Author's response to reviews

Title: Systematic review of networked communication interventions to promote access and engagement of young people with diabetes into healthcare

Authors:

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Version: 2 Date: 11 October 2010

Author's response to reviews: see over
Dear Sir/Madam

RE: Systematic review of communication technologies (MS: 9475609804157220)

Please find enclosed our manuscript with revised title “Systematic review of communication technologies to promote access and engagement of young people with diabetes into healthcare”.

Thank you to the two reviewers who provided useful feedback on the manuscript. Their comments have significantly strengthened the paper. Our detailed responses to each comment are report in the table below and all changes have been tracked in the text. We also provide a completed PRISMA checklist. The review addresses all relevant items in the checklist.

This comprehensive systematic review is the first to evaluate the impact of all forms of networked communication between young patients with diabetes and health care professionals. This review draws on the theoretical and practical implications of earlier studies. We assess the effectiveness and impact of networked communication technologies compared with usual packages of care for the healthcare needs, support and education of young people with diabetes.

We believe the manuscript will be of significant interest to readers of BMC Endocrine Disorders. None of the authors have any competing interests to declare.

Thank you for your support and consideration.

Yours sincerely

Dr Paul Sutcliffe
Senior Research Fellow/Lead author
Response to reviewers

MS: 9475609804157220
Title: Systematic review of networked communication interventions to promote access and engagement of young people with diabetes into healthcare
Authors: Paul Sutcliffe, Steven Martin, Jackie Sturt, John Powell, Frances Griffiths, Ann Adams and Jeremy Dale

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<th>Editorial request</th>
<th>Authors’ reply</th>
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<td>a) Systematic review: please go over the PRISMA checklist and ensure that you have adhered to all the points covered in the checklist (please address this point in your cover letter). The checklist can be found at this link: <a href="http://www.prisma-statement.org/">http://www.prisma-statement.org/</a>.</td>
<td>All appropriate points on the PRISMA checklist have been adhered too. Please find attached.</td>
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<th>Reviewer’s comment</th>
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<td>Reviewer: 1</td>
<td>Thank you for your very kind words of support.</td>
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<tr>
<td>Reviewer: David Marrero</td>
<td>This is a well conducted review dealing with a topic of emerging importance. The authors have used state-of-the-art techniques to select studies for inclusion and an excellent presentation of the findings.</td>
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The review would benefit from including some discussion about three factors:

1) differences in the age of the subjects

2) whether the intervention targeted the parents of the child

3) the fact that the different studies had variable durations (6-18 months) as this factors can have influence on the glycemic data. In this context, some discussion relevant to these points is warranted.

We have presented some discussion about the uncertainty about the effect of age on the outcomes (Page 20). The following was added “Furthermore, there is uncertainty about the effect of age on the outcomes due to the lack of subgroups analyses on the broad age ranges included in the studies.”

None of the studies were aimed at the parents of children. This will be raised as a possible future research consideration (Page 20/21).

Thank you for this important point. We now present further discussion and the concerns in generalising the findings (Page 22).

Finally, on page 17 the discussion of study reference 44 is followed by a sentence that reads "from the same intervention (41) patients who received conventional therapy and the "Sweat Talk"......" This is not the same intervention as described above (ref 44). Perhaps they intended to say “from a similar type of intervention....”

This has been changed (Page 17). Thank you.
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<td><strong>Reviewer: 2</strong></td>
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<td>Reviewer: Claudia Pagliari</td>
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<td>Reviewer's report:</td>
<td>Thank you for your valuable suggestions. We really appreciate your time and consideration.</td>
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<td>It is useful to have a new review focused on the potential of ICT to support young people with diabetes.</td>
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The following comments and suggestions are offered constructively.

1. Is the question posed by the authors well defined?
The term ‘networked communication interventions’ has not been well-defined. Throughout the paper, the authors refer to “interventions”, “technologies” and “devices” interchangeably, although these are somewhat different concepts. At different points in the introduction it appears that the review is about the comparative effects of different communications media (e.g. mobile telephony, videotelephony), about active interventions (e.g. educational, psychological) whose delivery happens to be facilitated by electronic media; or about technology-enabled remote interaction between clinician and patient, including passive monitoring with biofeedback or two-way dialogical communication (usually bracketed under the term telehealth or its variants) or, similarly, as “remote access to a service” which provides tailored information and support.

