Reviewer's report

Title: Evaluation of the Mercy weight estimation method in Ouelessebougou, Mali.

Version: 2 Date: 26 February 2014

Reviewer: Nguefack Tsague

Reviewer's report:

A) Major Compulsory Revisions

1. The authors stated that “It appears that the MM can be used in West African children without modification extending the utility of this weight estimation strategy”. To which extent do the author think this result (Ouelessebougou, Mali) can be extrapolated to the entire West Africa region? The issue should be discussed.

2. Elaborate more on sample selection (i.e method of selection)

3. Performance measures are of concern in this paper:

   a) Correlation coefficient: Correlation is not always a good measure of performance in this case; e.g. if Y is twice X, then Pearson’s correlation=1.

   b) Linear regression: By choosing to regress the predicted weight on actual weight, one should check that the intercept is statistically null and the slope is not statistically different of 1. For all methods, only the confidence interval (CI) of Nelson contains 0, thus intercept is not statistically different of 0. For slope, none of its CIs contain 1, thus all these slopes are statistically different of 1.

   c) ‘Mean error (ME) was calculated by taking the difference of the predicted and actual”. It is actually just a difference, not a mean; it may just be called error or residual (as it is commonly called in Statistics).

   d) “Mean percentage error (MPE)”, not convincing as measure of performance

   e) Root mean square error (RMSE) : may be acceptable

   I would suggest that, in addition to Root mean square error (RMSE), the authors choose two others measures of performance: the “limits of disagreement” (see e.g., Indrayan, 2008, Medical Biostatistics, page 564-566) and intraclass correlation (for each method, may be after log-transformation).

4. Authors should explain why the final sample size depends on the estimation method, e.g. 473 for Mercy; 269 for APLS; 446 for ARC, 365 for Broselow; 369 for NELSON.

5. The following key reference is worth citing:

Susan M. Abdel-Rahman, Ian M. Paul, Laura P. James, Andrew Lewandowski
B) Minor Essential Revisions
1. Page 4, Introduction, 3th paragraph, “In response to the lack of a robust, broadly-applicable weight estimation method for children we recently developed the Mercy Method [21]”. The ‘we’ should be changed since the current authors are not all those who developed the method. That method was developed by Abdel-Rahman and Ridge [21].
2. Methods, 1st paragraph, page 5, Write “years” instead of “yr”

C) Discretionary Revisions
1. Since “This study was undertaken to examine the performance of the Mercy Method in a West African pediatric population”, it would have been better if this study were multi-center.
2. Is there a specific software for Mercy?

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

Quality of written English: Acceptable

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

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