Reviewer’s report

Title: The effect of youths as change agents on cardiovascular disease risk factors among adult neighbours: a cluster randomised controlled trial in Sri Lanka

Version: 1 Date: 29 Jan 2019

Reviewer: Bosco Rowland

Reviewer's report:

Thank you for the opportunity to review this manuscript. It is good to see that there are efforts to implement an RCT at a community level, on these important outcomes in Sri Lanka. I have outlined some issues which are critical to the clarity and interpretation of the manuscript. Currently it is not clear and there is insufficient information indicating that the trial was implemented consistently and with fidelity across the sites. Other comments are also described below.

Abstract:

Line 36 it is not clear what "material difference" means, and whether this helps with clarity.

Indicate in the results what are primary (BMI weight) and secondary outcomes (e.g. fruit servings)

Line 64: sentence beginning with "Besides" does not seem to link well with preceding and following question. The sentence is not clear.

Line 64: the use of the term "health promotions" is irregular.

Line 74: the phrase "health of community adults" is not clear.

Introduction:

The end of the introduction indicates that the study investigated the effect of "change agents" on youth body weight and blood pressure. The idea of a change agents has not been introduced very well in the introduction to substantiate this as the rationale for the study. I would suggest developing the evidence for this in the introduction. Perhaps even state explicitly what the primary outcomes are, and maybe even secondary if sufficient space the secondary outcomes. This would help link with the title of the paper, which is changes in risk factors. The primary and secondary outcomes are all risk factors.
It may be helpful to introduce a hypothesis or hypotheses at the end of the introduction.

Study design:
More explicit information is needed on how randomisation was done (e.g. number generator, and the person was blind to allocation etc.)

Intervention:
The intervention needs more detail. Line 120-121 indicates that the intervention was based on "our theory driven experience of several years (9)". This is not sufficient justification for the intervention and needs greater support. Currently it is not clear what the "intervention logic" is; how youth are trained; what mechanisms/processes are used by the youths to ensure consistency and fidelity of intervention delivery. The researchers and the readers need to know whether intervention components were delivered as designed/intended. What is the dosage of the different components? Is it the same? Has this been measured? Why and what is the rationale for communities not receiving the same intervention? Evidence for this issues need to be presented. This is critical if the results are to be interpreted as an RCT.

Line 124 uses the term "unhealthy lifestyle behaviours. This is inconsistent with the term "risk factors" used throughout the manuscript. I would suggest using the one description.

Line 179 the Acronym METs has been used but has not been defined.

Line 191 USA drinking guidelines used. Does Sri Lanka have and drinking guidelines? If not justify why using USA and not another countries guidelines.

Statistical analysis:
It is not clear whether the data is repeated cross-sectional or the same people in pre and post measures. This needs to be made explicit.

If it is the same person pre and post, individuals are nested within themselves and need to be modelled this way.

If repeat cross-section a GEE analysis would seem the way to manage the analysis.

Should the intervention effect be interpreted as adjusting for baseline measures or with a intervention#time interaction?
How these issues/decisions have been managed need to be made explicit. I would advise checking with a statistician about the way the data has been managed/analysed.

Results

I am not clear on how the mean differences presented in Table 2 have been calculated from the regression analyses.

The table (Table 2) could be improved. As different metrics are use in the columns it can be confusing to read. Can a subscript be used to indicate to the reader whether the number is using mean, IQR or percentage? Indicate in the footnote what a positive and negative number means. Adequate drinks is an unusual description. As there is no safe level of alcohol, I would suggest this change to low risk drinking level.

I would recommend the text reports explicitly the primary and secondary outcomes.

Discussion:

Generally fine. It could be improved in discussing how the findings could be applied and systemically scaled up. It could also refer to the ideas I have raised above about the consistency/fidelity of the intervention delivery. The issues around dosage could also be raised.

**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?**
If not, please explain in your comments to the authors.

No
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 recommend additional statistical review

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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