Author’s response to reviews

Title: Effective nationwide school-based participatory extramural program on adolescent body mass index, health knowledge and behaviors

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Author’s response to reviews:

Dear Editor:

Thank you for inviting for potential publication in BMC Pediatrics as a Research Article a revised version of our manuscript (MS# BPED-D-17-00322) entitled “Effective nationwide school-based participatory extramural program on adolescent body mass index, health knowledge and behaviors.” We also thank the two reviewers for their thoughtful evaluations, comments and critiques, all of which help improve the manuscript. We responded to their comments item-by-item below, and indicated in highlights the revised areas in the text.

We believe that this report should be interesting to the audience of this journal since our study was conducted in a natural uncontrolled inner city high school setting to test effects of the program focusing on nutrition and behavior educations on weight improvement among students.

The contents of this paper are a product of original research. This manuscript has not been published and is not under consideration for publication elsewhere. All authors have reviewed
and approved the entire contents of the manuscript, and no author declared any conflict of interest in relation to the manuscript. Thank you for your consideration.

Sincerely,

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Reviewer reports:

Steven H. Kelder (Reviewer 1): Please include all comments for the authors in this box rather than uploading your report as an attachment. Please only upload as attachments annotated versions of manuscripts, graphs, supporting materials or other aspects of your report which cannot be included in a text format.

Please overwrite this text when adding your comments to the authors.

1. There is high potential for selection bias. 69 schools were eligible to participate in the evaluation (i.e., did the intervention), 15 New York schools were selected, and one agreed to participate. No school characteristics are given comparing the 69, 15 to the 1 evaluation school.

RESPONSE: We apologize for the typographical error, which is now corrected and clarified on page 7. In short, we meant that survey data were not available from 1 school resulting in 14 evaluation schools out of 15 NYC schools. Although during the 2013-2014 academic year, a total of 62 (not 69) schools, as was stated in the original manuscript, participated in the HealthCorps program nationwide, the present study focused on 14 NYC schools. Per our NIH-funded research, the plan and focus was to recruit the 15 NYC schools affiliated with HealthCorps because these schools were overseen by the NYC Department of Education with a system-wide IRB, curriculum policies and procedure. For this reason, the examination of the other schools outside NYC was beyond scope of our study. However, the school characteristics of the 15 NYC schools were briefly introduced on page 7.

2. Student response rates are not clearly stated, although appear to be less than 50% in both arms. No comparisons by participating and nonparticipating students is given. This is not stated as a limitation.

RESPONSE: Comparisons of student-level characteristics between students who participated and did not in the survey are not possible by the quasi-experimental parallel two-arm design. However, comparison of inclusion rates with respect to several characteristics between students
with complete and incomplete surveys were discussed as a limitation in terms of generalizability of transportability of the study findings on page 17.

3. The timing of the pre and post survey is not provided, nor whether there were any time differences by HealthCorps or control. Presumably, measures were taken in September and May? Information not provided.

RESPONSE: The pre-program survey was administered during September 2013 whereas the post-program survey was administered during December 2013 for the semester-long program and during May 2014 for the year-long program. This is now specified on page 8.

3. The intervention is not well described. What is written is only in generic terms, applying to all 69 program schools. Little intervention process information is given specific to the school reported in the study. Unclear as to level of intervention dose.

RESPONSE: Regardless of the length, however, the school-level dosage of the program was identical and the HealthCorps program activities were applied to all participating schools. Implementation process of the program activities was determined specific to each school depending on its needs, restrictions, and overall culture identified based on several evaluations: regular monthly wellness council meeting, Alliance for a Healthier Generation’s School Health Index Assessment evaluations, and HealthCorps Community Needs Assessment community assessment evaluation at the beginning of the school (Page 9).

4. Analysis methods are described as if there is more than one school (e.g., clustering among schools). It seems cut and pasted.

RESPONSE: Overall survey data were collected from 14 NYC schools. Please see above our response to point #1.

5. Main outcome analysis proposed is a treatment by time interaction, yet results do not provide the statistical test. Only within condition by time outcomes. This is a fatal flaw rendering interpretation speculative.

RESPONSE: The main purpose of interaction term was to construct and test contrast pertinent to arm-specific pre-post effect using sex-specific entire sample. This point is now addressed on page 12. In addition, due to relative small complete sample size, our study is underpowered for testing appreciable interaction effect on binary or continuous weight outcome.

