

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Telehealth and Patient Satisfaction: A Systematic Review and Narrative Analysis
<b>AUTHORS</b>	Kruse, Clemens; Krowski, Nicole; Rodriguez, Blanca; Tran, Lan; Vela, Jackeline; Brooks, Matthew

### VERSION 1 - REVIEW

<b>REVIEWER</b>	Lizzie Cottrell Keele University, UK  None declared (although I am first author of one of the included papers)
<b>REVIEW RETURNED</b>	19-Mar-2017

<b>GENERAL COMMENTS</b>	<p>I have enjoyed reading this article which has the potential to be very helpful as the extent of literature regarding telehealth is still limited. However, in its current form, my sense is it is a little too vague, lacking consistent structure and using language that is not common parlance for technical writing such as this. As a reader, one gets the sense this has been a learning journey for some of the authors, which is great within a thesis/dissertation, but less relevant for a scientific paper. I feel that paragraphs can be made more concise and relevant in places, and I have suggested specific points below for clarity.</p> <p>Abstract Background - My personal opinion is that telehealth is not an "essential component" to patient care but rather a conduit through which broader, enhanced or more efficient patient care. Again, while one driver to using telehealth is to improve quality of care, it may also be to provide the same quality but to more people. My sense is many initiatives are deemed to have 'failed' if higher quality is not achieved, however, it may be that a different patient group has been accessed. This point extends into the introduction of the main piece and the start of the discussion also, as the reason first given for the use of telehealth in the intro and discussion is for patient convenience, not higher quality. So I suggest the authors try to ensure all reasons for using telehealth are acknowledged within the relevant sections of the paper.</p> <p>Abstract Methods - the sentence "The initial search of 1732 articles..." on lines 39-40 does not make sense. Further the sentence starting "Key points summarized..." on line 40-42 feels to vague and non-technical - it is not entirely clear what the process of identifying the "key points" was and I assume the 32 is the number of articles included. The search result and no of included articles usually is placed in the results - this issue applies also to the main paper, the results of the searches are given in the methods, this is usually found in the results.</p>
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Abstract Results - again, this feels insufficiently precise. It is not really clear what the outcomes were here.

Abstract Conclusion - from the text in the preceding sections of abstract, it is not where the recommendation of an 'evaluation tool' has come from.

Introduction - as explained above, my sense is the potential reasons for using telehealth should be more clearly, comprehensively and consistently outlined - not all will necessary improve patient satisfaction. For improved clarity, I suggest the introduction be reordered to define telehealth, give the reasons for using telehealth, the importance of patient satisfaction, the evidence gap regarding patient satisfaction about telehealth (particularly given that two systematic reviews had already been done previously) and then what this review aims to do (currently given on line 71-2 - very early on before all contextual arguments have been given).

Introduction line 94-96 - the point being made by the sentence "Telehealth relies heavily on patient satisfaction..." is not clear to me, how/why does this differ to more traditional methods of care delivery?

Methods - the first sentence fits better in the background/objective, rather than the methods.

Methods - the language used to describe what was done was a little colloquial e.g. "conducted some initial homework" - this is not how development of themes is usually performed in what is essentially qualitative work. Further CSK "coaching the group" sounds a bit like members could have been persuaded into a single line of interpretation, rather than interpreting in a truly independent way. If this is about simply teaching the team how to undertake data extraction and analysis, this does not need to be included in the text.

Methods - the inclusion and exclusion criteria section starting on page 126 could be made clearer and more concise. For example, inclusion criteria start to be listed initially, then the next sentence includes articles that were included and those that were excluded (e.g. SR), then some results are given and then later on line 133 further descriptors of inclusion and exclusion criteria are given. This could be refined.

Methods - similar to the above point - the handling of articles and searching of reference lists could be given much more succinctly and leave the results to the results section (it is included there too already).

Results - given that a flowchart has been included, such detail of the numbers is probably not required. However, I would suggest the authors move their flowchart down to the results and make it a little more detailed, aligned better with the conventional PRISMA flowchart example see <http://prisma-statement.org/documents/PRISMA%202009%20flow%20diagram.pdf>

Results - detail that the abstract was reviewed by at least two reviewers was given already in methods and does not fit in the results section. Lines 151-154 are superfluous in my opinion.

