Reviewer’s report

Title: Reliability of length measurements collected by community nurses and health volunteers in rural growth monitoring and promotion services

Version: 0 Date: 26 May 2017

Reviewer: Ramzi W. Nahhas

Reviewer's report:

An important question was addressed with a Well-designed study. Additionally, the analysis was well done and well interpreted, for the most part. However, some more details on the methods and some more discussion of the results are required before this article is acceptable for publication.

Line numbers below refer to the global, not page-specific, line numbers.

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General comments:

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I thought it was interesting that the nurses improved quite a bit in Session B compared to A, but the Health Volunteers (HV) did not. This difference should be emphasized and possible explanation(s) provided. Why did only the nurses improve?. This also factors into your conclusion that more training is needed. Additional training helped the nurses, but not the HVs. Perhaps something else is needed for the HVs? Or maybe their baseline level of training was such that just two trainings were insufficient? That would support your conclusion, but does not seem to be supported by the data; the nurses and HVs were similarly unreliable in Session A, so their difference in baseline training did not result in different performance in Session A, but the nurses improved with more training. Edit the Abstract and Discussion accordingly.

As you mention in Line 358, "...equipment and protocols used in training differ among studies." In order to assess how applicable your results are to other settings, it is vital to know more about the previous training of the nurses and HVs, and the details of the training provided as part of your study. Give any information you have access to about the former and, since you designed the training for the study, definitely give sufficient details about the latter such that other researchers can imitate your training. Additionally, give suggestions for improving the training.
Since measuring length required two people, it seems your unit of observation for reliability should not have been individual nurses or HVs, but pairs of individuals. More detail needs to be given about how you paired people so it can be determined if this impacted your results.

Also, was training given specifically for being the assistant in a length measurement?

You observed underestimation of length. So did WHO. How did your bias compare in magnitude to theirs?

WHO observed underestimation. Do their WLZ charts reflect this underestimation? If so, and your magnitude of bias was similar, then does the bias you observed matter for evaluating wasting? Similarly for LAZ and stunting.

If the bias does matter, the fact that length is UNDERestimated results in OVERestimation of WLZ since L is in the denominator. That would result in decreased sensitivity for screening for wasting (too many false negatives) but would lead to UNDERestimation of LAZ, resulting in decreased specificity for screening for stunting (too many false positives). Your statement in Line 126 that "Missed growth faltering results in no growth promotion action and thus thwarts the purpose of GMP" should be edited. In fact, missed growth faltering would lead to too little action for wasting, but too much action for stunting.

What was the expert's intra-TEM? That information would be helpful to know what the thresholds were that you were comparing inter- and intra-TEM to.

Line 439: Should you change "before" to "along with"? If staff increases are needed anyway, and they are done first, then adding length will still result in understaffing. If staff increases are only needed when adding length and they are done first, then those paying the staff may question the need and, even though staffing is appropriate, when length is added less committed volunteers may still balk at the increased work load. Doing the two together (increasing staff and adding length) may work better. You know the setting... what do you think would work best?

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Specific edits:
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In some places you capitalize "Intra" or "Inter". These should always be lower case, right?

Line 57: Add the age range of the children to the Abstract Methods

Line 74: "more susceptible"... More than what?

Lines 88-89: 50% and 9% of what? Countries? Children?
Line 96: Change "weight-for-height/length Z score (WLZ/WHZ) <-2 Z" to "weight-for-length/height Z score (WLZ or WHZ) <-2"

[I changed the order of "length" and "height" to match the order of the abbreviations, I changed the / because it looked like you were dividing two things, and the Z at the end was incorrect]

Line 97: Change "length/height-for-age Z score (LAZ/HAZ) <-2 Z" to "length/height-for-age Z score (LAZ or HAZ) <-2"

[I changed the / because it looked like you were dividing two things, and the Z at the end was incorrect]

Line 97: The 17% is not a rate, but a proportion or prevalence

Line 98: "<-2 Z" should just be "<-2"

Line 102: Change "wasting which once identified can" to "wasting which, once identified, can"

Line 104: Change "influences rate of linear growth [7-10]. Linear" to "influences the rate of linear growth [7-10], and linear"

Lines 145-146: Change "standardization sessions were conducted at the training sessions held after three (session A) and nine months (session B) of the initial training session." to "standardization sessions were conducted at the training sessions held three (session A) and nine months (session B) after the initial training session." (unless I misunderstood your Table 1)

Lines 148-149: "conducted by an observer experienced in anthropometric data collection sixth months after six months of using length measurements"

"six months after six months of..." is confusing. First, from Table 1, it looks like it should be 7 months after, right? Either way, reword it.

Line 222: Add the SPSS version number.

Line 242: "Table 2 and 3" should be "Tables 2 and 3"

Line 258: "All length measurements were within" should be "All biases in length measurements were within", right?

Line 293: Change "confidence and skill of length measurements" to "confidence and skill in measuring length"

Line 354: Add a comma after "Session A"

Line 355: "the 6 to 24 month age group"
This is the first time this age range is mentioned. Where did it come from? Is this referring to one of the citations?

Line 364: Add "a" before "criterion anthropometrist"

Line 383: The last two sentences of the paragraph should be one.

Line 387: Change "both groups did not reach" to "although neither group reached"

Line 392: "(Angawadi)" Is this a citation? No date, and not in the references.

Line 394: Should there be an "among" before "community health personnel"?

Line 395: Add "the" before "midpoint"

Line 422: The last two sentences of the paragraph should be one.

Line 425: Change "perceived" to "perception of the"

Line 453: Change "several in-service training" to "several in-service trainings"

Line 480: Should you add "a need" before "for" in "There is for both pre- and in-service training"?

Line 489: Remove the space in "Height-for-age"

Line 491: Remove the space in "Length-for-age"

Line 509: Were parents consented or was this not considered necessary by the ethics boards? If consented, state so. If not, state why not necessary.

Line 553: Should "one observer" be "multiple observers"?

Line 586: Replace "differences between paired measurements" with "it"

Table 1: Add "Month" in the upper left cell.

Table 1: Consider combining the two Standardization rows into one.

Tables 2 and 3: Not completely consistent. For Table 3, you can add "(N=15)" after Session A and Session B as you did in Table 1, and eliminate the current footnote b. Make all the footnotes consistent between Tables 2 and 3. Add the actual values of 2.8*TEM and 2*TEM so it is clear what numerical values you compared to.

**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.

Yes

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

Yes

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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