Reviewer’s report

Title: Magnitude and predictors of undernutrition among children aged six to fifty nine months in Ethiopia: a cross sectional study

Version: 0 Date: 13 Feb 2017

Reviewer: Karin De Ridder

Reviewer's report:

Dear authors,

In general, it is an interesting article that is nicely structured and clearly written. Although English is not my native language, I observe that the text could be improved by someone with a good English competency.

The methodology is mainly good described, although some details could be added and some limitations of the methodology (discussion) could be some more elaborated.

In general, the discussion is quite much a repetition of earlier described findings. It would add value to the discussion if certain specific thoughts and facts from the literature (related to the Ethiopian situation) could be added to this discussion. E.g. any knowledge related to most common (elsewhere described) prevalence of type of malnutrition (kwashiorkor and/or marasmus) and causes of malnutrition, caused of diarrhoea (use of boiled water? Bottled water? Lack of good water supply? Economic situation of this population?...).

For some more detailed comments to each section, see below.

Kind regards,

Karin De Ridder

1. English

Some remarks, but the list is not exhaustive:

Page 4 line 20: "Undernourished children were usually suffered from chronic illnesses" ---> undernourished children are usually suffering from chronic illnesses

Page 4 line 35, 40, : "under nutrition" --> be consistent: undernutrition, undernourish ,...
Page 4 line 47: "under-nutrition" --> idem for consistency throughout the text

Page 5 line 44: "100, 790" -->100,790 ; "15, 723" --> 15,723.

Page 6 line 37: "The youngest child was selected as participant during more than one eligible child was present in the selected household, and in case of twins one was taken by lottery method to be included" --> the youngest child was selected as participant if there was more than one eligible child in the selected household,…

Page 9 line 25: 'Of the total number of mother 554 (68.3%) were housewife and only 444 (54.8%) were educated' -->In total, 554 (68.3%) of the mothers were housewife and only 444 (54.8%) were educated

Page 9 line 18-27: Seven hundred eighty one (96.3%) of the children were grown by both parents and the average household family size was 5.73 with the (SD + 2). nearly all of the study participants 794(97.9%) were Sidama by ethnicity. Of the total number of mother 554 (68.3%) were housewife and only 444 (54.8%) were educated. Seven hundred twenty (88.8%) of children belongs to Christian families. (Table 1)

--->If number above 10, use the numerical system instead of words (781, 720). Also to be applied in the text below.

->"5.73 with the (SD + 2)" can be "5.73 (SD +- 2)."

->nearly all of the study participants 794(97.9%) were Sidama by ethnicity: Nearly all of the study participants were Sidama by ethnicity (97.9%).

Page 13 line 24: "Children who born in less than 24.." --> Children who were born in less than 24… or: Children born in less than 24 …

Page 13 line 42: "Children who fed on their mother's breast for less than 2years were…” --> "Children breastfed for less than 2 years were…”

2. Methods:

Page 5 line 32: is it 6 months (or 5 moths, as mentioned in the abstract?) - to check out in abstract versus design section and rest of the article

Page 5 line 56 "The source population of this study was all six to fifty nine months old children paired with their mothers who lived in rural kebeles of Tulla sub-city, Hawasa town." Can be deleted as it is a repetition of the sentence above

Page 6: The authors mention that a systematic sampling (choosing the youngest if more eligible children) is used. On the other hand, a predictor "birth order" is included in the model. Could the
authors reflect to which extent eventual associations might be biased if a selection criteria influences an independent variable?

Pag 7 line 39: ENA stands for ....?

Pag 8 line 3: "multivariate" logistic regression: I assume that the authors refer to multivariable regression analyses? (Multivariate refers to analyses with taking into account different outcomes (dependent variables) at the same time ; multivariable refers to analyses which take into account different independent variables at the same time)

3. Results:

Page 9: in general, it is not needed to repeat all descriptive results from the first two tables in text format. Only repeat the most important ones, and add some additional information like type of complementary feeding (which is not in the table). Avoid (as mention above) to write large numbers in text format (above 10, use numbers).

Table 3: add the index to "normal" --> Normal HAZ, Normal WAZ, Normal WHZ; or create an extra line to introduce the different indices (HAZ, WAZ and WHZ)

Page 9: bivariate and multivariate logistic regression --> I assume you mean multivariable logistic regression (multivariate= 2 or more different dependent outcomes in your analyses; multivariable= 2 or more different independent variables) see https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3518362/

Page 10:

AOR: for which variables exactly has been adjusted if AOR is calculated? Note: Be aware that not too many confounders are included (if they are too much correlated, or they are colliders, you might cause a bias by adjusting)

The authors have originally three outcome categories: was it feasible to analyse the data with ordinal logistic regression?

Page 11 line 3: "Risk of underweight among children whose mothers were illiterate was 0.68 times [AOR 0.68; 95%CI (0.30, 0.93)] less likely than children whose mothers were literate." --> I assume you mean the opposite? Additional remark: be consistent in terminology: do you mean "no formal education" or "illiterate", it is not necessarily similar.

4. Discussion:
Besides this comment, I have some more specific comments:

Page 11: last paragraph - your kebeles do represent a specific town, probably a specific group in Ethiopia. Might it be an explanation to different prevalence compared to earlier Ethiopian research (which also refers to specific locations in Ethiopia ref13-19)? (limitation? Selection bias?)

Page 12: line 27-32: maternal age: might it be that older mothers have more children, and that therefore the children belong to larger families (and be therefore more at risk? Cf line 51-56). Or are it not related phenomenon's?

Page 13 line 22: "environmental stress": what do you refer to in this context?

Page 14 line 49: "Children who fed complementary feeding for less than three times per day were more likely to be stunted, underweight and wasted than their counterparts" : the content of this sentence is not related to the next sentence. Move this sentence up or down in the text. The finding that complementary feeding is associated with stunting: could it also be that complementary feeding also could be bacterial contaminated if water is not good enough boiled or no bottled water is used (higher risk of diarrhea), or that the familial economy makes that the energy and/or protein intake is reduced?

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