Author’s response to reviews

Title: Health promotion via SMS improves hypertension knowledge for Deaf South Africans. A mixed method study

Authors:

Hanne Haricharan (Hanne.Haricharan@uct.ac.za)

Marion Heap (Marion.Heap@uct.ac.za)

Damian Hacking (damianuct@gmail.com)

Yan Lau (llisalau@gmail.com)

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Author’s response to reviews:

Dear Sir/Madam,

Thank you for your email regarding our revised manuscript. We wish to thank the reviewers for their useful comments. Below is a point-by-point response to these comments.

Reviewer #1: Thank you for the opportunity to review this paper. This paper explores the use of short message service (SMS) to improve the hypertension and pregnancy health knowledge and behaviours for Deaf South Africans. This paper comes at a time where technology is being explored to benefit health communication and outcomes.

This paper finds a niche that is valuable but has not been well explored in mHealth space. I make the following comments for consideration in the review of this paper.
Major comments

1. Overall scope
a. While it is an excellent idea to test the technology with this target group in two different health related conditions, this also limits the detail to allow reproducibility, statement of the purpose and content of the interventions and health related nuances of the different conditions. I wonder if there would be a benefit to splitting the paper into two, using the mixed methodology to fully describe both interventions and results.

Each health related condition has quite different target audiences and thus requires different health related behaviours.

Response: We have followed the first reviewer’s advice and split the paper into two. The paper submitted here focuses on the hypertension intervention.

2. Title
a. The title claiming the motivation of behavior change is a stretch given the methodology and outcome data and requires rewording.

Response: We have followed the reviewer’s advice and changed the title (and the content of the paper) to avoid making claims (not sufficiently born out in the data) regarding the impact on motivation to change behaviour.

3. Aim
a. I wonder if the aims could better reflect the study and methodology. Given the mixed methodology and mixed participant groups the studies may also be viewed as feasibility and acceptability studies.
Response: We have considered the reviewer’s comment and edited the aims of the study in line 143-145. We describe the aim as exploring whether SMSs can improve knowledge about hypertension and healthy living. A secondary aim is described as assessing the acceptability of the campaign. We have removed the aim of impacting on behaviour. Behaviour change emerged as a theme in the qualitative data and is therefore only described in the analysis of the focus groups.

b. The aims are different for the abstract and in the background (line 66) and in the methodology (line 184).

Response: We have made sure that the aims in the abstract, the introduction (line 89-91) and the methods (line 143-145) are the same.

4. Background

a. I wonder if you could build a stronger and more cohesive argument and justification for the studies and maybe include reviews of the following:

* Studies, or lack thereof, where SMS has improved communication for the Deaf even outside health to demonstrate opportunity

* Studies utilising SMS in the hearing population targeting hypertension or pregnancy to show precedence

* Which aspects of hypertension and pregnancy education require improvement and targeting in the Deaf population

Response: We have attempted to build a more cohesive argument and justification for the study (line 89-139). We have emphasised that we did not find any studies on the use of SMSs in health care amongst the Deaf (line 122). We have referenced a study with pre-hypertensive in Latin America, and an evaluation of an SMS-campaign with hypertensive hearing South Africans (line 117-119) to show precedence.
5. Study Population

a. Can you please outline how the participants were approached and recruited including numbers targeted?

Response: We have described how participants were approached and recruited as well as the number targeted in line 160-167. This includes a description of the difficulties accessing the study population (Deaf South Africans).

6. Methodology

a. Please include the aim, focus and description for of each of the interventions. What were the health specific outcomes that you were targeting? Health clinic attendance? Risk of further disease? Behaviour change for which aspects?

Response: We have included the aim, focus and description of the intervention. However, this does not include a focus on specific health outcome as suggested by the reviewer. The reason for this is that the study population was the general Deaf population and not hypertensive patients or people at risk of developing hypertension. The main aim of the study was to assess whether SMSs could improve knowledge in the general Deaf population.

b. It is not clear how or why the stages of change were used in the qualitative analysis. Can you please clarify?

Response: Reference to the stage of change theory has been removed.

c. Could you please clarify how the acceptability and engagement questions were measured in the questionnaire? Were they a likert scale?
d. Could you please clarify how questions with multiple answers were treated?

Response: Measurement of acceptability and engagement questions analysis has been explained in line 181-182 “These questions were multiple choice questions, either with binary answers or multiple answers” and in line 201-204. “For the additional questions about communication preferences and acceptability of the SMSs asked at exit, for both the binary and multiple answer questions, the proportion of respondents indicating each choice is reported.”

e. In the data analysis section was some of the data continuous or categorical? For example, there were limited number of answers that you were asking for such as the poor health outcomes of hypertension.

Response: We have specified in the data analysis paragraph, that questions had either a single correct answer or multiple correct answers (line 192-193), indicating that the quantitative data was categorical.

7. Results

a. Could you please include how many people were approached for recruitment for each study?
Response: It is impossible to say how many people were approached as open public information meetings were conducted.

b. Please review your figures in additional file one and five to exclude people that did not complete the baseline survey earlier?

Response: Additional file 1 (participant diagram) has been changed to exclude participants lost to follow-up early.

c. Was the data available on how many people were and were not hypertensive?

Response: No survey data was available on how many participants were hypertensive. Amongst participants in the focus groups, 1/3 were hypertensive as indicated in line 264.

d. Could you please include the data on the participants that completed the studies in Additional files Two and Six in addition to the baseline sample?

Response: Demographic data was only available for the baseline survey. We had not expected significant loss to follow-up and had therefore surmised that it was not necessary to repeat demographic data. The choice not to repeat the demographic data in the exit questionnaire was also influenced by consideration to the length of the questionnaire. The exit questionnaire was substantially longer than the baseline questionnaire because it included additional acceptability and communication questions.
e. I wonder if data presented in the graphs in Additional Files Four and Seven would be better presented in tables? This would allow presentation of the complete set of questions as well as the total scores. Currently it is difficult to follow and assess the results and conclusions drawn from the data.

Response: We have considered the suggestion of presenting the data in additional file three (four and seven in the original article), but feel that a graphic illustration is the better option.

8. Discussion

a. You have a very long discussion about the theory of staged behaviour change but this needs to relate to the results you have found. In addition did you use this theory to develop your intervention? I am not sure your research was sufficient to identify different people in different stages of change and the movement between stages.

Response: We agree with the reviewer and have removed the description of and use of the theory of staged behaviour.

b. The discussion may benefit from drawing on a couple of key results and comparing them to other research in mHealth and/ or Deaf communication research.

Response: In the discussion, we have drawn on a similar campaign with hearing South Africans (line 354-355) and used this to argue that SMSs may be particular effective with Deaf populations. We discuss the potential for using SMS-campaigns to impact on Deaf people’s health seeking behaviour and make reference to systematic reviews, which found that SMSs have a short term impact on health seeking behaviour amongst hearing with chronic diseases (line 388-399).
c. Can you please suggest areas for further research or practice improvement given your results?

Response: We have suggested further research in line 401-405: “The results of this study are promising and should be explored further. Randomized controlled studies with Deaf populations would provide stronger evidence. Further research focusing on Deaf hypertensive patients would be useful to assess the effect on this target group. Such studies should aim both at improving knowledge and impact on health-seeking behaviour such as diet and exercise. Similar campaigns with other chronic diseases may be equally interesting.” We have suggested practice improvement in line 406-409: “Finally, the results suggest that it would be useful to explore using video-messaging and combining SMS-campaigns with other communication methods, especially an interactive communication service that would enable participants to seek clarification on issues in the campaign and get more detailed information.”

Minor comments

1. Abstract
   a. Line 34. Incomplete sentence

Response: Incomplete sentence has been edited.

2. Background
   a. The background is long and verbose and could be edited to make it more pithy.

Response: The background has been edited and shortened.

   b. Line 150. There are more up to date reviews of mHealth intervention that could be included.

Response: The following more recent (and relevant) reviews of mHealth studies have been included: Hall (2016), a systematic review of reviews (line 112), which found that SMSs were
effective in addressing behaviour change and adherence. Rubinstein (2016), a randomized control trial with pre-hypertensive (line 119), and Leon (2015), a South African study on improving adherence (line 115).

3. Study population

a. The studies described here are targeting a specific population and are very valuable in their own right. I am not sure that you need to compare and justify your recruitment to the previous hearing population studies. Just present your argument for recruitment and feasibility study. It currently sounds like you are apologising for your work.

Response: The comparison to hearing campaigns have been removed as suggested.

4. Results

a. Line 294. There first paragraph in results may not be required for brevity.

Response: The first paragraph has been removed as suggested.

5. Grammar and punctuation

a. SMS plural is most commonly SMSs

Response: The plural form of SMS has been changed to SMSs throughout the paper.
Reviewer #2: The paper 'It's like a learning curve': Health promotion via short message service (SMS) improves health knowledge and motivates behaviour change for signing Deaf South Africans. A mixed method study." is a well-written manuscript addressing an important topic for signing Deaf population health. Despite the good quality of the paper, I have some concern regarding its length. The Authors can consider to split all the information provided in two different articles (maybe one with quantitative and one with qualitative data) or to shorten a bit the results.

Response: Reviewer 2’s concern with the length of the paper has been addressed by splitting the paper into two. We considered both reviewer 1’s suggestion of splitting the paper according to intervention type and reviewer 2’s suggestion of doing one paper on the quantitative results, and another on the qualitative results. We felt that the better option was to write one paper on hypertension and one on pregnancy because the qualitative data can best be understood in the context of the quantitative data as the focus groups explored issues relating to the quantitative results.

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Ethics:

If your study involves humans, human data or animals, then your article should contain an ethics statement which includes the name of the committee that approved your study.

If ethics was not required for your study, then this should be clearly stated and a rationale provided.
Response: An ethics statement is included in line 210-212: “The study was approved by the University of Cape Town’s Health Science Faculty Human Research Ethics Committee (nr 043/2011).”

Consent:

If your article is a prospective study involving human participants then your article should include a statement detailing consent for participation.

If individual clinical data is presented in your article, then you must clarify whether consent for publication of these data was obtained.

Response: A statement detailing consent is included in line 208-210: “Written project information sheets and consent forms were produced in the languages used in Cape Town: English, isiXhosa and Afrikaans. Research assistants who were proficient in SASL took signed consent and ensured that consent was informed and voluntary.” Further, line 164-167 explains how information meetings in sign language assisted in the recruitment process.

Availability of supporting data:

BioMed Central strongly encourages all data sets on which the conclusions of the paper rely be either deposited in publicly available repositories (where available and appropriate) or presented in the main papers or additional supporting files, in machine-readable format whenever possible. Authors must include an Availability of Data and Materials section in their article detailing where the data supporting their findings can be found. The Accession Numbers of any nucleic acid sequences, protein sequences or atomic coordinates cited in the manuscript must be provided and include the corresponding database name.

Response: A section on data availability is include in line 436-437.
Authors Contributions:

Your 'Authors Contributions' section must detail the individual contribution for each individual author listed on your manuscript.

Response: Authors’ contributions are listed in line 451-454.

Please do not hesitate to contact us, should you have any further comments or concerns.

We look forward to hearing from you.

Yours sincerely,

Hanne Jensen Haricharan