	<p>Results - it would be helpful for readers if Table 1 (or a separate table) characterised the studies, giving detail of included patients, the technology being used, the conditions the technology was used for and the setting (primary care, secondary care, social care etc). The headings satisfied, effective, efficient could become columns to prevent repetition (It is not clear where these three headings arose from).</p> <p>Results - the sentence "Every article in our sample reported patient satisfaction" is unnecessary as this was an inclusion criterion.</p> <p>Results - line 164 the authors state "The third column lists general comments..." I assume they are referring to Table 1 but there is no explicit signposting.</p> <p>Results Additional Analysis - again, the methods are reported here - this is not the correct place for this text. Further the sentence starting at line 181 is more suited to the discussion section. Simply the results should be outlined in the reference section.</p> <p>Discussion - the authors state in the first paragraph that the team wanted to "evaluate factors of effectiveness and efficiency that contribute to patient satisfaction in studies on various aspects of telehealth" - this is not entirely consistent with the original objective outlined in the main paper "to evaluate the association of telehealth with patient satisfaction"</p> <p>Discussion - the statement "older patients, in general, do not embrace change" needs referencing</p> <p>Discussion - it is not clear why reference 45 was not included in the review</p> <p>Limitations - the number of articles significantly decreased by application of the narrow date-range and the initial filtering to exclude non-english articles. This should be discussed. While the actual technology may have changed, is it likely to really change the patients' satisfaction? Due to the way the authors present the information, I cannot assess whether the satisfaction data were technology-type specific, but this could be examined. No quality assessment appears to have been utilised. There is some discussion about the databases not used - rather than listing particular ones the authors have not used (there are many more not mentioned), my feeling is that the authors should simply be explicit about the limitations of their use of only 2 databases, that is, they may well have missed some articles (they may wish to comment on the number found from reference lists and within the previous SR that they did not 'find' as a way to identify the likely extent of this problem).</p> <p>A minor point - I am not clear why the word "Telehealth" has been capitalised throughout</p>
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<b>REVIEWER</b>	Gonzalo Segrelles Calvo Servicio de Neumología, Hospital Universitario Rey Juan Carlos, Móstoles Madrid (Spain).
<b>REVIEW RETURNED</b>	23-Apr-2017

<b>GENERAL COMMENTS</b>	<p>This review is an interesting approach of patients adherence with telemedicine program. In the last years telemedicine have had several troublesome with its implementation. Patients' opinion is basis to understand some of those barriers.</p> <p>Objective: I suggest that lines 107 to 109 ("To create the basic organization for this review, we looked to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), which served as our standard.6 Additional information for PRISMA can be found on their website") should be add to methodology section.</p> <p>Methods: This section is not clear enough. It is necessary to explain in more detail methodological procedure and explain statistics methods. How did authors define patients satisfaction, effectiveness and efficiency?</p> <p>Results: Could be interesting make a summary table with the main items of all studies included as number of patients, average age, sex distribution, factors related to patients' satisfaction, etc.</p> <p>Conclusions: Respect to authors afirmation "However, in deference to this review, our study identified a decrease in utilization of physical clinics", is not possible to conclude this because none statis analysis was performed to compared results. Perhaps the authors have to plan this review as meta-analysis if they want to compare the results of the journals and make the proposed relationships in the previous paragraph. I my own opinion this section should be reviewed because results are not enough explained in.</p>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer: 1  
Lizzie Cottrell  
Keele University, UK

Please state any competing interests or state 'None declared': None declared (although I am first author of one of the included papers)

Please leave your comments for the authors below I have enjoyed reading this article which has the potential to be very helpful as the extent of literature regarding telehealth is still limited. However, in its current form, my sense is it is a little too vague, lacking consistent structure and using language that is not common parlance for technical writing such as this. As a reader, one gets the sense this has been a learning journey for some of the authors, which is great within a thesis/dissertation, but less relevant for a scientific paper. I feel that paragraphs can be made more concise and relevant in places, and I have suggested specific points below for clarity.

Abstract Background - My personal opinion is that telehealth is not an "essential component" to patient care but rather a conduit through which broader, enhanced or more efficient patient care. Again, while one driver to using telehealth is to improve quality of care, it may also be to provide the same quality but to more people. My sense is many initiatives are deemed to have 'failed' if higher quality is not achieved, however, it may be that a different patient group has been accessed. This point extends into the introduction of the main piece and the start of the discussion also, as the reason first given for the use of telehealth in the intro and discussion is for patient convenience, not higher quality. So I suggest the authors try to ensure all reasons for using telehealth are acknowledged within the relevant sections of the paper.

\*\* I changed the wording in the abstract's background to "viable" component. I added a section with definitions. I also added more information in the Introduction section to clarify our concept of telehealth as it relates to this review. Our intent is in agreement with reviewer 1; telehealth is a tool to expand the reach of care. Even if outcomes and patient satisfaction are the same as in the clinic setting, the practice is a win for all. I had to add the language of clarification to the Introduction. It is difficult to impart the entire message and remain within the word-count limits of an abstract.

Abstract Methods - the sentence "The initial search of 1732 articles..." on lines 39-40 does not make sense. Further the sentence starting "Key points summarized..." on line 40-42 feels to vague and non-technical - it is not entirely clear what the process of identifying the "key points" was and I assume the 32 is the number of articles included. The search result and no of included articles usually is placed in the results - this issue applies also to the main paper, the results of the searches are given in the methods, this is usually found in the results.

\*\* There were several errors in this paragraph that have now been corrected. The numbers all changed with the expanded date range through April 2017. I cleaned up the language for clarification, while cleverly remaining within the journal's limits for word count in the abstract.

Abstract Results - again, this feels insufficiently precise. It is not really clear what the outcomes were here.

\*\* Understood. I believe the revised manuscript is now commensurate with expected language and precision.

Abstract Conclusion - from the text in the preceding sections of abstract, it is not where the recommendation of an 'evaluation tool' has come from.

\*\* I agree. This recommendation has been removed in the revised manuscript.

Introduction - as explained above, my sense is the potential reasons for using telehealth should be more clearly, comprehensively and consistently outlined - not all will necessary improve patient satisfaction. For improved clarity, I suggest the introduction be reordered to define telehealth, give the reasons for using telehealth, the importance of patient satisfaction, the evidence gap regarding patient satisfaction about telehealth (particularly given that two systematic reviews had already been done previously) and then what this review aims to do (currently given on line 71-2 - very early on before all contextual arguments have been given).

\*\* I added a section to the manuscript detailing our definitions of patient satisfaction, effectiveness, and efficiency. I also added a section at the end with definitions of the basic concepts. This additional section fit well with comments from the other reviewer.

Introduction line 94-96 - the point being made by the sentence "Telehealth relies heavily on patient satisfaction..." is not clear to me, how/why does this differ to more traditional methods of care delivery?

\*\* I clarified this sentence. Our intent was not to distinguish reports of patient satisfaction from traditional visits; instead it was intended to highlight its equal importance.

Methods - the first sentence fits better in the background/objective, rather than the methods.

\*\* I moved this sentence.

Methods - the language used to describe what was done was a little colloquial e.g. "conducted some initial homework" - this is not how development of themes is usually performed in what is essentially qualitative work. Further CSK "coaching the group" sounds a bit like members could have been persuaded into a single line of interpretation, rather than interpreting in a truly independent way. If this is about simply teaching the team how to undertake data extraction and analysis, this does not need to be included in the text.

\*\* I agree. This language has been cleaned up.

Methods - the inclusion and exclusion criteria section starting on page 126 could be made clearer and more concise. For example, inclusion criteria start to be listed initially, then the next sentence includes articles that were included and those that were excluded (e.g. SR), then some results are given and then later on line 133 further descriptors of inclusion and exclusion criteria are given. This could be refined.

\*\* I cleaned all of this up in the revision.

Methods - similar to the above point - the handling of articles and searching of reference lists could be given much more succinctly and leave the results to the results section (it is included there too already).

\*\* I shortened the verbiage in the methods section and broadened pertinent material in the results section.

Results - given that a flowchart has been included, such detail of the numbers is probably not required. However, I would suggest the authors move their flowchart down to the results and make it a little more detailed, aligned better with the conventional PRISMA flowchart example see <https://na01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fprisma-statement.org%2Fdocuments%2FPRISMA%25202009%2520flow%2520diagram.pdf&data=01%7C01%7Cscott.kruse%40txstate.edu%7C68dcb58a3ece400beb8d08d48e3da250%7Cb19c134a14c94d4caf65c420f94c8cbb%7C0&sdata=Tqb2Ur%2FN6iMcibTB65pkm%2FRCcH5PShV4OeluJSP3USg%3D&reserved=0>

\*\* Chart has been moved to the results section and formatted to better align with the PRISMA standard.

Results - detail that the abstract was reviewed by at least two reviewers was given already in methods and does not fit in the results section. Lines 151-154 are superfluous in my opinion.

\*\* These have been removed.

Results - it would be helpful for readers if Table 1 (or a separate table) characterised the studies, giving detail of included patients, the technology being used, the conditions the technology was used for and the setting (primary care, secondary care, social care etc). The headings satisfied, effective, efficient could become columns to prevent repetition (It is not clear where these three headings arose from).

\*\* The headings of satisfaction, effectiveness, and efficiency are the screening criteria for the articles being selected. I added some additional information on this point prior to the table. They are listed as "themes" and the 19 "factors" stem from these themes.

Results - the sentence "Every article in our sample reported patient satisfaction" is unnecessary as

this was an inclusion criterion.

\*\* I agree with your statement. This sentence was added to satisfy the formatting requirement that references be listed in order. It became very confusing to list them any other way prior to discussing the 19 different factors.

Results - line 164 the authors state "The third column lists general comments..." I assume they are referring to Table 1 but there is no explicit signposting.

\*\* I added to the column title to reflect its contents more accurately

Results Additional Analysis - again, the methods are reported here - this is not the correct place for this text. Further the sentence starting at line 181 is more suited to the discussion section. Simply the results should be outlined in the reference section.

\*\* I agree with your statement. The section exists in order to follow the format of PRISMA, but I cleaned up the language to eliminate some of the redundancy from the Methods and Discussion sections.

Discussion - the authors state in the first paragraph that the team wanted to "evaluate factors of effectiveness and efficiency that contribute to patient satisfaction in studies on various aspects of telehealth" - this is not entirely consistent with the original objective outlined in the main paper "to evaluate the association of telehealth with patient satisfaction"

\*\* I believe I have clarified that now with some of the previous changes. The objective is stated as We had multiple research questions. R1: Is there an association of telehealth with patient satisfaction? R2: Are there common facilitators of either efficiency or effectiveness mentioned in the literature that would provide a positive or negative association between telehealth and patient satisfaction?

Discussion - the statement "older patients, in general, do not embrace change" needs referencing

\*\* This is referenced.

Discussion - it is not clear why reference 45 was not included in the review

\*\* As I go through my research notes, this article had not appeared in our original search. We found it later through Google Scholar. I do not mind including it. I just do not have a reason to do so that fits with what we wrote in the Methods section.

Limitations - the number of articles significantly decreased by application of the narrow date-range and the initial filtering to exclude non-English articles. This should be discussed. While the actual technology may have changed, is it likely to really change the patients' satisfaction? Due to the way the authors present the information, I cannot assess whether the satisfaction data were technology-type specific, but this could be examined. No quality assessment appears to have been utilised. There is some discussion about the databases not used

- rather than listing particular ones the authors have not used (there are many more not mentioned), my feeling is that the authors should simply be explicit about the limitations of their use of only 2 databases, that is, they may well have missed some articles (they may wish to comment on the number found from reference lists and within the previous SR that they did not 'find' as a way to identify the likely extent of this problem).

\*\* I reworded the limitations to be more succinct on this point. Our limitation to only two databases

could easily have omitted valid articles from our review.

A minor point - I am not clear why the word "Telehealth" has been capitalised throughout

\*\* It should not have been. I corrected the capitalization throughout the manuscript.

\*\*\*\*\*

Reviewer: 2

Gonzalo Segrelles Calvo

Servicio de Neumología, Hospital Universitario Rey Juan Carlos, Móstoles Madrid (Spain).

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below This review is an interesting approach of patients adherence with telemedicine program. In the last years telemedicine have had several troublesome with its implementation. Patients' opinion is basis to understand some of those barriers.

Objective: I suggest that lines 107 to 109 ("To create the basic organization for this review, we looked to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), which served as our standard.6 Additional information for PRISMA can be found on their website") should be add to methodology section.

\*\* I moved this to the methods section

Methods: This section is not clear enough. It is necessary to explain in more detail methodological procedure and explain statistics methods.

\*\* I added more detail to explain our method of article selection and analysis.

How did authors define patients satisfaction, effectiveness and efficiency?

\*\* I added a short section of definitions prior to the abbreviations.

Results: Could be interesting make a summary table with the main items of all studies included as number of patients, average age, sex distribution, factors related to patients' satisfaction, etc.

\*\* All of this information is not available, but I have pulled several details from each study and added it to Table 1.

Conclusions: Respect to authors affirmation "However, in deference to this review, our study identified a decrease in utilization of physical clinics", is not possible to conclude this because none statis analysis was performed to compared results. Perhaps the authors have to plan this review as meta-analysis if they want to compare the results of the journals and make the proposed relationships in the previous paragraph. I my own opinion this section should be reviewed because results are not enough explained in.

\*\* I removed this sentence. I agree with the reviewer.

#### VERSION 2 – REVIEW

<b>REVIEWER</b>	Lizzie Cottrell Keele University, UK
<b>REVIEW RETURNED</b>	14-May-2017



**GENERAL COMMENTS**

This paper is improved but I think it still needs further refinement. It is very verbose still. I have provided multiple suggestions to refine it. The approach to using the term telehealth is well explained, but the authors need to make sure they are using this term consistently throughout (including the abstract). See below for more in depth comments

**Abstract**

The author comments on the difficulty on keeping to the word count in the abstract. However, there are still unnecessary statements e.g. "because the databases index differently." The sentence "The initial result of 2193 articles was filtered several times, and remaining articles were reviewed by multiple reviewers." Could be much more efficiently phrased. This would free up more words to improve the flow of the background of the abstract. Further, the methods is a little vague still, so rather than saying "then the authors discussed the merits of each article to reach consensus" the way in which the 119 factors of effectiveness and efficiency, reported in the results, could be described. For example, "factors relating to effectiveness and efficiency were identified using consensus to match them to pre-defined themes" or similar. Finally the conclusion feels a little weak, perhaps the authors could comment on how knowledge of these factors could help implementers to match interventions as solutions to problems (rather than blanket roll out).

**Strengths and limitations**

These feel a little weak, I suggest the authors really concentrate why this particular study is important. Further, they discuss difficulty in assessing trends over time, this was not an objective in this study, so this is not really relevant. Limitations might include, for example, studies not clearly setting out the reason for their implementation of the technology and therefore, not being clear whether the patient satisfaction was congruent with this etc. Try and think what is specific in this particular paper.

**Methods**

There remains a lot of excess text for example:

- Lines 114-118 on page 5 are unnecessary – you have already set the scene and described the research questions
- Lines 121-123 on page 5 again are unnecessary – usually just the databases used are required
- Lines 126-130 on page 6 could be simply refined by saying "search terms were adapted for use in the different databases" or similar, and the search terms could be provided as supplemental data
- Lines 139-142 on page 6 could be refined into "Articles were assessed according to the inclusion and exclusion criteria described above, and data were extracted according to pre-defined themes." I think it is, however, important to state how the themes were defined and what (if anything) you did with data that seemed relevant but did not fit within the themes.
- Lines 145-152 on page 6-7 could be refined, much of this is standard SR approaches so does not need full explanation but just brief report that it has taken place

Although risk of bias is mentioned (line 164-66), it is not really made clear in a reproducible way how this was done or what the outcome of this discussion was, were papers removed as a result of discussions?

Line 171-172 "These will be sorted by frequency" should be in past tense.

**Results**

First paragraph has a number of issues:

- The word “only” in line 178 is not necessary
- The description of filters and consensus meetings etc is unnecessary as this should all be made clear in the methods
- This paragraph could be one simple line “After the initial search yielded 2193 results, 193 underwent abstract and then full-text review resulting in 44 papers being included in the study” – or whatever the appropriate numbers/language is.

Table 1 needs to be broken up a bit for ease of readings. I suggest a landscape presentation and more columns – so to split out population, clinical context, (I would add technology used), satisfaction measure, effectiveness measure, risk of bias and other comments

The authors report that they have kept the sentence “every article in our sample reported patient satisfaction” to make it easier to reference the articles. As I said previously, this is not an appropriate sentence as it was one of the inclusion criterion. I would therefore recommend that when they describe the number of included studies, they put the references in there, if this was the problem they were trying to overcome.

It would be clearer for readers if lines 190-192 p16 “Many studies listed factors of both effectiveness and efficiency,20,21,26,30,31,34,36,37,39,41-43,46,48-50,51 but only one category was required as an inclusion criteria” was reported as “XX (Ref) studies reported patient views on effectiveness, XX (ref) studies reported patient satisfaction and XX (Ref) studies reported both.”

Lines 192-200 on page 16-17 again could be refined, “Potential risk of bias among papers included: [and then list them with no of relevant articles and references], See Table 1”. This would reduce the use of “one study” and “another study” etc which adds to the verbosity.

Lines 209-229 pages 18-19 feel like a mixture of results and discussion. I think that the authors are listing the themes from the literature that they have predetermined (in which case these should be included in the methods, as suggested above) and then the headline results should just be given here. Comparison of the findings from this study, with previous studies should be done in the discussion.

#### Discussion

The authors report on page 19 line 236-237 that they have “identified” 19 factors, however, they state that they pre-defined the themes. So did they identify these or did they examine these within the literature?

The summary of evidence section on page 19-20 feels like a mix of summary of findings, comparison with literature (which also comes next) and recommendations for future practice. It would be clearer for the reader to have a shorter section, just highlighting the key headlines from this study alone. Recommendations for future clinical practice and for future research could be provided after the limitations.

The first paragraph of the limitations section is, again, rather wordy. It reiterates the methodology used and already described. It could be refined to a sentence “Selection bias is possible within this study, however our group consensus methods will have mitigated against

	this risk” or similar. Again Publication bias description could be more refined. “Publication bias is another risk, particularly as we did not extend our search to the grey literature” or similar.
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<b>REVIEWER</b>	Gonzalo Segrelles Calvo Hospital Universitario Rey Juan Carlos, Madrid (Spain)
<b>REVIEW RETURNED</b>	16-May-2017

<b>GENERAL COMMENTS</b>	All suggested modifications have been made. In my opinion this manuscript is highly interesting and don't require other additional modifications.
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### VERSION 2 – AUTHOR RESPONSE

Reviewer: 1

Lizzie Cottrell

Keele University, UK

Please state any competing interests or state 'None declared': None declared

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Please leave your comments for the authors below

This paper is improved but I think it still needs further refinement. It is very verbose still. I have provided multiple suggestions to refine it. The approach to using the term telehealth is well explained, but the authors need to make sure they are using this term consistently throughout (including the abstract). See below for more in depth comments

Abstract

the author comments on the difficulty on keeping to the word count in the abstract. However, there are still unnecessary statements e.g. “because the databases index differently.”

\*\* I removed this phrase

The sentence “The initial result of 2193 articles was filtered several times, and remaining articles were reviewed by multiple reviewers.” Could be much more efficiently phrased. This would free up more words to improve the flow of the background of the abstract.

\*\* I changed the wording "2193 articles were filtered and assessed for suitability (n=44)." The rest is explained in the manuscript.

Further, the methods is a little vague still, so rather than saying “then the authors discussed the merits of each article to reach consensus” the way in which the 119 factors of effectiveness and efficiency, reported in the results, could be described. For example, “factors relating to effectiveness and efficiency were identified using consensus to match them to pre-defined themes” or similar.

\*\* I changed the wording to match the reviewer's recommendation.

Finally the conclusion feels a little weak, perhaps the authors could comment on how knowledge of these factors could help implementers to match interventions as solutions to problems (rather than blanket roll out).

\*\* I changed the wording to match the reviewer's recommendation.

#### Strengths and limitations

These feel a little weak, I suggest the authors really concentrate why this particular study is important.

\*\* I strengthened the statements, using the reviewer's suggestions as a guideline.

Further, they discuss difficulty in assessing trends over time, this was not an objective in this study, so this is not really relevant.

\*\* I removed the phrase about trends over time.

Limitations might include, for example, studies not clearly setting out the reason for their implementation of the technology and therefore, not being clear whether the patient satisfaction was congruent with this, etc. Try and think what is specific in this particular paper.

\*\* I reworded one limitation to increase its appeal, and I added another, "Published studies do not often clearly set out reasons for inserting technology into an intervention, and therefore, it is not clear whether the patient satisfaction observed was congruent with the change of intervention."

#### Methods

There remains a lot of excess text for example:

- Lines 114-118 on page 5 are unnecessary – you have already set the scene and described the research questions

\*\* I removed these lines, along with the subheading dictated by PRISMA.

- Lines 121-123 on page 5 again are unnecessary – usually just the databases used are required

\*\* I removed those lines.

- Lines 126-130 on page 6 could be simply refined by saying "search terms were adapted for use in the different databases"

or similar, and the search terms could be provided as supplemental data

\*\* I reworded, as recommended, and moved the search terms to supplemental data

- Lines 139-142 on page 6 could be refined into "Articles were assessed according to the inclusion and exclusion

criteria described above, and data were extracted according to pre-defined themes." I think it is, however, important to

state how the themes were defined and what (if anything) you did with data that seemed relevant but did not fit within

the themes.

\*\* I have used the same process in about 15 published reviews, but I admit I have experienced difficulty in trying to

explain it. I do not feel that the explanation used in this manuscript differs significantly than the others published.

I can appreciate the reviewer's comments about succinct language, and I am always interested in

making improvements, but the reviewer is also asking me to be more verbose to explain the process in the methods section while also cutting the very explanation that describes the process. I am willing to reword my explanation, I will just need some additional guidance. See above all comments for a list of the steps we used.

- Lines 145-152 on page 6-7 could be refined, much of this is standard SR approaches so does not need full explanation but just brief report that it has taken place
- \*\* I summarized this text into one sentence.

Although risk of bias is mentioned (line 164-66), it is not really made clear in a reproducible way how this was done or what the outcome of this discussion was, were papers removed as a result of discussions?

\*\* Please clarify. The explanation for a reproducible method was, at least partially explained in lines 145-152. I am willing to concede to recommendations, but I am unclear about this guidance.

Line 171-172 "These will be sorted by frequency" should be in past tense.

\*\* I complied, as instructed

## Results

First paragraph has a number of issues:

- The word "only" in line 178 is not necessary
- \*\* I removed the word "only" from the sentence.
- The description of filters and consensus meetings etc is unnecessary as this should all be made clear in the methods
- \*\* I removed the first paragraph.
- This paragraph could be one simple line "After the initial search yielded 2193 results, 193 underwent abstract and then full-text review resulting in 44 papers being included in the study" – or whatever the appropriate numbers/language is.
- \*\* I added this sentence.

Table 1 needs to be broken up a bit for ease of readings. I suggest a landscape presentation and more columns – so to split out population, clinical context, (I would add technology used), satisfaction measure, effectiveness measure, risk of bias and other comments. The authors report that they have kept the sentence "every article in our sample reported patient satisfaction" to make it easier to reference the articles. As I said previously, this is not an appropriate sentence as it was one of the inclusion criterion. I would therefore recommend that when they describe the number of included studies, they put the references in there, if this was the problem they were trying to overcome.

\*\* In other articles that I have published through BMJ-O, landscape tables were not allowed, but I understand your concern. I went through the table and created additional categories to distinguish the observations. I ensured consistency of placement

for sample size, report of satisfaction (effectiveness and/or efficiency), and placed all mention of bias in parentheses.

I respectfully disagree on a separate entry for the technology used; I think that has been sufficiently described in the second column.

It would be clearer for readers if lines 190-192 p16 “Many studies listed factors of both effectiveness and efficiency,20, 21,26,30,31,34,36,37,39,41-43,46,48-50,51 but only one category was required as an inclusion criteria” was reported as “XX (Ref) studies reported patient views on effectiveness, XX (ref) studies reported patient satisfaction and XX (Ref) studies reported both.”

\*\* I complied, as instructed.

Lines 192-200 on page 16-17 again could be refined, “Potential risk of bias among papers included: [and then list them with no of relevant articles and references], See Table 1”. This would reduce the use of “one study” and “another study” etc which adds to the verbosity.

\*\* I complied, as instructed.

Lines 209-229 pages 18-19 feel like a mixture of results and discussion. I think that the authors are listing the themes from the literature that they have predetermined (in which case these should be included in the methods, as suggested above) and then the headline results should just be given here. Comparison of the findings from this study, with previous studies should be done in the discussion.

\*\* The intent of this paragraph was to verbally walk the reader through the table, but I agree that the figure can speak for itself. I summarized the findings by just mentioning the top five factors which constituted about 55% of the occurrences.

We did not make any references to previous work in this paragraph, so I will need clarification on that point. We only summarized our findings in our analysis of published studies.

## Discussion

The authors report on page 19 line 236-237 that they have “identified” 19 factors, however, they state that they

pre-defined the themes. So did they identify these or did they examine these within the literature?

\*\*I think I have addressed that issue now in the Methods section. From my perspective, these were not pre-determined.

We read the articles multiple times making independent observations. Factors were identified during this process.

Once factors were recorded, we identified themes (effectiveness and efficiency) that they seemed to fall into.

The summary of evidence section on page 19-20 feels like a mix of summary of findings, comparison with literature (which also comes next) and recommendations for future practice. It would be clearer for the reader to

have a shorter section, just highlighting the key headlines from this study alone. Recommendations for future clinical practice and for future research could be provided after the limitations.

\*\*I complied, as instructed

The first paragraph of the limitations section is, again, rather wordy. It reiterates the methodology used and already described. It could be refined to a sentence "Selection bias is possible within this study, however our group consensus methods will have mitigated against this risk" or similar.

\*\* I complied, as instructed

Again Publication bias description could be more refined.

"Publication bias is another risk, particularly as we did not extend our search to the grey literature" or similar.

\*\*I complied, as instructed

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Revision 1 reviewer comments and author responses.  
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Reviewer: 2

Gonzalo Segrelles Calvo

Hospital Universitario Rey Juan Carlos, Madrid (Spain)

Please state any competing interests or state 'None declared': None declared  
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Please leave your comments for the authors below All suggested modifications have been made. In my opinion this manuscript is highly interesting and don't require other additional modifications.

**VERSION 3 – REVIEW**

<b>REVIEWER</b>	Elizabeth Cottrell Keele University, UK
<b>REVIEW RETURNED</b>	10-Jun-2017

<b>GENERAL COMMENTS</b>	<p>This paper has been extensively revised in line with previous feedback, in particular it has been refined and parts significantly shortened, which really helps the flow. I note the authors returning comments, and I am not suggesting deviating from the PRISMA statements nor lacking detail where it really matters, but instead, ensuring that as few words as possible are used to convey key points.</p> <p>Further comments are as follows:</p> <p><b>STRENGTHS AND LIMITATIONS</b></p> <p>1) I am not convinced "portent" is the correct word in line 53</p> <p>2) I am not sure that "sample size" is the correct terminology in line 58 - do not usually refer to sample size in literature reviews - you get what is available</p> <p><b>INTRODUCTION</b></p> <p>1) Line 77 - should not be indented</p> <p><b>METHODS</b></p> <p>1) Line 132-133 - it states "we agreed on the qualities of telehealth and patient satisfaction to look for from our initial research" - I am not clear here what the authors mean. They later refer to pre-defined</p>
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themes. It would be helpful to be more explicit here about exactly what these themes were, when they were defined and how they were derived. It may be appropriate to mention the impact of pre-defining themes in the paper's limitations as well.

2) The Authors summarise the approach well in their responses to reviewers comments but state difficulty in addressing these clearly - why not use a flow chart to explain the approach used? Again, I fear the author has slightly misunderstood my point about verbosity, I was simply suggesting to remove the unnecessary phrases and to refine sentences (using fewer words to say the same thing) rather than lacking detail in the approach. The development of the themes is a section I have always felt has lacked clarity and still does - however it is a crucial element as the reliability of the subsequent results and interpretations really relies on this process.

#### RESULTS

1) I still find table 1 difficult to read. I note that the authors declined to break down the information into more separate columns - but I think this is a big problem - it is not easy to skim down the table and select e.g. technologies/contexts that may be of particular interest to the reader. Also, the information that is there is insufficient in some cases to really understand the papers included. For the benefit of readers I still feel this needs to be broken down more. Potentially this could be the country, year, context, technology being used, comparison (if applicable), outcomes examined, results, risk of bias and other notes. By way of example - take Dias AE et al on page 8 bottom row, it states "Voice rehabilitation in Parkinson's Disease (n=20); Satisfaction: Reported as high. Effective: Preference for telehealth intervention (small sample size)" I am not the wiser as to what this study actually tested, how it delivered the intervention and what it was comparing it to etc etc. Finally, with regards to this table, the authors could break it down into two tables, listing those that examine satisfaction and those that examine effectiveness, to reduce the length of the individual tables. If the authors are concerned about the use of landscape tables - could more tables be used? One to outline the details of the studies and one to outline the findings?

2) line 177 "The third column lists comments and details that could point to selection bias" is not required

3) line 183 "Table 2 is the result of the additional analysis listed in the Methods section" - for ease for the reader, this should simply describe what it is. e.g. "Table two outlines the frequency with which different factors were raised among the included paper".

4) My sense is that the sentence "These 19 factors of effectiveness/efficiency..." does not really help the reader make more sense of the results

#### DISCUSSION

1) Without knowing how and when the authors derived their themes it is not clear if "The results of our review and narrative analysis are consistent with other reviews" on line 218 is appropriate or relevant - if the authors determined their themes from the pre-existing literature, this would be no surprise as they did not do an inductive thematic analysis from what is written - thus no new themes would have arisen

#### ADDITIONAL POINTS

1) The flow diagram is slightly unusual and suggests that there were no duplicates between CINAHL and PubMed. I find this hard to believe. It would be better to follow the conventional PRISMA flow chart.

2) There is a typo at least with the reference relating to one of my



	<p>previous papers - p12 it states "Cotrell C et al" this should be "Cottrell E et al" - given that this is wrong in two places, I suggest the authors need to recheck all references in table and in the reference list to ensure there are no further errors. Also on that row of table, there is a lack of capitalisation of the word "satisfaction" in the third column and readers will not know what "AIM" is without reading the paper - so this needs to be described e.g. as "the service". There are other examples in this table of inconsistent use of capitalisation.</p>
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### VERSION 3 – AUTHOR RESPONSE

Reviewer: 1

Elizabeth Cottrell

Keele University, UK

Please state any competing interests or state 'None declared': None declared

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Please leave your comments for the authors below

This paper has been extensively revised in line with previous feedback, in particular it has been refined and parts significantly shortened, which really helps the flow. I note the authors returning comments, and I am not suggesting deviating from the PRISMA statements nor lacking detail where it really matters, but instead, ensuring that as few words as possible are used to convey key points.

Further comments are as follows:

#### STRENGTHS AND LIMITATIONS

1) I am not convinced "portent" is the correct word in line 53

\*\* I changed the word to "voice"

2) I am not sure that "sample size" is the correct terminology in line 58 - do not usually refer to sample size in literature reviews - you get what is available

\*\* I changed the word to "group"

#### INTRODUCTION

1) Line 77 - should not be indented

\*\* I disagree. This is a new paragraph.

#### METHODS

1) Line 132-133 - it states "we agreed on the qualities of telehealth and patient satisfaction to look for from our initial research" - I am not clear here what the authors mean. They later refer to pre-defined themes. It would be helpful to be more explicit here about exactly what these themes were, when they were defined and how they were derived. It may be appropriate to mention the impact of pre-defining themes in the paper's limitations as well.

\*\* I removed the phrase about pre-defined themes. I added it last time at your request, but we did not pre-define anything other than looking for articles that included both telehealth and some measure of patient satisfaction.

2) The Authors summarise the approach well in there responses to reviewers comments but state difficulty in addressing these clearly - why not use a flow chart to explain the approach used? Again, I fear the author has slightly misunderstood my point about verbosity, I was simply suggesting to remove the unnecessary phrases and to refine sentences (using fewer words to say the same thing) rather than lacking detail in the approach. The development of the themes is a section I have always felt has lacked clarity and still does - however it is a crucial element as the reliability of the subsequent results and interpretations really relies on this process.

\*\* Flowchart added as an appendix and referenced in the methods section.

\*\* There is no section about the development of themes. In the Methods section I talked about the consensus meeting process. Here is the sentence that I expanded to address the confusion, "During the consensus meetings factors and themes were identified through observation and discussion; e.g., as we discussed the articles, it became evident that patient satisfaction was often stated in terms of effectiveness and efficiency, so these became the themes."

## RESULTS

1) I still find table 1 difficult to read. I note that the authors declined to break down the information into more separate columns - but I think this is a big problem - it is not easy to skim down the table and select e.g. technologies/contexts that may be of particular interest to the reader. Also, the information that is there is insufficient in some cases to really understand the papers included. For the benefit of readers I still feel this needs to be broken down more. Potentially this could be the country, year, context, technology being used, comparison (if applicable), outcomes examined, results, risk of bias and other notes. By way of example - take Dias AE et al on page 8 bottom row, it states "Voice rehabilitation in Parkinson's Disease (n=20); Satisfaction: Reported as high. Effective: Preference for telehealth intervention (small sample size)" I am not the wiser as to what this study actually tested, how it delivered the intervention

and what it was comparing it to etc etc. Finally, with regards to this table, the authors could break it down into two tables, listing those that examine satisfaction and those that examine effectiveness, to reduce the length of the individual tables. If the authors are concerned about the use of landscape tables - could more tables be used? One to outline the details of the studies and one to outline the findings?

\*\* I created a landscape table and will leave it up to the editor on whether multiple tables will be necessary. It definitely makes it longer (from 4.5 to 18 pages).

2) line 177 "The third column lists comments and details that could point to selection bias" is not required

\*\* I do not understand. I was asked to add this column in the last review. I combined it with a column that contained sample size and other comments.

3) line 183 "Table 2 is the result of the additional analysis listed in the Methods section" - for ease for the reader, this should simply describe what it is. e.g. "Table two outlines the frequency with which different factors were raised among the included paper".

\*\* I changed the sentence as requested.

4) My sense is that the sentence "These 19 factors of effectiveness/efficiency..." does not really help the reader make more sense of the results

\*\* I removed the sentence.

## DISCUSSION

1) Without knowing how and when the authors derived their themes it is not clear if "The results of our review and narrative analysis are consistent with other reviews" on line 218 is appropriate or relevant - if the authors determined their themes from the pre-existing literature, this would be no surprise as they did not do an inductive thematic analysis from what is written - thus no new themes would have arisen

\*\* I believe that I clarified our theme development in the Methods section: comment above.

## ADDITIONAL POINTS

1) The flow diagram is slightly unusual and suggests that there were no duplicates between CINAHL and PubMed. I find this hard to believe. It would be better to follow the conventional PRISMA flow chart.

\*\* There were no duplicates because one of the filters in CINAHL was "exclude MEDLINE" This is

stated in the figure.

\*\* I do not think our figure differs significantly from the PRISMA Flow Diagram, but I moved numbers inside the squares (n= ) in order to better conform.

2) There is a typo at least with the reference relating to one of my previous papers - p12 it states "Cotrell C et al" this should be "Cottrell E et al" -

given that this is wrong in two places, I suggest the authors need to recheck all references in table and in the reference list to ensure there are no further errors.

\*\* My apologies. I rechecked all references and found three other errors: one of wrong initial, two of missing initials. I also rechecked those in the References section.

Also on that row of table, there is a lack of capitalisation of the word "satisfaction" in the third column and readers will not know what "AIM" is without reading the paper - so this needs to be described e.g. as "the service". There are other examples in this table of inconsistent use of capitalisation.

\*\* I perused the table multiple times and corrected several inconsistencies.