Author's response to reviews

Title: Development and feasibility of an automated call monitoring intervention for older wheelchair users: the MOvIT project

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Author's response to reviews: see over
**Comments reviewer 1**

The paper is extremely well written and on an important topic. The use of IVRS for this clearly has merit.

Discretionary Revision

- Line 341 describes the % of people who did not find the calls related to duration, clarity or speed. I was surprised at how low the % were, all things considered. For example only 61.4% found that the calls were not too long, suggesting ~39% believed they were too long. I would be helpful to the reader to know if there are benchmark rates that should be considered for other similar calling approaches.

We modified line 341 to include the neutral statement in the non-problematic category, to better represent the data presented in Table 3. Unfortunately, there are no benchmark to compare our results. To our knowledge, this is the first study that uses qualitative interviews to assess the perception of automated calls with respect to duration, clarity and speed.

**MODIFICATION : (line 373-376)**

The automated call was not problematic for a majority of participants with respect to call duration (n=48; 73.8%), clarity (n=55; 84.7%), and speed (n=51; 78.5%).

When probed about call duration, some participants mentioned that the call was a little long or too long (n=17; 26.2%), while others (n=5; 7.7%) felt that the slower pace of the dialogue caused this impression.

**Responses**

Level of interest: An exceptional article

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

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

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**Comments reviewer 2**

1. This is an interesting topic, of relevance to BMC Health Services Research.
2. The paper is generally well written, but there’s more jargon than necessary. I would prefer more plain
language.
3. The overall concept is sound, namely that putting in place a plan to follow-up with someone who has newly received a wheelchair nicely complements any client-initiated follow-up communications. The notion that this follow-up contact be done by telephone also makes sense. However, going the next step, namely to automate the calls and responses is based on the assumption that this will result in a cost-saving by reducing the time spent by health-care personnel. The issue of cost is not, however, dealt with in this paper although it would have seemed to be an obvious consideration when looking at feasibility.
4. Although there are 68 references, the scope of the study with respect to the variety of adverse incidents makes it difficult to provide a thorough literature review for all of them. Although it is understandable that the authors were required to be selective in providing representative references, it seems as though the titles of the paper cited do not always correspond well with the content of the sentence to which the reference is appended.

Specific comments
5. Lines 2-3, title: It is not clear from the title alone what it is that the investigators were monitoring.


7. Lines 28-29: The MOvIT acronym is defined here, but it appears to be a misnomer. Given that the outcomes looked for were not mobility outcomes but rather adverse outcomes associated with wheelchair use.

8. Line 35: Is not clear from the abstract alone that the automated calls were using the telephone.

MODIFICATION (line 29)
The purpose of the Mobility Outcomes...
via Information Technologies (MOvIT) project is to examine the feasibility of automated calls for the systematic monitoring for adverse outcomes associated with wheelchair use.

9. Lines 43-46: These 9 problem areas are not entirely clear from the abstract alone.

We removed the 9 problems from the abstract to avoid any confusion.

MODIFICATION (line 43)
The MOvIT monitoring questionnaire developed in phase I tracks nine potential wheelchair-related adverse outcomes considered important for end-users: 1) non-use of wheelchair, 2) pain, 3) skin problems, 4) positioning problems, 5) wheelchair incidents, 6) psychosocial issues, 7) restricted wheelchair participation, 8) limited wheelchair skills and knowledge, and 9) technical problems.

10. Lines 47-51: The percentages given are a little unclear without the reader being provided with both the numerator and denominator.

The denominator was added in the abstract.

MODIFICATION (line 44-55)
In phase II, 92 individuals who received a wheelchair were eligible, 71 out of 92 accepted (77%) and 65 out of 71 (92%) completed the 3-month follow-up. In the sample of 65 participants, a wheelchair-related adverse outcome was confirmed by a rehabilitation professional for 58.5%, and at least one recommendation was given to 66.2% during the 3-month monitoring period.

11. Line 61: The content of the sentence refers to a “worldwide” scope but the reference cited is a “national” sample. The estimate of 65 million people worldwide is actually one that comes from the WHO (reference number 4).

The reference of the first sentence was modified for the WHO reference (formely reference 4).

MODIFICATION (line 68)

12. Line 67: Of the pain that wheelchair users report, only subsets of the causes are due to wheelchair use.

pain associated with caused by the WC use
As the authors build their rationale for this study and the automated intervention, it seems as though a missing step is any literature that might exist that suggests that telephone follow-up (in person) is an effective thing to do. The automatic calls would seem to build upon that.

We are not aware of any literature reviews on in person telephone follow-up as a clinical intervention – although telephone interviews are used for data collection for research purposes.

Having developed a questionnaire in the way that the authors did, it is not clear how that questionnaire was programmed in the “IVRS”. Is this a commercially available system?

We added the name of the IVRS service provider.

Each item comprises decision rules programmed by an IVRS service provider (TelAsk) in the IVRS to determine the presence of potential WC-related adverse outcomes.

The order of the two phases of this study is reversed in this paragraph.

We removed one sentence in this paragraph to avoid any confusion.

The outcomes were extracted from literature reviews conducted on
18. Lines 112-114: Here it seems as though the authors have three groups of adverse outcomes whereas 9 were reported in the Abstract (lines 43-46) and the larger number is used later in the feasibility section. Since Table 1 defines adverse outcomes, we removed this sentence to avoid any confusion.

**MODIFICATION (line 130)**
We defined WC-related adverse outcomes as undesirable results (e.g. pain), negative consequences (e.g. restricted WC use) or injuries resulting from WC use.

19. Line 139: The authors do not provide any justification for confining their study to people 50 years of age and older.

**MODIFICATION (line 71-74)**
For example, after 50 years of age the sudden onset of disability presents a higher risk for restriction in social roles [5], and the persistence of restriction for community participation, particularly mobility outside the home, increases with age [6].

20. Line 158: This seems to be inconsistent with line 47 where it is stated that a larger number of participants began the study.

When we addressed comment # 11 above, we clarified that 65 participants were followed. Figure 2 shows the study flow, with 65 participants.

**MODIFICATION (Line 175)**
We administered the same mock version of the questionnaire during the first wave of six interviews, and a revised version iterations for the second wave of six interviews.

21. Lines 189-190: Although it is implied later on in the Results section, the authors might elaborate a little bit on what the automated system does if the person is not home, if there is a busy signal, if there is a recorded message requiring the input of an extension number, etc.

We added the information requested.

**MODIFICATION (line 220-222)**
It would make 2 to 12 attempts over 4 days to reach the participant according to rules for a busy signal, no answer, answering machine, hang-up or partial call.

22. Lines 220-221: It sounds as though there were many iterations but I had understood there were only 2.
23. Line 221: Achieving “saturation” on such a small sample seems unlikely. The modifications during the second wave of interviews were very minor, and the last two interviews did not add any new suggestions. We therefore consider that there was data replication or redundancy because the participants agreed with the changes and did not bring new ideas at that point. We did not use the term saturation in the paper.

24. Line 295: It is unclear what “not shown” means. We removed the mention not shown. MODIFICATION (line 327) (t-test p>0.16; not shown)

25. Line 322: It is not clear from the data provided how the participants “benefited” from the recommendations as distinct from merely receiving recommendations. We changed « benefited from » for « received » MODIFICATION (line 355) We found that 66.2% (n=43) of study participants received benefited from at least one recommendation during the monitoring period.

26. Table 2: The footnote refers to a “ratio” but no ratio is provided in the table. We removed the footnote. MODIFICATION Table 2 (legend) Ratio: Number of WC-related adverse outcomes confirmed by clinical coordinator divided by WC-related adverse outcomes detected by automated call

27. Table 3: I very much liked this combination of qualitative and quantitative data.

28. Figure 1: This algorithm seems a little self-evident with the exception of the optional how-to step. If space is at a premium, Figure 1 could be deleted. We leave this decision up to the editor.