This is reflected in the abstract where the subject of the review is described as “e.g. social networking sites (a sociotechnical phenomenon), mobile phones (a device), forums (similar to the former) and email (a communications medium). In the ‘Background’ section it is even stated that “the current review evaluates networked communication interfaces”. (Substituting ‘mobile telephony’ for ‘mobile phone’, would help to focus the reader on process rather than device.) At the top of page 6 it is stated that “The review will assess the effectiveness and impact of networked communication technologies compared with usual packages of care...” Should this read ‘technology-supported packages versus usual packages’.

Thank you for raising your concern. We have taken your points into consideration and have revised our definition. However, these inconsistencies in definition reflected the variability encountered in the literature. We have made our definition consistent throughout. We have chosen to use “technologies” through out the manuscript to address this issue. It should be noted that the on some occasions we have chosen to use intervention to represent the study arm (e.g. intervention group vs control group). We have removed the term “networked”. Following your useful suggestions we have also inserted the following to describe the purpose of the review: “The review explores the comparative effects of different communication technologies, active interventions whose delivery may be facilitated by technology and technology-enabled remote interaction between health professional and patient, including passive monitoring with biofeedback or two-way dialogical communication or tailored information and support”. We feel this significantly improved the manuscript.

We have substituted mobile telephony for mobile phone. We have also changed the wording of the section at the top of page 6 to ‘technology-supported packages versus usual packages’. |
packages versus usual packages’?

I’m not sure whether the term ‘networked’ is necessary, since there is potential for confusion with web-based technologies. It may be worth avoiding the reference to ‘social networking sites’ in the abstract, as none of the reviewed studies considered these and it is therefore misleading.

The abstract makes much of the increase in ‘frequency of contact’ observed when new communications tools are put in place without acknowledging (as rightly happens in the discussion) that this is often the basis of the intervention itself (as in poorly controlled patients who need more regular support). This is a bit like reporting that getting a telephone increases frequency of contact.

Thank you for your suggestion. You are correct that none of the included papers involved social networking sites. We have removed the reference to social networking sites in the abstract.

2. Are the methods appropriate and well described?

In general these are appropriate and well described. However it would be useful to have greater clarification on the processes through which articles were screened and rejected or included at each stage (this is linked to the questions above).

There is an inconsistency in the reported number of retrieved articles in the abstract/results, compared to Figure 1, and this should be resolved. Light is shed on the massive number of initial hits when, on p 7, it is reported that initial searches covered all long-term conditions.

The search terms described in the appendices are suitably general and do not appear as Cochrane-style strings; however given current indexing of this literature, well-planned free searches are likely to be just as reliable.

Nevertheless the methods section refers to information specialists and combining terms, so if there is a more formal set of searches then it would be useful to supply this in an appendix.

On page 6 the sentence starting “We utilized the pathway of action documented by Murray et al....” needs some work; firstly because it is not made clear what the ‘pathway of action’ is and, secondly, because the different parts of the sentence do not hang together, making it

Thank you pointing this out. What we reported in the abstract was the potentially relevant studies identified and screened for retrieval (N = 20,925) subtracted from the Duplicates (N = 2,205) i.e. 18,720. To avoid confusion we will report 20,925.

Following advice from our expert information specialist (Samantha Johnson at Warwick University Library) it was decided that following the several attempts to search the available literature in which we restricted the technologies to specific key words, we felt that using a broader search terms were more appropriate. Limiting the searches to keywords related to the diabetes and technology we found key papers that had already been identified though key reference searches were omitted. This was what we referred to as an iterative procedure. The earlier search strategies were not useful and would confuse the reader if presented in the appendix.

Further information is given on the pathway of action (Page 6). We didn’t want to go into too much detail on the pathway of action; rather we aimed to provide a theory of action which has been previously discussed by the authors cited. We have revised this paragraph: “We utilised a pathway of action to understand the
difficult to decipher.

Also on p.6 (upper paragraph) - Have the terms effectiveness and impact been confused with efficacy and effectiveness?

The Downs and Black checklist is appropriate, for the reasons stated, but it may be worth saying a few words about why other, often used, quality checklists were rejected in favour of this one.

