Reviewer's report

Title: Prevalence and Predictors of Stunting and Thinness among Adolescent Students in Northern Ethiopia: A Comparison to World Health Organization Standards

Version: 2 Date: 28 April 2015

Reviewer: Carine Van Malderen

Reviewer's report:

1. Is the question posed by the authors new and well defined?
   Yes.

2. Are the methods appropriate and well described, and are sufficient details provided to replicate the work?
   Methods are described in sufficient details but I did not understand some analytical choices. See my comments below.

3. Are the data sound and well controlled?
   Yes.

4. Do the figures appear to be genuine, i.e. without evidence of manipulation?
   Yes.

5. Does the manuscript adhere to the relevant standards for reporting and data deposition?
   Yes. No data deposition.

6. Are the discussion and conclusions well balanced and adequately supported by the data?
   Yes.

7. Do the title and abstract accurately convey what has been found?
   Yes, though I would prefer the term “factors associated” instead of “predictors” as it is a cross-sectional study.

8. Is the writing acceptable?
   Yes.

The question is interesting and the manuscript well written. However, the multivariable approach is not self-evident and the results could be better structured by focusing on stunting and thinness.

Major Compulsory Revisions

Abstract:

Line 27: Instead of the statement “few studies have assessed…” I think that a
justification on why adolescent is a good period to study the nutritional status (“last chance for curbing the consequences of malnutrition”, “breaking the intergenerational cycle of malnutrition and poor health”) would be more convincing.

Background:
Lines 95-100. A comment on the differences between stunting and thinness would be welcome (causes and consequences, why is it important to consider both).

Methods and materials:
Line 180: “two-ways ANOVA was used”: as you compare boys and girls, does it correspond to a Student T test?
Line 184-185: “Predictor variables having p-value <0.05 were retained”. I find this criterion very strict. I think that you could also see the magnitude of the regression coefficient to decide whether or not a determinant should be removed from the model.
Line 186-187: does it mean that, except for type of food, all other non-significant determinants: birth interval, parent’s education, source of water, latrine etc. do not have an epidemiological association based on the literature? Why not keeping all determinants in the model?
Line 189: why studying both stunting/thinness AND height of adolescents? Do you expect the associated factors to be different?
Figure 1: I do not understand the first arrow “proportion to population size”. Did you not select all schools at this step? The last step: how did you select the 348 adolescent from the 5 schools is not clear in this figure.

Results:
Lines 207-219: mixing the description of the sample and the analyses of the outcome is a bit confusing. I would separate both, by adding a new table with the socio-demographic characteristics of adolescent only (without any nutritional data). Please avoid repeating figures that are in the table (e.g. Line 214: “two-third of the participants”, “nine out of ten of the participants” would be sufficient).
Table 1-2: Please specify the test used. The columns “Normal” are not useful. If the column n(%) is removed to another table, it would be good to keep the total number of adolescent by determinant (to see easily if you have 248 everywhere or if you have missing data).
Table 3: Please specify the test used. And on which test the p-value refer.
Table 4: I do not understand this choice of variables.
Line 229-237: Is this analysis relevant as we know that girls and boys have different standards and evolve differently?
Line 249-250: the trend of stunting and thinness across age was not significant: what analysis did you do?
Discussion
Can we assess if the food (type, quantity) taken by adolescent is adequate? And conclude on the nutritional deficiency based on that? As the study is done on one village would it be possible that the height/weight standard is this village are less comparable to the WHO standards than if it was national data?
So less stunting but more thinness in the Jimma zone than in your study. How to explain this?
Lines 306-313: Again, can we really compare boys and girls in height and weight?
Line 342: how do you calculate that adolescent 16-19 were 53% less likely to be thin?

Minor Essential Revisions
Figure 1: P = Primary school
Please change every “predictor” to “factors associated with”
Line 212-213: “like stunting”: the sentence sounds strange, please reformulate it.
95% CI: you could specify that all your CI are 95% in the methods section to gain in clarity
Table 1: Education of mother: remove %, change <= to #
Line 262: are employed -> were employed
Line 272: are independent -> were independently associated with…
Line 328: BAZ and HAZ: abbreviations were not detailed before
Please add a subsection “limitations” before line 363

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