Reviewer’s report

Title: SKIP (Supporting Kids with diabetes In Physical activity): Feasibility of a randomised controlled trial of a digital intervention for 9-12 year olds with type 1 diabetes mellitus.

Version: 0 Date: 15 Oct 2018

Reviewer: Frida Sundberg

Reviewer’s report:

Dear Authors,

the manuscript includes the important reporting of the negative finding that an intervention aimed at increasing physical activity in children with T1DM did not work. Publishing this kind of negative findings is important in order to avoid unnecessary repetition of failed interventions and the conclusion of the study is in line with the reported findings. However, I do not conclude that this paper is ready for publication.

It is for me, unclear what the focus is of the manuscript. It reports different kinds of outcomes, both quantitative and qualitative analyses. They can be combined in the same report if the aim is obvious and the paper is easy to follow. This is currently not the case. There are too many competing questions in the report confusing me as a reader. Maybe a more clear focus could benefit the reader.

Since this is a manuscript intended for BMC public health the first question is whether the paper fits into the journal. Treatment of T1DM is not a part of public health even of the explored intervention part is physical activity.

The abstract reflects the content of the manuscript.

Line 89; introducing the broader age group "children and young people (CYP)" when the study exclusively includes children aged 9-12 years is unnecessary and confusing. This paper is about children not adolescents or young adults. The discussion on sharing of treatment responsibilities with parents is not in the scope of this paper and contributes to the confusion.

Using "diabetics" as a noun (line 94) is abandoned by most journals.

The statement that interventions must be "inexpensive" (line 98) is provocative. Cost effective might be easier to understand?

The general statement of "CYP" using technology (line 101) is rather vague with reference to the young age group children 9-12 years.

Line 118; East Midlands NHS University Hospitals. For a foreign reader, please add nationality. UK I assume?
Line 125: It could have been more appropriate to refer to study participants as children or study participants rather than patients.

Line 130: The sentence "Written Participants completed questionnaires... " was hard for me to follow.

Line 132: The description "a Polar Active physical activity wristwatch" is too vague to be part of a methods description. Model, brand, manufacturer, manufacturing country. A short description whether it was blinded or provided feedback to the user would be helpful.

Line 141: "a questionnaire" on what?

Line 167: Whom did the interviews? One interviewer or more? What was the relation between the interviewer and the informant? Where and under what circumstances were the interviews performed?

Line 173: "Body composition" - what measurements were used?

Line 187: What does the sentence "total usual care score was similar between sites..." mean?

Line 189+191: The abbreviations NUH and UHL are introduced without explanation.

In the qualitative analysis, the question of attitude to research overall (line 283) does not contribute to the reading of the paper.

Several questionnaires were used and results reported in the tables. Most of this data was not reflected in the discussion. It could be possible to either reduce the uncommented data or to deepen the discussion on the data on severeal aspects as fear of hypo, perceived health and so on.

Table 2: There are unexplained abbreviations in the headers of "INT" (intervention group?) and abbreviated names of questionnaires. Each table should be possible to read and understand separately. There is too much data in the table. Data that is not reflected in the discussion might be regarded as redundant. Which findings are regarded as important enough to report? And there are no information in the tables on what differences that are significant.

Table 3: It might be more appropriate to report BMI SDS (Z-scores) rather than raw BMI as it changes with age and onset of puberty. There is no information on Tanner Staging. The information on insulin delivery is confusing: MDI:pump:pen is not the normal categories. MDI vs pump would be a more common description. Does "self-monitoring" refer to capillary glucose monitoring by "finger-pricking"? What does parent "without qualifications" mean? Level of school/professional education? Is it necessary for the understanding of the manuscript to know all these steps of incomes or would it be possible to cluster data to reduce redundant information not commented on in the discussion? Is the information necessary overall?

Table 3: Percentage data is presented with a very uneven level of certainty "100.0%" "98%" "87.8%". It is a bit confusing.
Table 5; too much data. What is necessary and what is redundant? It is unsatisfactory to have data on delta (changes), please give absolute numbers instead. HbA1c should be presented both as % and mmol/mol in accordance with international agreements. Insulin doses could have been presented as U/kg but is hard to interpret in this age group due to onset of puberty. What to you mean with "HbA1c aim low/high accuracy"? There are unexplained abbreviations in the table as HFS do. The table need to be possible to read alone.

**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.

Unable to assess

**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

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Acceptable

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