Reviewer’s report

Title: Relationship between breakfast consumption, BMI status and physical fitness of Ghanaian school-aged children

Version: 2 Date: 19 Feb 2019

Reviewer: Barbara Ann Lohse

Reviewer's report:

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Abstract: This is a bit confusing. What research shows that physical fitness of school-aged youth is linked to their cognitive performance? Also, since your study does not measure or relate to cognitive performance, why is this an introductory line? Please verify that percentiles derived for Japanese youth are appropriate for Ghanaian youth? The country industrialization, healthcare, and food-related cultures are quite different between the two countries. BFA is utilized without being identified--do you mean BMI for age? I'm unclear about your use of BMI for age vs BMI z-scores--they are both mentioned but I'm unsure if they were each used or used differently. The structured questionnaire was adapted from another well known survey. How did you test the adapted version? How was it adapted and why? Are you sure it had face validity with these youth? The abstract is unclear about which group the 22.2 vs 11.2% refers too. One can see in the article that this refers to the obese prevalence difference between boys and girls, but an abstract needs to stand alone so this must be clarified. You discuss breakfast consumption, yet the conclusion refers to dietary habit. More information would be needed to refer to dietary habit, e.g. as other meals, snacks, intake, timing etc... It is a stretch to say that information on breakfast consumption provides dietary habit information. Abstracts report what was done, not what will be done. This last line is totally inappropriate. The keywords need revision so that dietary habits and nutrition status aren't included. Nutritional status includes dietary intake, biochemical lab values and clinical data e.g., blood pressure, appearance, etc.... This study only refers to Anthropometry and breakfast intake--that isn't nutritional status.

References look good except for 8, which is incomplete and 15, which needs Lancet to be capitalized.

Writing: Overall acceptable, there are some noun verb disagreements (page 4 data were; not data was) and some passive writing, e.g. page 13 line 48 "It has been suggested" . Rewrite to be more active. Page 13, line 7 has incorrect use of "which"--should be "that"

Statistics: Nice that you note the need for non-parametric stats, but indicate specifically where they were used. Just noting P values doesn't let us know if Mann-Whitney U was used or a t-test. Did you check for normality of data and if so how?

Results: Since so many children participated in exercise and ate breakfast, how can one really make comparisons between those who did and didn't do these things? Information should be only in text or tables, not both so need to remove some specific numbers from the text e.g. lines 11-12 page 8.
I don't understand the conclusion of the last line "combined nutrition and physical...." what is the evidence for making that assertion? Your study doesn't discuss nutrition education at all and you already noted that nearly all students are physically active. It seems like searching for some application of your findings.

Basically, I think this study was a needs assessment of Ghanian youth with respect to growth and development. Are the youth generally active, healthy, of a good weight? The study seems to purport doing more than it does. Since anemia is such a major problem among Ghanian youth it is too bad that the children weren't measured for anemia or a record of anemia in early childhood wasn't obtained for each child to include in the analyses. The concept that this is a study of nutritional status is not appropriate given what was measured.

**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.

No

**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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