Reviewer’s report

Title: Stunting and anemia among children 6-23 months old in Damot Sore District, Southern Ethiopia

Version: 1 Date: 08 Oct 2018

Reviewer: Megan Costa

Reviewer's report:

Review by Section

Throughout; reread and edit closely with regard to spelling, grammar, and tenses. If the journal has suggested editing services, consider using them.

Abstract:

Not all of these details are necessary in the methods section; for example, use of WHO anthro program and SPSS can be added as one line later in the methods section of the manuscript. I am more interested in which specific outcomes were used (height-for-age z-scores, weight-for-age z-scores) and why. It is not relevant at this point of the paper which software program was used.

I assume binary models were run on anemia status, stunting, and wasting, but this is not mentioned in the methods section of the abstract. The author should include the exact measures in this section.

The first sentence of the abstract conclusion is not clear; does this mean higher relative to the national average in Ethiopia? Does this mean higher prevalence? The abstract conclusion refers to solutions oriented toward breastfeeding. What about solutions oriented toward some of the other findings, such as dietary diversity?

Background

Line 56: parasites affect not just blood loss, but also ability to absorb nutrients. This is currently worded as if parasites only cause blood loss.

Line 61: Is this the underlying logic for including this age group in the model? If complementary foods are the main concern, perhaps breastfeeding patterns and frequency should be included in the analysis.

Lines 72-83 do not seem like they should be a series of one-line paragraphs. If this is a formatting issue, resolve.

Line 70: Is there any explanation for this observed increase in anemia within the literature for the period 2011 and 2016?
consider explaining clearly that stunting is associated with chronic compromised nutrition as height is a slower process than a more flexible type of growth such as wasting.

why is stunting so much lower in Kemba Woreda, and what is the significance of this (or not?)

Is there a village-level fixed effect to account for differences in villages? Are there enough observations per village to do this? I see no area-level controls in the attached tables.

Sample Size and Sampling Procedure

What was the actual prevalence of anemia in this area at the end (66.6% seems like a high prevalence to base sample size estimation on). Consider referring to the observed prevalence in line 95. If the condition was suspected to be more prevalent than it actually was observed to be, you may have undersampled.

The phrase 'family folder' is unclear.

Data Collectors and Measurements

It is not necessary to spell out the degrees of the individuals taking measurements.

Laboratory investigations

Why was adjustment for smoking within the household made? Is there a citation saying that a different hemoglobin level should be used if an individual in the home smokes?

Data Quality Control

I am not sure this section is necessary; some of the information is redundant.

Data Management

What proportion of anthropometrics were in implausible ranges? What is the attrition rate? It will be difficult to make inferences about the generalizability of your results without a clear understanding of how much of the sample is dropped.

Eliminate this wording from the initial abstract. There is no need to present this part twice.

Statistical analyses

If the authors mean what I suspect, they should substitute 'bivariate' for 'simple' in this case. If there is only one explanatory variable and one outcome, it is a binary regression- it then seems the authors used this for model building, which is fine, as long as any non-
statistically-significant but theoretically important predictors were still included in the multiple regression.

Operational Definitions

Line 174: this is <-2 standard deviations from the reference median.

Line 175: What is the reference population? This is where you should discuss the origin of the WHO Multicentre Growth Study.

Line 177: Ensure the first time you mention the World Health Organization it is completely spelled out and then the acronym is applied.

Lines 180, 182: Definitions do not seem mutually exclusive; please clarify each of them. Are they both meant to be 8 hours or 8 times?

Results

Line 187: This needs to be clarified much sooner, response rate does not belong in the results section.

Line 187: Should this be 13.69 months? The way the sentence is written it seems as if both quantities given are in years.

Line 195: The sample size estimate was based on a stunting rate of ~60%, correct? What are the implications of this?

Line 202: Again, why adjust for smoking? Is this a common practice? Is this due to policy concerns regarding smoking?

Line 213: Previously it seemed anemia was one of the outcomes; should anemia be fit as an interaction with drinking water from an unsafe source to attempt to understand the role of parasites in this sample?

Line 221: Again, is there a village-level fixed effect? Relationships between exposures and outcomes are bound to vary by residence, especially if some drinking water sources are safer than others for instance. (For example, if a well is contaminated in one village and not another, this will affect the water source coefficient).

Discussion

Lines 226-234: A map of supplementary figure illustrating regions' prevalence might be most useful for this portion of the discussion.

Line 253: What are the changes made in existing interventions? This section needs to be expanded.
Conclusion

Line 277: This section needs to be expanded. What are some of the long-term implications of the results? What are some of the priorities that should be set, and how does this tie back in to the regional variation discussed earlier in the manuscript?

Line 280: There are no limitations discussed or listed of this study; first, the power calculations seem problematic given the higher anticipated prevalence of stunting. Second, why are height and other nutritional statuses (height for weight) not considered? Rather than listing prevalence of stunting across regions, why might this region have had less than anticipated? The meaning of the findings needs to be explored in more depth.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

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.

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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Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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