6. Reliability and validity estimates are not provided for behavior measures, or other measured constructs. The nutrition and physical activity measures are imprecise and limitations of such measures are not discussed in discussion section.
RESPONSE: We have now cited a paper (ref #26, Brener et al, 2003) which examined reliability and validity of the YRBS questionnaire items on page 10. We also discussed this limitation on page 17.

7. It is unclear how, for HealthCorps obese girls, the percentage measured as obese increased from 12.7% to 13.1% pre to post, while BMI z-score decreased from 1.98 to 1.74. This is likely due to small sample size (n=33). This deserves discussion.

RESPONSE: This point was also raised by the second reviewer. It is due to a scaling difference between continuous and dichotomous scales. We addressed this point on page 13.

7. Given the method flaws, the written interpretations are not reliable.

RESPONSE: We have now clarified issues that might have deemed to be methodological flaws. Please see above our response to all raised points. Limitation section also addressed considerations that should be taken into account for interpretations of our study findings. However, our study reproduced findings from a prior study and thus they are reliable, while new findings may need to be replicated in a future study.

Julie M. Metos (Reviewer 2): Review: BMC Pediatrics

Effective nationwide school-base participatory extramural program on adolescent body mass index, health knowledge and behaviors.

Overall, this is an important paper to publish because it evaluates a potentially cost-effective obesity prevention program for adolescents. The use of Health Corps is innovative and allows for a population-based approach that reaches all adolescents regardless of weight status. Given that the focus of the program is not specifically weight loss, it is impressive that significance in BMI z-score reduction was detected, and this is somewhat encouraging, despite it being self-reported and of questionable clinical significance. Further, it is important to publish such findings to establish that programs with many overall health aims, while important, may not result in dramatic changes in biology such as weight, over a short time period such as a year. The methods of the study are solid for a school-based intervention in real-time, and the conclusions are appropriate. The modest changes in knowledge, behavior and BMI z-score found in this study are typical and the authors raise good questions about how the field can move forward to effect substantial change. I have the following suggestions:

1. Line 7: Indent

RESPONSE: Indents are made at the beginning of the paragraphs throughout the manuscript.
2. Line 6-12: This sentence needs reworking. Perhaps break into 2 sentences and address other health status issues besides mortality that are more immediate for adolescents in the first sentence.

RESPONSE: We have now re-worked this sentence on page 5.

3. Page 12-line 31. In the methods, one-two sentences on BMIz-score and why you used it.

RESPONSE: BMIz-score is relevant for measuring longitudinal change of pediatric adiposity (page 9).

4. Page 13, line 37-39. Address that there were no changes in the overall percentages in the Discussion. What's your interpretation of this?

RESPONSE: This finding is due to the scale changes from the continuous BMI z-score to dichotomous obesity status. We addressed this point on page 13.

5. Page 15, lines 23-26. It seems like an overstatement, since knowledge scores increased by 1 point overall. Yes, they increased, but is 1 point relevant considering the time and energy put into the program?

RESPONSE: The knowledge increase was not a sole focus of the program. It is rather a byproduct of the program. Nevertheless, the knowledge level was increased in all domains. We addressed this point on page 15.

6. Page 15, lines 33-39: I am not sure what your point is here. Needs re-wording. Like the following connection of mental resilience in the context of obesity prevention and the construct of GRIT, but not sure about your connection with the Dietary Guidelines.

RESPONSE: We have clarified this point on page 16 as the Dietary Guidelines emphasize physical activities and healthy dietary patterns.

7. Like your suggestions for future implementation that takes into account factors that moderate treatment effects. Also like connection to school-district wellness policies.

RESPONSE: Thanks.

8. I understand the limitations in collecting heights and weights. Can you add a reference that supports the accuracy of adolescent weight reporting?
RESPONSE: We have now cited a paper (ref #34, Perez et al, 2015) supporting the reliability of adolescent weight reporting on page 17.

9. Any further thought on why you and Planet Health researchers find differences in girls and not boys? Patterns of growth in adolescence that vary by sex, social pressure, readiness to change, more/less receptive to program content?

RESPONSE: This point is indeed perplexing. We do not have solid explanation with our data. However, your suggestions are well taken and we incorporated them in the manuscript on page 15.

10. Page 18, lines 14-17: This is the first time that academic and other challenge in urban inner city high schools has come up. Suggest addressing it in Background or Discussion for context.

RESPONSE: Yes, HealthCorps was the first program of its kind that was implemented in NYC high schools with intense and challenging urban inner city environments. We stated this point on page 6 in the introduction.