Reviewer's report

Title: Household food insecurity and symptoms of neurologic disorder in Ethiopia: An observational analysis

Version: 1 Date: 7 September 2010

Reviewer: John Cook

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Comments to authors on “Ethiopia: Food Insecurity and Neurologic Disorder”

This is a very nice study that addresses important public health issues, described in a very well-written manuscript. It also makes an important contribution to the overall state of understanding about food security and its relationships to health outcomes. I have some small editing-type suggestions that you need to consider and deal with, and one larger technical statistical issue. I will list the small editing issues first, then the larger statistical issue. Generally I would like to see your study published, but you need to do some editing, and deal with the larger technical issue. This may require both minor and a somewhat more extensive revision.

Minor essential revisions

1. In Background, in the first paragraph at the 4th line of text; it appears that a reference number is left without brackets.

2. In Background, in the second paragraph at the 4th line of text; please change the word “suggest” to “suggests”.

3. In Background, in the third paragraph at the 2nd line of text; I would change “an ND” to “a ND”.

4. In Methods, Sample, in the third paragraph at the 1st line of text; it seems to me that you should reverse “cohort baseline” to “baseline cohort.” That wording makes more sense to me, unless you have a specific reason for the current word order.

5. In the same paragraph at the 5th line of text; I suggest you change “children were unable to be located” to “children could not be located”.

6. In Methods, sub-section Survey Domains, first paragraph at the 3rd and 4th lines of text; please consider whether the wording “because food ran out or money was not enough to buy food in the last three months” is exactly consistent with the food security scale wording. In my experience food security survey researchers are encouraged to connect the lack of access to sufficient food specifically with inadequate household resources. Thus the condition “food ran out” would be specifically connected to “money was not enough to buy food.” Not doing so appears to leave open the possibility that household resources were sufficient but for some other reason household members were unable to obtain sufficient food (e.g., were too busy, etc.). This may seem like a minor point, but it
is one that I believe is important. You can easily fix the situation by simply changing “food ran out or money was not enough to buy food” to “food ran out and we did not have enough money to buy food”. The general assumption is, I believe, that if the household has sufficient money, they can buy food unless there is no food to buy. In that case the nature of the problem changes to one of community food insecurity instead of household food insecurity, and a different kind of question is called for.

7. In Methods, sub-section Dependent Variables, first (long) paragraph at the 15th and 16th lines of text; please delete one of the occurrences of the word “either” from the text in parentheses.

8. In Results, in the fourth paragraph at the 2nd and 3rd lines of text; unless I am misinterpreting your results it appears as though food insecurity is positively associated with occurrence of most NDs. If that is the case then the statement that “Low FI was associated with higher odds of each indicator” is incorrect. Would it not be low food security (high food insecurity) that is associated with higher odds of each indicator? Please check this and be sure you state it correctly.

9. In Results, in the last paragraph, in which you discuss the primary results; I urge some caution that you do not diminish the findings regarding your primary hypotheses by giving equal emphasis to the control variables. You do not state a priori hypotheses regarding the control variables, and they are not the primary focus of your study. You are testing hypotheses about associations between food insecurity and occurrence of NDs, and you develop these hypotheses in your background/introduction. The control variables are relevant only insofar as they may be confounders whose relationships with either the predictor variable (food security status) or the outcome variables might lead you to erroneously conclude associations between the predictor and outcome. Here you discuss their associations with the outcomes with equal space and emphasis as those of the predictor with the outcomes. This gives the impression they are of equal importance, and in the context of your hypotheses they are not.

Major Compulsory Revisions

1. There is a technical/statistical issue that you need to address. If I understand your design correctly, you have data on 450 husband-wife pairs, and you have food security and SES variables that apply to both members of the dyads. I.e., both the husband and wife in each household will have the same food security scale score (and hence category), and the same SES score. If I am not mistaken, this creates a multi-level or hierarchical situation in which the variance in food security status across all 900 individuals is composed of a household-level fixed effect, and a random individual-level effect. Similarly with SES status. Using the household’s food security status and SES status for both husband and wife limits the variance for these two variables since within-household scores for these variables are the same for both husband and wife; i.e., their correlation is 1 within dyads.

In the last sentence at the bottom of page 9 you state “Adjusting for potential interviewer/group clustering had no effect on odds in any model.” Depending on
what this sentence means, the concern regarding multi-level effects may have been addressed, but it is not clear that it was. I believe you should consult with a statistician to verify whether the adjustments referred to here were made to address the multi-level effects, and to obtain appropriate language to describe the adjustments and the reasons they were tested if it was to deal with the multi-level issue. You should also mention this issue in the “limitations” section, or the section in which you discuss limitations.

I believe one way to deal with this issue would be to use the household as the unit of analysis instead of individuals. This would cut your sample size in half (and might affect the significance of some findings) and require modifying the ND outcome variables to make them also household-level variables by, for example, making composite variables indicating whether either the husband or wife experienced ND symptoms (or both). Another way would be to stratify your analysis sample by gender and run separate models for men and women. You may have done this already since you mention that women were more likely to report co-morbid disorders.

I think the most important thing for you to do is consult with someone familiar with multi-level modeling to determine the implications of using household-level food security status and SES variables together with individual-level ND, age and gender variables. You may find that the restriction in variance for the two household-level variables is not critical and your results are correct, but you need to determine that, and to tell your readers.

**Level of interest:** An article of outstanding merit and interest in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests