Author’s response to reviews

Title: Assessing Effectiveness of a Novel Mid-Upper Arm Circumference Z-score Tape in a Community Setting in Guatemala

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Author’s response to reviews:

Reviewer #1

No additional comments

Reviewer #2

We have responded below to the reviewer comments. Our responses are not quoted.

“This is a generally well-written piece and the findings contribute to available body of evidence on the usefulness of MUAC as a tool and also as an effective alternative to the weight and height tools for determining nutritional status.”

We agree and thank the reviewer for their consideration.

“I did a PubMed search on the topic and there are lots of studies (including some recent ones published in this journal - AOPH) and would have favored a systematic review and meta analysis to this article, as the findings are not drastically different from what has been reported in other similar publications, except that this is about the only study of this type (community-based MUAC) that turned up for Guatemala in my search (an important justification as this reports findings from a different setting/perspective).”

We do not believe our is conducive to a systematic review (meta-analysis being a specific type of systematic review) as the main purpose of the paper what not to systematically synthesize all available evidence and evaluate research design, methods, and potential biases. Rather, our study
aim was to evaluate the effectiveness of the novel MUAC Z-score tape in the hands of non-medical professionals in a community setting. While there are many studies using a traditional MUAC tape, this is the first study conducted with the MUAC Z-score tape, thus a systematic review would not be feasible. We have summarized the relevant literature as it relates to nutritional screening with traditional MUAC tapes, identified existing gaps, and emphasized the novelty of the device, methods, and results contributed by our study. Our new contributions are detailed below:

1. To our knowledge, this is the first instance of the MUAC Z-score tape being used and assessed in a community setting.

2. Our study is one of the first community-based nutrition screening studies in Guatemala.

3. Non-medical personal were trained to use the MUAC Z-score tape and identify nutritional risk status.

4. The MUAC Z-score tape itself includes ages 2 months to 19 years, whereas some of the other traditional MUAC tapes are not calibrated to represent a distribution of Z-scores, but rather to measure Mid-Upper Arm Circumference in cm or mm. Our study, with use of the novel tape, allowed us to use the device on children outside the typical 0-5 years range.

5. We conducted a survey to learn about the volunteers’ experience with the MUAC Z-score tape, which is an important feedback component in community-based interventions.

We have adjusted the body paper to distinguish traditional MUAC from the novel MUAC Z-Score tape. Additionally, we have included details from a systematic review conducted in 2013 concerning MUAC cutoffs and adequacy in a hospital setting, and we cite another systematic review from 2018 concerning appropriateness of MUAC in various community settings (pg 5 reference [16] and pg. 6 reference [34]).

“Another strength of the paper is that the volunteers used are non-medical personnel and the results still confirms that MUAC is as effective a measurement of nutritional status as the study did not find "significant disagreement between the nutritional status assigned by BMI Z-score and that assigned by MUAC Z-score tape” P11, lines 10-15.”

We agree and are planning to implement screening changes to the Nutritional Rehabilitation Program at Children International.

“Finally, study confirms MUAC is easier to use than BMI Z-score, and used robust statistical methods to ascertain the validity/consistency of the findings.”

We agree that the MUAC Z-score tape is a simple, cost-effective alternative. Our data suggest that it is not significantly different from either the MUAC Z-score measurements obtained by the field medical staff or the BMI Z-score risk status grades.
“I recommend acceptance of the paper as it presents further evidence on the efficiency of the MUAC as a cheap and easy alternative tool to assess malnutrition, from a different geographic and community perspective. “

We again thank reviewer for the comments and consideration.

Miscellaneous:

Pg 12, line 28 - "the" should correctly read "they"

Correction has been made

Pg 15, line 57 - "change" should correctly read "changed"

Correction has been made.

Table 3 header - "your" should change to "you"

Correction has been made