Author's response to reviews

Title: A review of randomized controlled trials comparing the effectiveness of hand held computers with paper methods for data collection.

Authors:

Shannon J Lane (shewhofeels@hotmail.com)
Nancy M Heddle (heddlen@mcmaster.ca)
Emmy Arnold (arnolde@mcmaster.ca)
Irwin Walker (walkeri@mcmaster.ca)

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Author’s response to reviews: see over
Reviewer 4:

Most of my suggested corrections have been addressed, other than Fig 1, and the problem may be technical.

Comments by editorial board:

The findings are sound enough and novel enough to warrant publication, although I think the general level of interest will be low. I think the authors have addressed the comments from the reviewer and that the paper can be accepted. A couple things I feel can be improved in the introduction:

1) Some motivation of why someone should care about trials comparing paper to PDA data collection by research subjects.

- See explanation regarding “research subjects” under reviewer 6, below. Regarding motivation, this is explained in greater detail in the text. In brief, reviews reflect the literature, which is, understandably, predominantly technical, descriptive, and conceptual. We were particularly interested in comparing actual performances of handheld computers with the traditional paper method. General reviews address a number of aspects, and while these are mostly very valuable they do not rigorously address the question we wanted answered in a rigorous manner. We wanted to concentrate exclusively on randomized trials and through a systematic literature search ensure a complete retrieval and then apply specific prospectively defined criteria to the analysis.

2) Apparently, there is one review that precedes this paper: reference 9. The authors should explain what that review showed and why a new review (theirs) is needed.

- A short critique of reference 9 (Koop et al) is included.

Comments by Reviewer 6:

The article provides a systematic review of literature on controlled randomized trials, which compare the use hand help computers to paper-based methods in patient populations. The authors conclude, that handhelds are an effective alternative to data collection with paper and pencil.

The paper is well-organized, well-written and follows an scientific standard for systematic literature reviews. However, I suggest the following points for reworking:
The term research subjects is confusing for me. It should be explained at its first appearance.

- We agree that the term “research subjects” is confusing. The focus of our literature search was on randomized trials comparing the use of handheld computers with paper methods for recording and transmitting data, not on the subjects performing the recording. The literature search strategy was not exclusionary of any type of user. Ultimately, the subjects (“research subjects”) in the randomized trials were a mixture of patients, volunteers and medical students and no trials were excluded on the basis of the type of subject. We have removed all references to “research subjects”, substituting simply “subjects or participants”.

- In the Introduction the sentence "Studies focusing on the utility....; however, .... used by research subjects" should be moved to the end of the chapter. Immediately before the purpose of the study is explained.

- We have moved these sentences to the end of the section.

- When the purpose of the study is introduced, an explanation is missing, why it is relevant to focus on research subjects. Why do we really need a review considering this. In how far are the results expected to be different from other reviews. What is the particular research question of the article? Which benefit is expected by concentrating on research subjects?

- We have deleted the term “research subjects”. We have been using this term because at the outset we were embarking on a randomized trial involving research subjects who were patients. As a result of the critiques we have received, we realized that we seemed to be expressing an interest in the types of subjects, whereas we were primarily interested in the comparison of the devices. No trials were excluded on the basis of who was actively involved in the recording.

- Regarding the reason for carrying out this type of review, see the answer to Reviewer 4.

- Methods: Please provide information on the exact query. How are the mentioned terms combined (with 'and' or 'or'). Otherwise it is not possible to evaluate the query.

- This was clearly an omission; the terms were linked by “OR” and this has been clarified.
The section "The search was performed....The details of the latter study... was included...resubmission" is rather confusing. It may be important for the history of the article but for the reader is only important which period has finally been chosen for review and if all articles of this period have been considered. Additionally, it is argued in the section with the inclusion criteria, although they have not yet been introduced.

- The historical chronology was eliminated and the periods merged.

- Explain the exclusion criteria in the methods-chapter. Why are studies excluded where health care professionals or children were study subjects or were data were gather by researchers. This is again important to highlight the relevance of the review.

- We are able to delete all reference to these exclusion criteria as the search strategy did not in fact exclude publications of randomized trials involving health care professionals or children, and none were, in any case, found.

- "Two reviewers independently....articles according to" My suggestion for continuing this sentence would be 'the inclusion criteria'.

- Phrase “….the inclusion criteria” was inserted.

I cannot identify a process and nomenclature in Figure 1.

- We are not sure of the meaning – was there an absence of the figure due to a technical problem?

- Results: Instead of "Three of the studies used a parallel RCT design--" I would start the results with describing the variety of applications and the disorders they dealt with.

- We have inserted the following: “Topics addressed by the nine randomized studies were: Symptoms in patients with overactive bladder [31], appreciation of pain by volunteers (32), collection of chart data by medical students (33), symptoms of patients in an orthopedic clinic (34), rating of appetite by volunteers (35), respiratory data in patients with lung diseases (36), quality of life in patients with gastrointestinal disease (37), food intake by patients with diabetes (38) and factor concentrate use by patients with hemophilia (39).”

- Why is the duration of follow up so important?
The following sentence was inserted in Methods- literature search: “Duration of follow up was considered important because preferences for new technologies might conceivably lack durability, initial enthusiasm and ‘halo’ effects clouding other issues of acceptability.”

- There is a clear correspondence of the discussion and the result, which is laudable. Unfortunately, a critical discussion of the approach of the approach the authors used is missing.
  - Why do they think, that the recall of their query was good enough?
  - Is it really sufficient to generalize conclusions from 9 reviewed papers? How expressive are these results really.

- We have added further text at the end of the Discussion to express our final opinion: “In deciding on a method of data collection, researchers could reasonably consider that handheld computers will likely be acceptable to patients and have the potential to provide more rapid data handling. On the other hand, improved compliance and accuracy of data recording should not be assumed and may depend on the particular conditions of the study, the origin of these aspects may lie outside the nature of the recording device, such as in training, understanding and motivation.

- In my print-out the text in figure 1 does not fit in the squares.

- We suggest that the editor give direction on this point as the figure fits OK in our version.

In addition to these changes we have also reorganized the tables so that the citations appear from oldest to most recent. Some minor edits have also occurred. All of the major changes have been highlighted on the manuscript resubmitted.

To summarize, there are two main, crucial weaknesses: The relevance of the research question and the expressiveness of the results. If the authors manage to proof these two points with substantial arguments the paper is worth considering for publication.