Reviewer’s report

Title: Prevalence and predictors of under-nutrition among school children in a rural South-eastern Nigerian community: A cross sectional study

Version: 1 Date: 29 Mar 2018

Reviewer: Mark Anthony Myatt

Reviewer's report:

I reviewed the previous version of this article. The authors have addressed most of the concerns that I expressed in my previous review.

I think the treatment of the sample as a simple random sample is OK. I had previously misunderstood what had been done.

I have a remaining issue with the material on sample size. Using the information in the article:

"Sample size was derived from a single population proportion formula. We used vitamin A deficiency prevalence of 40% [10 11] at 95% confidence interval, 12.5% margin of error and non response rate to derive a sample size of 450".

I get:

\[ n = \frac{p \times (1 - p)}{(e / 1.96)^2} \]

\[ n = \frac{(0.4 \times (1 - 0.4))}{(0.125 / 1.96)^2} \]

\[ n = 59 \]

not \( n = 450 \). With \( n = 450 \) the margin of error (i.e. the approximate half-width of the 95% CI) would be about a 4% (not 12.5%).

It is not clear how this type of sample size calculation is useful for this application. A better approach would be (e.g.) to calculate the sample size required to detect an effect (e.g. odds ratio) of a given magnitude. For example:

Number of controls per cases = 1.5 (i.e. 60% / 40%)

OR to detect = 2.5
Exposure in controls = 10%
alpha = 0.05
Power = 90%
gives n = 460 (184 cases and 276 controls). The author's could do this sort of calculation. Another approach would to test for a difference in proportions.

An alternative is to remove the sample size material and replace it with and illustrative power analysis.

It maybe that I misunderstand the authors' meaning. In that case some rewriting is also required.

I am not concerned about the overall sample size as n = 450 is not "small". My concern is that the procedure used to calculate the sample size is confusing and may be inappropriate.

**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?**
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Yes

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I am able to assess the statistics

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