**Reviewer’s report**

**Title:** Effectiveness of diabetes self-management education via a smartphone application in insulin treated type 2 diabetes patients. Design of a randomised controlled trial ('TRIGGER study').

**Version:** 0  **Date:** 11 Jun 2018

**Reviewer:** Astrid Torbjørnsen

**Reviewer’s report:**

The authors seems to have planned their study well, and in general, the manuscript gives a systematic and understandable presentation of the study.

1. Consider to delete the "(cost)" in the aims as HbA1c is primary outcome and cost only part of the secondary outcomes.

2. Consider to make clear that you wrote the background according to study start in 2015, or add an update as there are a considerably amount of relevant evidence from the years after 2015.

3. There is an inconsequence in the manuscript due to presentation of HbA1c level between >53 mmol/mol (>7%) and the opposite ≤7% (≤53 mmol/mol). A consequent order would ease the reading.

4. The manuscript does not describe demographic and clinical variables other than randomly. As an example, do the variables include socio-economic status and frequency of attending health services mentioned in the discussion?

5. Please explain why the T9 follow-up does not include the control group, as the measurement is relevant for all three groups (continuers, discontinuers and control).

6. It is not clear what discontinued use of the app after 6 months means, is it the patients that did not actively prolong the intervention, or in addition those who prolonged, but did not read the messages?

7. Line 280 and 281 describe, "The messages do not contain any personal information and logging data are anonymized". Still, some of the messages indicates that the receiver possibly may have hypoglycemic events and uses insulin. The manuscript presents the messages as unidirectional; please elaborate what the logging data refers to - the app messages, the push messages or other? How are they anonymized?

8. The participants receive patient diaries at the start of the study. Is this a traditionally paper diary, or is it digital, integrated in the app and part of the log data?
9. In the discussion, use of other apps is a theme. This is interesting and use of other apps can contaminate the findings. The manuscript argue that both the intervention and the control group are able to use other diabetes apps, but there is a risk for developing differences between the groups due to the nature of the study. It would be interesting to read some further discussion due to this issue. Does the study survey use of other apps?

10. In Table 3, all the references are offset (wrong numbers).

11. The questionnaire "Satisfaction and usability of the app" is a newly developed questionnaire and lack a reference. Do the researchers develop the questionnaire for this particular study? It will be interesting to read the authors reflections of their choices due to the few validated app satisfaction questionnaires.

12. Consider to turn Figure 1 as it is less intuitive to read a flowchart from the bottom.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**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.

Yes

**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 am able to assess the statistics

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

Acceptable

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