Reviewer’s report

Title: Food consumption and undernutrition variations among mothers during the post-harvest and lean seasons in Amoron'i Mania Region, Madagascar

Version: 3 Date: 07 May 2019

Reviewer: Ayalew Astatkie

Reviewer's report:

Manuscript title: "Food consumption and undernutrition variations during the post-harvest and lean seasons in Amoron'i Mania Region, Madagascar".

Manuscript number: PUBH-D-18-04053R3

The authors have improved the manuscript from what it was initially but there are still several issues that the authors need to consider. Please see my concerns below.

- The authors didn't provide a convincing justification as to why they used a sample size estimated for a prevalence study while theirs is an incidence study.

- The description of the dependent variable still does not explicitly clarify what the dependent variable(s) is/are. For example, is "food consumption frequency" a dependent variable? Is undernutrition as measured by BMI a dependent variable? I couldn't see any such results.

- In response to my earlier comment about including "season" as an independent variable affecting food consumption and undernutrition, the authors responded that doing so would be "irrelevant". Yet, in the first sentence of the discussion, the authors claim that "Our study shows the effects of season on the frequency of food consumption and nutrition status of a representative sample mothers in Amoron'i Mania region." Also the first sentence of the conclusion states that "This study highlights the importance of the seasonal variation in food consumption, and the increase in the incidence of undernutrition in the lean season." There are similar claims in the background sections of the abstract and the body of the manuscript. The preceding claims by the authors are unwarranted if "season" is not treated as an independent variable in the multivariable model and unless its confounder-adjusted effects are unraveled. Furthermore, comparison of undernutrition in the post-harvest and lean seasons using McNemar's test yields only a
crude (confounded) result. Any claims about the effect of season should be based on a confounder-adjusted analysis.

- The use of Pearson's chi-square test to investigate the effect of season is also not recommended as it doesn't adjust for confounders.

- The authors should provide brief details of "the extension to the binomial family of Generalized Linear Model (GLM)" they used. It is worth describing the model building and refinement procedures. The authors should also state the link function used.

- In Table 2 the authors should provide the adjusted RR for all independent variables even if the effects are not statistically significant.

- Include the effect of pregnancy on undernutrition in Table 2.

- The heading in Table 2 should clarify whether the undernutrition is as measured by MUAC, BMI, or other means.

- Incidence is an aggregate-level measure. What the authors investigated is not the factors associated with the incidence of undernutrition. They investigated the factors associated with undernutrition at individual level. Hence the title "Factors associated with the incidence of undernutrition" (page 10) should be corrected.

- Are the results about factors associated with undernutrition in the abstract and the body of the manuscript based on BMI or based on MUAC? Should be clarified.

- In the last sentence of the "study setting" use dot (.) not comma (,) as a decimal separator.

- The discussion section is mainly a repetition of the results. The findings have not been properly interpreted, mechanisms have not been sufficiently discussed and implications have not been elaborated.

- The highlighted paragraph on page 13 (lines 297 to 304) does not seem to be of any relevance.

- The population (i.e., "mothers") should be indicated in the title of the manuscript.

- The manuscript still needs careful language revision (grammar, typos, punctuation).
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.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

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I am able to assess the statistics

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