Author's response to reviews

Title: Promoting Healthy Eating and Physical Activity among School Children: Findings from Health-E-PALS, the first pilot intervention from Lebanon

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Response letter to the reviewer’s comments- BMC Journal

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Thank you for reviewing our manuscript. We are most grateful for your very useful comments and suggestions. Kindly find below a point by point response to your comments. We have amended the manuscript accordingly where appropriate, and have highlighted these amended sections in yellow for your convenience.

Major Compulsory Revisions

1. The main comment is if school have been considered as a random confounder, although the selection is consistent and justified, and there is balance between public and private schools. It could be that the differences are due to differences between centres, mainly by the SES and environment in which they lived.

Thank you for raising this important point. Indeed, we did not control in the regression models for ‘type of school’ (i.e. private or public) to avoid over-fitting the models especially that we had tried to account for that in the design stage. The four private schools were assigned to matched pairs, according to their socioeconomic status based on neighborhood, religious sect and whether or not the school had a shop selling snack food. Then, each of the private schools in the matched pair was randomly assigned to either ‘intervention’ or ‘control’; the same was done for each of the 4 public schools. Also, we believe that the method of allocation of schools to intervention and control groups did, as far as possible (given the fact that only eight schools took part in the study) distribute potential confounders equally to both groups and account for the differences between the schools, randomly. We do accept that the relatively low number of schools (eight) that were randomised may have limited the likelihood of distributing potential confounders equally between the intervention and control schools. So, given that the link between the potential confounder (‘type of school’) and the independent variable (‘intervention versus control statuses) was broken at the design stage, we did not enter ‘type of school’ as a control variable in the models to avoid over-fitting. We have clarified details about the randomization in the revised manuscript, specifically in the abstract, methods, and limitations sections (highlighted in yellow).

Introduction

2. Page 3 line 25. Could you clarify the aims? For my, there are clearer in the abstract.

We have edited the aim as stated at the end of the introduction section, which now maps onto the aim as stated in the abstract.
Method section

3. Page 5 line 78. Please, Could you explain why you are promoting moderate physical activity instead of both moderate-to-vigorous physical activities? The physical activity intensity is a very important issue in body composition changes.

We are sorry for the error in our original manuscript. As you suggest, one of the components of the intervention was to increase MVP, not just moderate physical activity levels. We have amended the relevant sentence on page 5.

4. Page 5 line 85. What mean ‘C.H.M’?

‘C.H.M’ are the initials of the researcher who delivered the intervention in schools: Carla Habib Mourad. We have clarified this in the text on page 5.

5. Page 5 line 95. ‘Anthropometric measurements including height, weight, and waist circumference were carried out at both time points using standardized techniques and calibrated equipment’. Please, to include make and model of the used materials

We have added details for the make and model of equipment we used to measure height, weight, and waist circumference to the revised manuscript, page 6.

6. Page 6 line 99. Please, to be consistent, could you include the number of questions in nutrition knowledge and self-efficacy questionnaires?

The total number of questions in the nutrition knowledge questionnaire is 14, and is 9 for the self-efficacy questionnaire. This information has been included in the revised manuscript, page 6.

7. Page 6, line 102. I miss information about PA questionnaire and screen time habits. More detail is need. Idem, for diet. Did authors assess the time spend in PA and screen time? I so, it should be show.

The questionnaire used in the present study was designed to provide an indication of dietary, physical activity, and sedentary behaviour habits. The questionnaire was not designed to measure dietary intake, MVPA, or sedentary behaviours. For dietary intake, questions included regularity of intake of meals, types of snacks eaten or bought from the school shop, frequency of eating out, and eating in front of TV. Physical activity questions included the regularity of sessions of physical education at school, playing outdoors at school and at home, and after school structured activity per week. Sedentary behaviour questions included regularity of screen time, e.g. watching TV, playing computer games. We have added this information to the revised manuscript, page 6.
In light of your comments, can we suggest that we add the questionnaire as a supplementary file to the paper. We have taken the liberty of doing this as part of the revised manuscript. We hope this is helpful.

8. **Page 6, 105. For knowledge score range: the higher the score mean the better the knowledge about diet. Please, add it.**

The sentence has been added to the manuscript, page 6.

9. **Page 6, lines 110-114. This paragraph needs to be move to ‘Statistical section’. Statistical section need to content full information about, data, sex interaction quantitative and qualitative statistical test used and the software used (as authors did). In addition, normal distribution of the main continuous variables should be shown.**

The title “Statistical Methods” was added on page 6 and it includes the “Quantitative data collection and analysis” and the “Qualitative data collection and analysis”. Important details describing the statistical tests and procedures were added to this section, page 6. The normal distribution of the two continuous variables of interest (i.e. knowledge and self-efficacy) have been attested for in the text only given that the majority of the dependent variables of interest are binary in nature, and no assumptions of normality are required for any of the fitted binary regression models.

10. **Page 6, line 123. Please, explain this sentence: ‘…analysed using thematic content analysis’**

The method of thematic content analysis is a way of analyzing qualitative interview data in a step by step process as described by Burnard. We have now included a little more information in the paper about the method, page 7.

**Statistical section**

11. **Please, describe the test used in tables 3 and 4. Did authors use binary logistic binary regression? Please, clarify. In addition, the reference group (table 3 and 4) should be comment in this section and mentioned into the tables.**

We apologize for not including this data before. Indeed, the results presented in Table 3 and 4 were generated using GEE and a logit link for binary data was fitted. We have now included this in the statistical analysis section of the methods, and clarified the reference groups in Tables 3 and 4.

Result section

12. This section should be completed.

Page 7 line 137. Delete: ‘As can be seen’
Page 7 line 137-139. ‘students 137 belonging to both groups (intervention or control) were very similar (for the most part) in 138 their baseline behaviours and habits, while marked differences were observed at post-test’. Please, add P value and statistical test used to check these differences. Include statistical test used in table 2.
Page 7 line 142. Add ‘(Table 3)’ before to ‘controlling for the student’s baseline responses’. And then, delete ‘As shown in Table 3,’.
Page 7 line 145: ‘this could partially be explained by the lower proportion of children 145 in the control group reporting daily breakfast intake at post-test’. Results are not discussed in result section. Move this sentence to discussion section.
Page 7 line 148: ‘The intervention was also successful at reducing the odds of having chips as snacks and the odds of drinking soft drinks (Table 3),’. Please, add statistical data or the effect size.
Page 7 line 151: ‘Purchasing habits were also compared and results showed that the odds of buying chips, soft drinks and chocolate were much less for an average student in the intervention versus control group, controlling for their baseline habits (Table 3)’. Please, add statistical data (odd, P value,...) or the effect size.
Page 7 line 163: Unknown symbol in this sentence.
Page 7 line 174: Please, add more information, at least, the means and SD data. What about waist circumference?

Thank you for these helpful comments. We have made all of the changes you suggest in our revised manuscript.

Discussion

13. Page 8 line 196: Could author explain how studied feasibility of undertaking a successful school-based intervention?

The feasibility of the intervention was assessed using a process evaluation, and this is described in the methods section under ‘Process evaluation’ (page 7). On reflection, we acknowledge that this section was lacking in detail in our original manuscript. We have included more detail on the methods we used for the process evaluation in our revised manuscript.
14. Page 10 line 256. ‘Efforts to decrease availability of energy dense snacks and drinks were only successful in few schools; as shop owners were concerned about reduced profit’. This point should be considered, some differences could be due to this change, so if children’s do not have unhealthy food they can eat and then dereferences are due to changes in the environments and not because children want to eat better. When will this initiative take? If it was made during the intervention, the results are influenced and are not valid. Could you detail?, please.

