above
all the relevance of this analysis with regard to primary objective of the study is
not clear.

Reply: Modification was done in the main text.

Discussion

13. Many of the studies mentioned in the discussion section for comparative
purposes have also had a very small sample size/s which might not be
appropriate to generalize the findings.

Reply: Revised in the main text.

14. The limitations of the study which might hinder the applicability of study
findings were not discussed. And the measures taken to minimize the biases and
measures taken to improve the quality of data were not properly addressed.

Reply: Corrected as per your comments.

Conclusion

15. Please refer comments mentioned under the results section regarding the
terminology ie. Maternal anaemia vs haemoglobin status.

Reply: Corrected in the main text.

16. With the results mentioned it is debatable how the authors have conclude
that “there is an urgent need to educate pregnant women and their families about
the importance of antenatal care” which is beyond the purview of this study.

- Minor Essential Revisions

Reply: Revised in the main text.

Overall

17. Throughout the article the authors have used different spellings for the most
important variables of the study, viz “anaemia” and “Haemoglobin”, which have to
be corrected promptly.

Reply: Corrected in the main text.

Introduction

18. Most of the facts were repeated in this section, owing to the fact that it was
not written in an orderly manner. It would have been better if the introduction
section was written in several paragraphs to,
- introduce the main variables and the gravity of the problem
- highlight the prevalence of maternal anaemia (world, regional, local setting)
- describe the important associated factors according to the relevant literature

Reply: Revised in the main text according to your suggestion.

Results
19. When presenting the results in some instances only the absolute number or the mere percentage was mentioned.

Reply: Corrected in the main text.

20. In the tables, the p value for each variable has to be mentioned rather than just mentioning that it is not significant. Together with the p values the Chi values could have been provided.

Reply: Corrected in the main text.

21. The figures given at the end are not properly labeled. In addition to that the axes of the graphs are not labeled. Hence, this is not a proper graphical illustration of the study findings.

Reply: Corrected in the main text.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests: I declare that I have no competing interests.

Reviewer: Judith Stephens
Reviewer's report:
REPORT
Key to comments:
DR - Discretionary Revisions
MER - Minor Essential Revisions
MCR - Major Compulsory Revisions

1. The question is well defined
2. The methods though appropriate are not well described
   2.1 There is no information on the selection of the pregnant women and what informed the sample size. (MCR)
   
   Reply: The selection criteria of pregnant women were described in main text and the sample size formula was given.

   The sample size was determined based on the available information of the published literatures (Hyder SMZ et al, 2004). The prevalence of anaemia was 19% to 50% among pregnant women and the sample size were calculated using the following formula: $n = \frac{z^2q}{r^2p}$. Thus, the sample size was 204. Considering the 10% non-response, the final sample size for this study was approximately 224.

   Sample calculated by following formula
   
   $n = \frac{z^2q}{r^2p}$
   
   Where,
   
   $n$ = desired sample size
   $z$ = 1.96 (95% confidence interval)
   $P$ = prevalence of anemia among pregnant mother = 32% [13]
   $q$ = 1 - $p$
   $r$ = relative precision = 20% = 0.2

   $n = (1.96)^2 \times 0.68 / (0.2)^2 \times 0.32$

   $n = 204$

   Considering non response of the 10% the total sample size will be, $n = 224$.

   2.2 Though the frequency of ANC attendance, Iron supplementation and Health Education are discussed and recommended, the methodology does not mention that this data was collected. (MCR)
   
   Reply: Methodology has organized according to your suggestion.

   2.3 Blood sample collection:
   - The amount of blood collected or drawn from the pregnant women is not indicated. (MCR)
   - The method of blood collection is not described. In my view it is not sufficient to say that blood was collected by a qualified technician. (MCR)
   - The method of haemoglobin assessment is not described. (MCR)
   - Statistical Analysis: Analysis done should be clearly stated in the text.

   ‘appropriate statistical analysis’ is not enough to describe the tests that were run.
- Ethics: Ethical Clearance from an accredited research review board was not provided. (MCR)
Reply: Details are described in the main text.

3. Data: Data collected is sound:

4. Standards of data reporting and disposition
The manuscript mostly adheres to the relevant standards of data reporting and disposition. However, the following need attention:

4.1 Table headings are not adequate. They need to be revised so that each table can stand on its own by adding the subjects of the study and place. (MER)
Reply: Table headings have revised.

