Reviewer’s report

Title: Free school meals as an approach to reduce health inequalities among 10-12- year-old Norwegian children

Version: 1 Date: 03 May 2019

Reviewer: Carola Ray

Reviewer's report:

The study touches an important topic from a public health perspective as it both looks into whether children's eating habits are affected by a free school lunch in accordance with nutritional recommendations and in addition touches whether effects are "better" among schoolchildren from lower SES backgrounds. In general, the study is clearly presented and it fills a gap in the scientific knowledge. However, I have some questions and comments which I would like to discuss with the authors.

Title
Lines 1-2: The title. I have no suggestion about the title at the moment, but I think it is maybe a bit too much to by these results present school meals a solution to reduce health inequalities?

Abstract:
Is it possible to add in line 25 how many items the food frequency questionnaire included and what time did it comprise?

Background:
It runs very well and I have no comments on the background section.

Methods
Lines 100-. Was it possible for the intervention children allowed to bring their own lunch package in addition to what the school served? Even if the served lunch was in accordance with recommendations, children were free to choose what of the served foods they wanted to eat if I understood it correctly? Can these two things have affected that the total energy intake was higher than before the intervention?

Line 113. This is a bit confusing. I think later on it is mentioned that all children (intervention and controls) went to same school? Even if the controls did not get the school lunch can they have been affected by the program and do researchers think that the control teachers gave more "healthy" instructions to children about what to bring for lunch during that schoolyear?
Lines 121-125. So, the FFQ included questions only about how often they have eaten following foods during school lunch, or was it also about what they eat out of school time? Even if the researchers refer to an already published study it would be nice for the reader to be informed about what time the FFQ comprised.

Line 126. Did the FFQ include more that those 13 items? Did it include fish (in general) or fish spread as in table? No questions about cheese, meat, egg? Did all children at school a free fruit per day, or was it only children in the intervention group?

Statistical analysis
Lines 167-. Is it possible or necessary in the Repeated measures multivariate ANOVA analysis to correct for the fact that the control group is bigger? Or that the age might vary in the groups even if the mean did not differ between the groups?

Results
Can the fact that response rate in the control group was much lower than in the intervention group have affected the results? More health conscious families in the control group than in the intervention group?

Table 2. It seems that there are a bit higher proportion of children from higher SES group in the control group than in the intervention group (even if not significant difference)?

Discussion
Lines 223-. Is it possible to present all main results before starting to discuss the results?

Line 270-. Is 75% a low participation rate? The control group might have had a low participation rate, but overall I should not say that it was low? However, I am not sure if the amount of participants in the study was enough (the power) for all conducted analysis?

Lines 274-. I agree on that as the amount of participants was small in the study the results for BMI could have been due to chance. Still, can the fact that some children, especially when there were more girls in the control group, started to grow faster and therefore the BMI in that group decreased?

Line 282. The participation rate is here listed as a strength and previously it was presented as low (line 270)?

Line 292. As previously commented; can also the teachers have been affected by the knowledge that some children in school attend a program in such a way that teachers instructed their control children more about the lunch packets that they brought to school?

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes
Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

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

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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Please indicate the quality of language in the manuscript:

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