Reviewer’s report

Title: Multi-part Quality Evaluation of a Customized Mobile Application for Monitoring Elderly Patients with Functional Loss and Helping Caregivers

Version: 1 Date: 23 Dec 2018

Reviewer: Gaby Anne Wildenbos

Reviewer’s report:

Thank you for the opportunity to review this manuscript. The research presented here is regarding a timely and interesting subject. The authors present the results of the preliminary use/feasibility to implement a mobile health tool aimed at strengthening care giver and health care professional communication in the care for dementia patients. The strength of the research is a robust foundation in several evaluation moments with multiple target groups of evaluators as well as the reporting on adjustments made in the care processes to align with the tool. The weaknesses include the variety in the structure of the manuscript and (limited reporting on) theoretical background of methods used during the various evaluation moments.

Major comments

Introduction

The argument made in line 59-62 could be made more concrete or stronger in my opinion. Increasingly reviews are performed on mobile health applications' use. Why is the review from Mosa et al chosen? In literature on this topic it is often mentioned that the interaction between patients (including caregivers) and health professionals is important. What is the specific difference in this interaction when it comes to caregiver communication? Do they require a different communication approach then patients?

The goal of the paper could be specified. "Representing the experience of developing …" is quite vague, whereas the steps of the development, refining and evaluation performed are vast. I think with a more specific description of the goal and the importance of this research the paper might better represent the research performed.

Methods / Results

The methods section provide little information on which theoretical background is used in testing/ how the tests are performed. Are their tasks that the users needed to perform? Which attributes of usage were measured? How were the measurements analyzed? Etc.

In the results it is often described how the research is performed, whereas I think that could better be placed at the methods sections. In my opinion, the first sentences per paragraph in the
results are sentences that belong in the methods section. Examples are: p5, line 37 to 49 and p5 the section of 'clinical qualitative evaluation'. Yet, in several other lines at the results section this can be changed as well. By placing the 'how' at the methods and the outcomes of the evaluation moments at the results, the readability of the manuscript will increase. The outcomes can also be made more concrete. For example, on p 5 in the second column, the authors say: 'some interface panels were improved in the new prototype. It would be better to have concrete examples of changed elements in the interfaces.

Discussion:

The authors say that many improvements could be made because of feedback from the caregivers. As a reader I would appreciate to see the amount of changes here (based on the data given in the results). For example, x-changes from prototype 1 to 2, y-changes from prototype 2 to 3 etc. It further remains unclear if these improvements were major or minor improvements. Would they comprise patient-safety if not improved? Perhaps there can be a categorization of issues found and improvements made. The examples given in the second and third paragraph of 'preliminary assessments' are very illustrative and interesting.

Minor comments

Abstract:

The abstract of the paper can be improved aligned with changes in structure in the paper to make the strengths of the paper more visible / recognizable in the abstract.

Introduction:

In the current introduction it seems as if the creation of the tool was mainly co-created by computer science and health teams. This poses the question: Were caregivers themselves also involved during the co-design process? I would assume that they would also be consulted in this process since they are a main end-users. In the paper (fig 1 for example) it becomes apparent that the caregivers evaluated / are involved from prototype 3 onwards. The manuscript could be strengthened by explaining the caregivers' involvement in the introduction.

Methods:

Design guidelines: were existing design guidelines (on designing mobile healthcare applications and mobile applications in general) examined? If so, which ones? If not, is there an explanation for this?

**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.

Unable to assess

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?
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