4.2 Table 1:
- Educational level: The frequency values add up to 100.1 It should be revised to 100. (MCR)
Reply: Revised in the main text.
- ‘Number of living children’ is not important to this study. The information collected in the study was the parity which is different from the number of living children. Parity is the number of deliveries and they include both living and nonliving children. (MCR)
Reply: Number of living children is removed from the table.
- The frequency of the gestation groups (trimester) should be included in Table 1, (MER)
Reply: Included in table 1.
- The frequency of the gravid status (primigravida, multigravida) should be included in Table 1. (MER)
Reply: Included in table 1.
- Information on ANC attendance should be added to table 1 (if collected). MER
Reply: Not collected
- Information on Iron supplementation should be added to table 1 (if collected). (MER)
Reply: Modified in table 1.
- The footnote: The first asterisk * should appear in front of the category heading and in front of Monthly (*Monthly) to cover the first part of the footnote. (MER)
Reply: Modified in the main text.
- There should be two asterisks (**) to explain the BDT. (MER)
Reply: Modified in the main text.

4.3 Table 2:
The general comment on the heading above applies. (MER)
Reply: Modified in the main text.

Each category should add up to the sample size (224). (MCR)
Reply: Modified in the main text.

The numbers (n) for each subgroup should be indicated and should add up to the sample size. The following disparities were noticed: (MCR)

Age: Frequency for <25 adds up to (99%). (MCR)
Reply: Modified in the main text.

INSERT (%) to differentiate the frequency from the observations. (MER)
Reply: Modified in the main text.

Occupation: Total (n) in both Tables 1 and 2 = 224. However the ‘Housewife’ category in Table 1 is 209 as opposed to 183 in Table 2. (MCR)
Reply: Modified in the main text.

Living Area: For the ‘Living Area’ category Table 1 shows 207 for the Urban group as opposed to 200 in Table 2 which brings the total of observations to 207 in Table 2 as opposed to 224 in Table 1. Please see highlighted areas in attached tables for clarity. (MCR)
Reply: Modified in the main text.

Trimesters: 124 observations accounted for, 100 observations are unaccounted for. (MCR)
Reply: Modified in the main text.

4.4 Table 3: Heading comments for Tables I and 2 should apply. There is no test statistic for iron supplementation. This analysis is needed to support statements made about iron supplementation. (MER)
Reply: Iron supplementation information has given in the table 1.

4.5 Table 4: There is no Table 4 so it must be replaced with Table 3 in the text. (MER)
Reply: Corrected in the main text.

4.6 Figure 1:
- Heading needs revision to reflect the pregnant women and place. (MER)
- Revise heading to show anaemia instead of haemoglobin level. (MER)
- Include axis label and units for the y-axis. (MER)
Reply: Corrected in the main text.

5. Discussion and conclusions: The discussion and conclusion are not well balanced.

5.1 Discussion: The discussion touches on most of the factors observed in the study. However, the reason for using age 25 as a point of reference is not supported by the reference Ogbeide et al., (xxxx), cited in the paper. (MER)
The discussion is silent on the impact of gravid status on haemoglobin levels among pregnant women which is a very important factor especially in malaria endemic areas. (MCR)

Reply: Our study site is not in malaria endemic region.

There is no information on antenatal attendance to justify the statement made to support the rate of anaemia in this study. (MCR)

Reply: We did not collect any information about antenatal attendance.

Reference to ‘overall improvement of health care in the studied community’ has also not been previously made except for an allusion in the ‘setting’ under methods which is not adequate. The paper must describe these programmes and their bearing on the study. (MER)

Reply: Modified in the main text.

5.2 Conclusion: Anaemia cannot be both ‘common’ and prevalent among the pregnant women while ‘majority’ have normal haemoglobin levels. The conclusion needs to be rewritten to reflect the standing of the paper. (MCR) The paper does not have data on Antenatal Care to justify the call for education on the importance of Antenatal Care (MCR)

Reply: Modified in the main text.

6. Limitations: No limitations have been mentioned. There are confounding factors such as malaria parasitaemia, worm infestation and other blood disorders which affect heamoglobin.

7. Authors have clearly acknowledged published work.

Reply: Thanks

8. The title and abstract largely reflect the findings

Reply: Thanks

9. Writing is acceptable with modification

Reply: Thanks

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests