Author’s response to reviews

Title: First steps in designing an all-in-one ICT-based device for persons with cognitive impairment. Evaluation of the first mock-up

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Author’s response to reviews:

Answer to reviewer 1. Thank you very much for your comments and very useful suggestions how to enhance the clarity of our manuscript. Please see our answers inserted after your comments. We have highlighted (yellow) all changes in the manuscript.

1. The proposed device might be useful for patients with cognitive impairments; however, the authors should demonstrate what problems must first be resolved for the target patients.

   Answer: In the paragraph “Background” (please see page 4-6) it is described what problems that must be resolved in order to support people with cognitive impairment to be more independent. Persons with cognitive impairment might need time-cued reminders to keep track of activities and appointments and to remember to take their medication. They might also need event-cued reminders to keep track of equipment in their home environment. Moreover, they might need easy-to-use video communication solution to maintain social interaction. Furthermore, they often need help from their significant others and formal caregivers.

   Therefore, the “SALIG++ all-in-one device was developed to support persons with cognitive impairment in keeping track of appointments, activities and equipment in their home environment, in remembering to take medication, in facilitating communication and in receiving help if needed”(please see page 8).

   Table 3 describes the participants’ requirements of the functionalities. Based on this result and the comprehensive and valuable information regarding the design of the device
further work will focus on developing a prototype to be empirically tested by people with cognitive impairment and their significant others.

2. For evaluating the functions of a proposed device, the authors should describe the evaluation design in more detail in the method section.

    Answer: We have described the evaluation design more in detail on page 8-9. The evaluation procedure is described in a separate paragraph. Please, see page 8-9.

3. What kind of hardware device was used?

    Answer: The mock-up was demonstrated in an Ipad (Please see page 8)

4. What were the eligibility criteria?

    Answer: We have described the inclusion and exclusion criteria on page 8-9 for all participants. (Please see page 8-9)

5. How long was the proposed device examined?

    Answer: The evaluation session lasted between 45-60 minutes (described on page 9)

6. How did the authors validate the evaluation comments?

    Answer: We have included a new sentence on page 9 (please see below).

    “The emerging findings were critically examined throughout the process by the second and last author in order to check the relevance and validity of the findings.”
7. For evaluating the design of this type of system, a usability test should be employed.

    Answer: This was the first mock-up of the device and unfortunately the mock-up was very rudimentary. Therefore, it was not possible for the participants to use the mock-up to perform tasks. In a forthcoming study we will develop a prototype that will be tested by persons with cognitive impairment and their significant others. In this study we will use a usability test.

8. Figure 2 should be shown more clearly.

    Answer. The image of the eight functionalities that were included in the mock-up is a screenshot. If the quality of the image is not good enough I suggest that we remove figure 2.

Reviewer #2: Thank you for your submission. Your manuscript is so interesting study of information technology field. It is so unique to research the development process of all-in-one device for persons with cognitive impairment. There are a few checkpoints as follows.

Answer to reviewer 2. Thank you very much for your comments and very useful suggestions how to improve the manuscript. Please see our answers inserted after your comments. We have highlighted (yellow) all changes in the manuscript.
Page 8 participant and procedure:

1. I did not recognize sampling method of participants.

   Answer: We have used a theoretical sampling inspired by the principles of grounded theory. 
   Please see page 7, paragraph Design.

2. How did you select the participants?

   Answer: The persons with cognitive impairment and significant others to persons with cognitive impairment and health care professionals (nurses and occupational therapists) were recruited through a rehabilitation unit and a geriatric clinic in Stockholm (please see page 8).

2. There were not exclusion criteria.

   Answer: We have described the exclusion criteria on page 8-9 for the participants. (Please see page 8-9)

3. I suppose to describe sampling process more in detail.

   Answer: We have described the sampling process more in detail in the paragraph “Participants”.

   Please see page 8-9.

4. If this device is supposed to use in daily home life. Was it appropriate to interview with stroke patients in rehabilitation unit?

   Answer: The patients in this study were discharged from the in-patient ward. They lived at home and participated in an out-patient cognitive rehabilitation programme 2-3 times a week.
5. Are there enough only two persons with cognitive impairment to interview?

Answer: We only included two persons with cognitive impairment as the mock-up was not fully developed. On page 10 “Results” we state that the mock-up was too abstract and rudimentary to be evaluated by persons with cognitive impairment. In the Discussion section limitations we have explained why we only included only 2 patients.

6. Are there enough only one significant other to interview?

Answer: After each evaluation session we have anlysed the material and discussed issues that we thought should be brought up in the next interviews in order to capture issues that had not previously been addressed.

We first turned to nine health care professionals working with persons with cognitive impairment as it is recommended in the literature. In this study OTs were included as they have valuable knowledge of the topic since they play a central role in prescribing assistive technology for cognition. Nurses were also invited as they were believed to add increased knowledge about the functionalities “Pillbox” and “Care Plan” and how they could be designed to match the end-users needs and requirements.

In the next step we included two patients with cognitive impairment and one significant others.

After 12 interviews the material was considered to be rich enough to shed light upon how to improve the design and functionalities of the device and no further participants were recruited. Please see page 9 (Paragraph Procedure and Data analysis)

Table 1:

7. It is better to show not median but each age of two stroke patients and one significant others.

Answer: We have removed median age and inserted each patient’s age in Table 1.

8. By using numeric scale such as MMSE, is it possible to show level of cognitive impairment?
Answer: The patients in this study participated in cognitive rehabilitation in out-patient rehabilitation clinic. However, we did not have access to their medical records.

9. There were not mean age and standard deviation of health care professionals.

Answer: We have inserted age, median, range and standard deviation of health care professionals.

10. How many years did health care professionals has job career?

Answer: We have inserted the health care professionals’ experience, median, range standard deviation, years of health care professionals

Table 3:

11. There were not numeric data in table 3.

Answer: In this study we have used a qualitative design. An inductive analysis was used since the aim of the study was to examine how the design and functionalities of the mock-up could meet the needs and requirements of persons with cognitive impairment. An inductive approach is recommended in the literature when there is not enough knowledge about a phenomenon (Elo & Kyngäs, 2007).

12. How many participants did it show each agreement for individual icon functionalities?

Answer: Please see our answers above. The participants agreed that all functionalities could be useful for persons with cognitive impairment. However, surprisingly, the functionality “Care plan” was considered less important. Please see the Results page 10-13.
Reference: