Reviewer's report

Title: A novel school-based intervention to improve nutrition knowledge in children: Cluster Randomised Controlled Trial

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Reviewer: John H Kalbfleisch

Reviewer's report:

This review addresses statistical methodology aspects of the manuscript. As described, readers cannot decide if the statistical methods are appropriate or not. I offer the authors the following comments and suggestions.

Major Compulsory Revisions

(1) Strategies of data analysis are dictated by the study design and measurement scales. In this study, the experimental unit (or sampling unit) is “school” not “student” – since randomization was among schools (students were not randomized to intervention or control). Comparison of mean levels should use an error term computed from school responses (SD and number). Individual student responses are nested within schools, if authors include “student” in the statistical analysis. Although student responses (initial and 9w) cannot be linked (mentioned by a referee and the authors), school (mean) responses can obviously be paired or linked for comparisons within study groups. As currently described, methods of data analysis avoid the issue of the study design experimental unit, hence, current results could be based on an inappropriate analysis. Statistical methods (page 7 and 8) need to better explain how mean levels of “intervention” and “control” were compared (with and without covariate adjustment). Current results might need revision.

Minor Essential Revisions

(2) A table of school mean levels at baseline and 9weeks would be informative to readers. This table could also provide school covariate descriptors (this follows comment (1)).

(3) It is not clear what variation the SD in Table 1 describes. Is this “among schools” or “among students” or something else?

(4) The model used for covariate adjustment is correct, such a procedure can alter study group mean levels and alter the error term used for comparing adjusted means (usually both are achieved). The authors make no mention of the statistical appropriateness of the regression model used for the “adjusted analysis” (I assume it was a main-effect-only linear regression type model). The covariate influence within the 2 groups should be very similar.

Discretionary Revisions
Changes in mean levels (baseline to end of study) were 0.6 for intervention and 0.5 for control. With slightly different group baseline means, the effects of intervention and control seem remarkably similar. It seems that many readers will want to see statistical results of comparing change-scores (in addition to using baseline as a covariate).

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests.

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