Thank you for raising this critical point, however we didn’t talk about this more in our original manuscript since we have published the intervention design elsewhere (please see reference). We have now added some additional text to explain that the intervention used a ‘whole school approach’, which targeted both individual (children’s) behavior change and also the school environment. We have included some additional information in the introduction and methods section on the points above.

We understand that the change in purchasing behaviour of children was either due to the changes in the environment or the students’ willingness to eat better. However, the underlying reason behind that change in behaviour goes beyond the scope of this paper.

15. Page 10 line 289. Authors did not assess the screen time, only whether or not watching TV. It is an imprecise measure, in my opinion, and it should shown screen time, if this has been measured. Is difficult to avoid this habit totally... just decrease the time is already very beneficial.

The referee is correct in that we did not measure screen time. Instead we aimed to assess any broad changes in self-reported screen time habits using a simple questionnaire. The way in which we analyzed the data meant that a change in screen time habit from, say, watching TV all day during the weekends to watching it only twice a day, watch TV once a day at the weekends to never watching TV, did not register as a change in our analysis. However, given that we analyzed the children in groups, we feel that the way in which we assessed and analyzed the data would detect a general shift in (using the same example) a reduction of time spent watching TV at the weekends. We assessed screen time habits using the 4 questions listed below (each with 3 or 4 options for the answer, which were then collapsed into two answers for analysis): two for Television viewing (for week days and week-ends) and two for time spent playing computer and electronic games (for weekdays and week-ends):

Do you watch TV during week days?
- a lot
- a little
- I don’t

For analysis, these categories were collapsed into two groups; a lot OR a little (a little and not at all)
Do you watch TV during weekends?
- all day
- twice a day
- once a day
- I don’t

For analysis, these categories were collapsed into two groups; a lot (all day and twice a day) OR a little (once a day and I don’t)

Do you play electronic games after school?
- every day for a long time
- every day for a short time
- 3 or more times a week
- I don’t

For analysis, these categories were collapsed into two groups; everyday OR not everyday

Do you play electronic games during weekend?
- all day
- twice a day
- once a day
- I don’t

For analysis, these categories were collapsed into two groups; a lot (all day and twice a day) OR a little (once a day and I don’t).

The questionnaire which contains these questions is now included in the revised manuscript as a supplementary file. The information is also included as a footnote to Table 4, along with how the four optional answers were collapsed into two, for each question (supplementary file 2)

16. Page 9 line 210. Add a ‘,’ after ‘In addition’
The sentence has been rephrased in the revised manuscript.

17. Page 10 line 289. ‘Despite the strict rules at home for screen time during school days in some families’. Please, explain how it has been evaluated.

This information was obtained from parents during focus groups interviews. The detail has been added to the manuscript (page 12).

18. Page 12. Conclusion should be summary in one paragraph instead of in one page. The conclusion in start in line 340

We have moved the heading ‘conclusion’ to head up just the last paragraph – the conclusion. We have made a slight change to the first sentence of the new conclusion, to highlight two important points you have raised in previous comments – we have included the words ‘whole school approach’ and ‘feasible’.
19. Minor Essential Revisions

Table 1. Please, check the form letter.

If we have understood this comment correctly, we have amended Table 1 so that the type of font used is the same as in the other Tables. If we have misunderstood the meaning of the comment, we are sorry, and would be grateful for further clarification.

Table 2. It should be good to include knowledge and self-efficacy scores

We have corrected Table 2 as you have suggested

Table 3 and 4. P value column could be deleted. Please, clarify the reference group too. Both tables could be shown in figure to easier understanding. Add more details about food questionnaire and food group in the method section.

We have corrected Tables 3 and 4 as you have suggested. Thank you for your suggestion to present this data as Figures – after discussion with our statistician and the research team, we feel that this data is better presented in Tables. However, we would be very happy to produce Figures, and include these as supplementary files if you feel this would be helpful. Please do let us know if you would like us to produce these Figures for your consideration. More details about the questionnaire used have been added to the methods section, page 6. Also, as mentioned above in our response to your comment No 7, we have included a copy of the questionnaire as a supplementary file.