Reviewer’s report

Title: On exploring and ranking risk factors of child malnutrition in Bangladesh using multiple classification analysis

Version: 1 Date: 27 Jan 2017

Reviewer: Scott Ickes

Reviewer’s report:

The introduction of the paper is overly long and has an unnecessary explanation of regression methods; this is a widespread method used in public health/nutrition research and the specific model construction, but not purpose, can be described in the methods, not the introduction. Also, I agree with an earlier reviewer who suggested to separate results and discussion. As this is a quantitative article, it is non-convention to keep these as one section, even with a separate conclusion section.

In general, the writing style is still informal in some places, even after the review. While generally written with good grammar, there are a few places where grammar needs revision.

The model is explained in the introduction, but this is methods material. Further, the "nourish" and "malnourish" language is unclear. Specify the height-for-age Z score cut point.

The earlier reviewer comment about inclusion and exclusion criteria is very important and was not addressed. This means that the authors need to specify how they selected their final sample from the original DHS full dataset. Were only last born children included?

Per earlier reviewer comments, the tables need footnotes and better headings. IN the current revision, interpretation of Tables 2-4 is very difficult as standalone tables.

The paper lacks a clear conceptual framework. What was the theoretical approach? Why were the variables used actually selected? The authors provide some clarity towards the end of the discussion in the ranking of factors associated with malnutrition, but the concept of immediate (child), household, and maternal level variables. It is not clear what this study adds beyond what other published studies about risks factors for malnutrition in Bangladesh have demonstrated.

The conclusions do provide some clarify towards the purpose and unique contribution of the study comparing risks factors using the logistic and MCA ranking), but the purpose of the study should come earlier in the methods. Further, the authors need to explain how their findings extend, contradict, or corroborate with the other findings that have examined a similar question in Bangladesh.

Table 1 title is also unclear. Title is again circular. Should read something mean predicted HAZ according to socio-demographic factors. The column heading also needs to be more specific to describe HAZ. ISMCA is the method, but it needs to describe the variable that is measured.
Table 2 title is circular. The authors describe logistic regression of nutritional status by nutritional status - what is the predictor? Sub-heads are missing in the table. For example, it appears that age categories are listed first, but there is no title to indicate these. Instead, this table appears to be demonstrating logistic regression of nutritional status by socio-demographic factors.

Table 3 - The definitions of “nourish” and malnourish need to be defined. These are not conventional. Does this refer to height-for-age Z scores < -2? It is unclear. Also, the percentage correct is also not clear.

Table 4 - Education status should indicate if this is mother's highest level of education received. It is not clear why Table 4 is needed. What new information does this contribute? The abbreviations for linear and logistic regression are not necessary and do not all value to the table, instead they add confusion. The tables need footnotes in order to be standalone pieces of evidence. As they read now, the results cannot be interpreted with the text, and even then they are difficult to interpret. For example, percent correct is not a convention.

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

Yes

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

Yes

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

No

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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Please indicate the quality of language in the manuscript:

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