Reviewer’s report

Title: A feasibility study of ‘The StepSmart Challenge’ to promote physical activity in adolescents

Version: 0 Date: 08 May 2019

Reviewer: Abdulaziz Farooq

Reviewer's report:

Thank you for the opportunity to review the manuscript. Overall it is an excellent design and wish you all the best for the main study.

'The StepSmart Challenge': A feasibility cluster randomised trial of a gamified intervention to promote adolescent physical activity

I think the title of the paper could improve.

Instead of feasibility of the trial, it could be feasibility of intervention… or feasibility of StepSmart Challenge.

Is it to promote PA or increase PA. What is the main outcome of the study?

Abstract:

Results: 52 weeks or 12 months? Be consistent

Instead of MVPA data, add unit like (min/day or %of MVPA per day etc). min/d is best choice.

Not receiving valid follow up accelerometer is common issue of longitudinal studies. So maybe conclusion could be focused on other issues.

Line 40, you introduce T0 here. Perhaps use same word 'baseline' used earlier.

Page 4.: Line 54:

Schools were asked to identify classes (classes could have been selected randomly).
Page 4.: Line 57: "to try to recruit" the word try gives a suggestion that this was often not always the case. Recruitment did not go as planned.

Methods:

Page 4. Line 31.: Immediately after Methods subheading, before Recruitment, add a paragraph about study design. Also Methods and Recruitment seems to be heading of same level. Because same font size and style used. You could rename Recruitment of Schools.

Page 4. Line 41: "aimed to include mix of schools…. From above it seems the study aimed to include mix of school (co-ed or single sex) (affluent or deprived) etc. but how was it possible to achieve this with 5 schools. If initially only 5 schools were possible due to limited resources, why does randomize by many criteria. All intervention schools were for example single sex schools. My understanding is that you cannot have first five schools who responded and also have a randomization process. It cannot be convenient sampling as well as randomized at the same time.

Page 4. Line 36: It would be useful to understand why only schools that were previously engaged in research projects were selected. To get a quick positive response?

Page 4. Line 52. You could label this as Participants instead of Adolescents. Instead of schools asked to identify it would have been appropriate if this was selected randomly by researcher from list of available Year 9 classes. Also out of curiosity, why is year 9 have children age 12? Although it is possible but might be too young to be in year 9.

Line 58: Perceived physical activity behavior. Adding this in the selection criteria may lead to some bias. And how could the teaching staff judge this based on class, but based on student it is possible. The idea of the feasibility study should have been to identify such potential conflicts rather than teacher assessment. Also there is no mention of how the teacher could have assessed this.

Page 5.

Line 12. They had not provided consent. Please change this to assent and for parents use the keyword "written consent".

Line 15. Instead of Intervention group, just Intervention.
Line 24. The duration of each phase is mentioned here. It would be great if this is also mentioned in Table 1.

I think more information needs to added here to the Intervention paragraph. Like the participants were made aware of the challenges or competition. If so by which method, how was it announced. There is more information available in Table 1 that could be added here.

Line 36: Ethical approval… this could move another appropriate location.

Line 41: Controls

I am confused here a bit. Did the controls get the pedometers Fitbit Zip? I assume they got the pedometers but not challenge or competition or incentives. No gamification. Some clarifications are needed here.

Outcome measures:

Line 49: Please delete (Aims 1 and 2)

Line 52. Please delete "Retention of schools and participants" the information that follows in brackets is sufficient.

Line 57. Proposed outcome measures. Delete (Aim 3)

Instead of referring to Table 2. The physical activity was assessed using accelerometer and MVPA was defined using cutoffs as referenced. This information needs to be added and described in detail here. Just move the content of Table 2 "mode of completion" here. As for the questionnaires, a general statement of how it was administered will be sufficient.

Also clarify whether teacher administered the SDQ questionnaire for all students one on one?

Page 6.

Line 19. This section describes the qualitative methods using focus groups. More clarification is needed about (n=5) before randomization and repeated 3 more times. Is the same participants invited again? And if it was repeated was it repeated at T1 and T2 etc. This is not clear and requires careful attention. To be clear, mention that the participants included only adolescents. Of course teachers were also included in a separate focus group at the end of intervention period.

Line 41. And Line 46. Sub headings could be deleted and paragraphs could be merged. Was this also transcribed and analyzed? It's not mentioned here.
The sample size calculation is not mentioned anywhere in methods. In feasibility study it is important to understand how target sample size can be achieved. Is it feasible to recruit such a sample and how long or how easy it is.

Page 7.

Line 28. By agreed you mean provided written informed consent.

Some more results could be presented and analyzed, especially given that this is a feasibility study.

1. Average time taken to complete SDQ
2. Average time taken to complete WEMWBS
3. No of staff needed and no of days needed to achieve the respective sample size of completed questionnaires.
4. Issues faced during the data collection.
5. 84% provided valid data at baseline and 57.2% at 12 months. The results section need to mention why these cases were considered invalid.
6. For example, average hours per day < 8 in how many days. How many children.
7. No of Children who provided less than 3 days of valid weartime data. Factors associated with this. (age, sex, or other information).
8. How much time and days were used to download and process accelerometer data. No of staff involved in data collection and analysis with pedometers.

Given that this is a feasibility study, above information in results can assist future researchers in the same are.

Figure 2.

The flow chart shows Left arm allocated to intervention (n=3) and right arm allocated to intervention also.

I am sure one of these arms are controls based on Table 1.
The flow chart can be improved. Instead of "n" used for number of participants It is also used for number of schools. And interchangeably, so it can be confusing to some.

From discussion, the paper read smoothly.

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None

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