Reviewer's report

Title: Integrating Mobile health and Physical Activity to reduce the burden of Chronic low back pain Trial (IMPACT): a pilot trial protocol

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Reviewer: Iben Axén

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Integrating mobile health and physical activity to reduce the burden of chronic low back pain trial (IMPACT): a pilot trial protocol.

In general, I think it is an interesting study, utilizing modern technology that is likely to be important for future health promoting and preventive strategies. However, the aim, objectives and procedures need some clarification.

Major compulsory revisions:

Background: There is a lack of information concerning the normal clinical course of LBP. In fact, we know that most LBP runs a recurrent or persistent course through life, and that full recovery is unlikely. See the work of Dunn, Kongsted, Macedo, Downie, and Chen. The problem is rather that patients and clinicians may not be aware of this, and work according to the hypothesis that the pain will be cured. This results in the following questions:

- Will your booklet also contain information regarding the nature of LBP?
- Will your subjects’ individual goals be set with this in mind?

I am not sure about your statement that patient disappointment with LBP flare-ups leads to costly, invasive procedures. The reference you provide to support that statement (reference 5) is not a study designed to test that. Rather, the main economic burden from chronic LBP stems from sickness absence and productivity loss. There are numerous research articles that have studied costs, see for instance Woolf, Gustavsson, Juniper and Dagenais.

Methods: I am not clear on who your target group of patients is. You state that they have been discharged from physiotherapy. Does that mean that they are considered well or that they are “hopeless” cases? Further, as the economic burden of LBP is associated with sickness absence, are these patients sick-listed or working? Are you going to measure this variable in the study?

I welcome a clearer description of the IMPACT WebApp. Apparently, it is not yet built, and it is important to have users’ input into the design and user-friendliness of such a product. It is not clear to me if participants access the App at their own leisure, or if the App has a system of reminding and asking for information. (For instance, the weekly NRS and RDQ measures.) The difference in compliance and the success of the intervention could rely heavily on the amount of data entered via the App, and the ability of the system to respond, prompt and remind.

Please describe how the outcomes will be collected. Weekly measurements will
be collected electronically, but through what system? Secondary outcomes are not mentioned concerning mode (paper, interview, electronically) nor system. You also mention diaries/calendars – is this in paper form to be filled in also, aside from the App information? Finally, are the interviews individual or group interviews?

Discussion: You use some terms that I think should be introduced already in the background: first, you mention “prevention of clinical decline and recurrence”. I think this is really your aim, to minimise deterioration (tertiary prevention) and recurrence (secondary prevention). These fit well with my suggestion above to talk about the persistent and recurrent clinical course of LBP. Second, you state that the aim is to empower patients, which you did not mention in the background. I think this is also a consequence of learning to deal with a condition that is life-long.

Minor essential revisions:
Title: I think it is unfortunate to use the abbreviation IMPACT, as this may easily be confused with that of the IMMPACT recommendations of reporting outcomes from clinical trials.

Background: I think there is an implicit (as you are gathering information about BMI) as well as an explicit association (reference 6) between obesity and LBP in the text, which I am not sure is evidence-based. In the referenced report by the WHO, they are not connecting the two. A reference should thus be provided to support this association.

Methods: The patient-centred physical activity plan is somewhat confused with “healthier lifestyle”, these are not the same. You also state that you will encourage a gradual increase in physical activity. This presumes that the level is already low, or that it is always possible to increase. There should be a target level (evidence-based) incorporated into the individual goals.

The manpower needed to run the system is not well described. If participants are to receive feedback and even contact their coach, it is not clear to me what their level of engagement will be. Will it be possible to communicate during normal working hours only? Will the coaches be able to make contact with a participant that is clearly “off course”? Will this require manual surveillance or will features like this be built into the system?

Discussion: Finally, I wonder if you are going to look at costs. It would be interesting to look at development costs for the App (and later: costs for updating), and the costs of coaches previously mentioned.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests.