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: 2 Date: 15 Feb 2019

Reviewer: Ayalew Astatkie

Reviewer's report:

Manuscript title: Food consumption variation and undernutrition incidence of mothers according to the season in Madagascar [PUBH-D-18-04053R2]

This manuscript reports the results of a study investigating variations in food consumption and incidence of undernutrition across seasons and determinants of undernutrition among pregnant women in Madagascar. It is an interesting work and an important contribution to the literature in its own field. As such, it merits publication if thoroughly revised.

Get my comments below.

Major Compulsory Revisions

- The description of the sample size estimation and sampling procedure is mixed up. It must be re-written coherently. First describe clearly in one paragraph about how sample size was estimated. Then state how sampling was done to obtain the required sample size.

- While the present study is a cohort study, the sample size calculation was done for a prevalence study which doesn't meaningfully yield a sample size for incidence. It is also difficult to judge whether the sample size has enough power to detect factors associated with undernutrition. Therefore, the authors need to present clearly how sample size was estimated. At least a post-hoc power analysis should be done to see if the study has enough power to detect factors associated with undernutrition.

- In the description of the variables of the study, the authors should clearly distinguish between the dependent and independent variables.

- The authors stated that, "Food consumption frequency was categorized into 2 groups: no or less than once a week consumption and consumption more than once a week." Into which category does "consumption only once a week" fall?
An appropriate measure of effect for a cohort study is the risk ratio (RR), not the odds ratio. Hence, the authors need to use an analysis method appropriate for the study design. They may use Poisson regression or convert the odds ratios from logistic regression into RR using Stata's "oddsrisk" command.

Notwithstanding the above comment, if the authors are to retain their use of logistic regression, then the use of the backward stepwise technique doesn't seem a good choice as it is an automated procedure and doesn't give enough room for human reasoning. Hence, I recommend the use of the "Enter" or "forced entry method". For additional information, please refer to the article by Bursac et al: https://scfbm.biomedcentral.com/articles/10.1186/1751-0473-3-17. Besides, as one of the aims of the study is to evaluate the effect of season, season should be entered into the multivariable model as an independent variable.

The results on "factors associated with undernutrition" should be revised in line with the comments given in the methodology section. Also, merge tables 2 and 3 such that both the unadjusted and adjusted effects are shown in the same table.

The discussion section needs to be updated based on any re-analysis of the data as per the suggestions above.

In the last paragraph of the discussion section, the authors argue that "Because of the high undernutrition's incidence for pregnant women, we considered pregnancy as a determinant of the deterioration in nutritional status during the lean period". This argument is based on the authors' intuition and not substantiated by their findings. Only results substantiated by the data should be discussed.

Any limitations of the study should be discussed.

Conclusion should be based on the results. The conclusion about pregnant women is not based on the data.

The manuscript needs careful and thorough language revision.

Minor Revisions and Concerns

In the title replace the preposition "of" with "among" such that it reads as "… incidence among mothers …"
- The authors refer to the DHS results of 2009 when arguing about the status of malnutrition in Madagascar. Is there no DHS result after 2009? If there is one, better to update the argument accordingly.

- In the data collection section (page 5, line 119), cite reference to the "Food Frequency Questionnaire".

- Better not to number the sub-headings in the results section.

- In the results section, under the "description of the sample", the comparison of the lost-to-follow-up with those remaining in the study is ambiguous. It needs rewriting.

- Revise the sub-heading "Factors associated with undernutrition's incidence" as "Factors associated with undernutrition".

- Better to omit the p-values from the tables and the text in the abstract.

- Avoid the use of very long paragraphs in the discussion section.

- In Figure 2, the x- and y-axes should be properly labeled.

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.

No

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