Reviewer's report

Title: Prevalence and associated factors of anemia among non-pregnant women of reproductive age in Bangladesh: Multilevel logistic regression analysis

Version: 3 Date: 10 March 2015

Reviewer: Ha Trinh

Reviewer's report:

The authors studied an interesting women’s health issue in understudied population using multilevel logistic regression analysis. Relying on nationally representative sample from the Bangladesh Demographic and Health Survey currently collected in 2011 and objective measure of anemia from the blood sample, the study was promising to shed light on the accurate prevalence of anemia and its social determinants. However, the manuscript needs much revision and improvement to be considered to publish in BMC Women’s Health. The following comments should address all the weaknesses of this manuscript in details.

Major compulsory revisions:

1. The section on “Measurements” needs to be added to this manuscript. The authors only specified how they categorized anemia (dependent variable) into three groups of “severe”, “moderate” and “mild.” The authors listed residence, women’s education, husband’s education, breastfeeding, currently amenorrhea, working, source of drinking water, toilet facility, living with husband, religion, wealth index, body mass index, age group, age at first marriage, number of ever born children and their coding in Table 2 and 3. But very little is known for the measurements of these variables, for example if they were recoded or in their original forms. Please specify.

2. Line 241: In Table 2 and 3, authors specified that contraceptive use was dichotomized as “Yes” and “No.” Can authors compare anemia risks between “oral contraceptive use” and “intra-uterine device use” based on their results? Please verify.

3. Authors need to interpret results with caution as this study only employed cross-sectional data (BDHS-2011). Any conclusions regarding causality need to be eliminated.

Minor essential revisions:

1. Line 75: Add “the” to United States
2. Line 98: Use “nationally representative” rather than “national-level population”
3. Line 109: What do you mean by “the present authors”?
4. Line 118-119: Incomplete sentence
5. Line 122: Specify ICC score for this study and the conclusion of whether to use multilevel analysis
6. Line 157-186: Specify that Chi-square results shown in Table 2
7. Line 188: Specify that multilevel logistic regression results shown in Table 3
8. Line 189-191: The conclusion that multilevel analysis was appropriate for this study (with ICC score) must be stated in the Statistical Analysis section
9. Check format for Table 3. Rather than reporting exact p-values, authors should report significant level of p<0.05, p<0.01, p<0.001.
10. Authors do not need to report results in Discussion section. Authors should only discuss relevance of their studies compared to previous studies on the same subject.
11. Line 228: Citation needed for “Education is another factor that influences the general health status of the public”
12. Line 234: What does it mean by “of girls”?
13. Line 235-236: Citation needed for “Eradication of poverty and improving level of education among women are two essential components that should be able to reduce the prevalence of anemia”
14. Line 238: What does it mean by “suture evaluations”?
15. Same as #10, authors do not need to report results in Conclusion
16. Line 258-259: Is it relevant to conclude about “ongoing socio-economic development by the government” based on the results on individual anemia? Please revise.

Discretionary revision:

1. Authors can choose to report either coefficients or odds ratios, standard errors or confidence intervals as these concepts are similar. Based on the text explaining results from Table 3, authors should only report odds ratios and confidence intervals in the table.
2. What is the purpose of comparing anemia prevalence between countries in the Discussion section? Does it serve any 'policy implication' purpose?

**Level of interest:** An article of importance in its field

**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:**

Not applicable