Working of communication technologies in the diabetes healthcare context [15] coupled with several forms of communication technologies [18,19] or other self-management interventions [20]. Health communication technologies may act by combining information with additional services (peer support, decision support, behaviour change support) to allow interpretation of the information and internalisation; a combination of knowledge and enhanced self-efficacy with motivation enable users to change their health behaviours, leading to changes in clinical outcomes [15]. Social cognitive theory states that health behaviours are influenced by self-efficacy, or the belief in one’s ability to perform actions that will influence outcomes [21], which, in turn, is influenced by goal setting and social support [22,23]. This can lead to changes in knowledge for improved health or health behaviours, affective parameters and self-efficacy. The combination of enhanced self-efficacy with motivation and knowledge may enable adolescents and young adults to change their health behaviours, which in turn, may change some clinical outcomes (e.g. HbA1c).

We do not feel that these terms have been confused. This has not been changed.

Consideration of other quality assessment tools is provided (Page 9/10). Reference to the CASP is also made. The Downs and Black checklist enables an assessment of the methodological quality not only of randomised controlled trials but also nonrandomised studies. The checklist provides a valid and reliable checklist with the following features: appropriate for assessing both randomised and nonrandomised studies; providing both an overall score for study quality and a profile of scores not only for the quality of reporting, internal validity (bias and confounding) and power, but also for external validity.

3. Are the data sound?
I am not able to comment on the specific results without having the time to review the included studies myself; however these generally appear sound. I am somewhat uneasy about the emphasis on aggregated patient numbers, as this implies more robust evidence than is actually available from the included studies.

We recognise your concern about the use of aggregated patient numbers however feel that we have already been tentative in our conclusions based on the available evidence and its limitations.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
As above.

The results section labeled 4. Novel electronic communication, is dominated by digital glucometry, with various add-ons. It is important in this section to clearly differentiate between remote monitoring alone and interactive systems which link monitoring with

Thank you for your comment. For the purpose of this review all the studies would be considered interactive systems in that they all enabled feedback to be sent to the health professional by the patient. It is sometimes difficult to determine whether two-way interactions had occurred and therefore it is difficult to
<p>| Patient-specific feedback, motivational support, or education. Suggest re-labelling this section. | Differentiate remote monitoring from interactive systems. We have decided not to rename this section. In recognition of your comment we will mention the following in the discussion section: “It is unclear which forms of communication technologies are more effective due to the inconsistencies in the reported findings and difficulties in categorising technologies to allow reliable comparison. Furthermore, there is uncertainty about the effect of age on the outcomes due to the lack of subgroups analyses on the broad age ranges included in the studies. The use of such communication technologies for improving the frequency of contact for conditions that require close monitoring, clinical assessment and early intervention to avoid adverse events such as hospitalization or emergency visits should be researched further.” |
| Top of p18, section starting with “Franklin (2008)… is a bit disembodied and needs a connecting sentence. | Thank you for mentioning this. We have added a connecting sentence (Page 18) and made this a separate paragraph. |
| P 19 Section labeled “3. Care coordination outcomes.” I’m not sure whether this is a good way of describing what is in this section (e.g. how are cost reductions and self care outcomes “care coordination”?). Another term should be considered. | We have changed the subheading to “Self-care and cost outcomes” (Page 18). |
| 5. Are the discussion and conclusions well balanced and adequately supported by the data? On p 18 parag 3 a key summary point is that these technologies may reduce levels of problem solving. This is based on very limited data and, whilst possibly accurate, should probably be downplayed here. | You are right. We will be more tentative in our conclusion here. We have removed “but may also lead to reduced levels of problem-solving and the use of extensive reminders” (Page 18). |
| 6. Are limitations of the work clearly stated? Generally, yes, although the problems with grouping different types of intervention, media and device could be discussed a little further. | We have highlighted the difficulties in grouping the different types of interventions further (Page 20). The following has been added: “It is unclear which forms of communication technologies are more effective due to the inconsistencies in the reported findings and difficulties in categorising technologies to allow reliable comparison. Furthermore, there is uncertainty about the effect of age on the outcomes due to the lack of subgroups analyses on the broad age ranges included in the studies.” |
| 7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? Yes, but there is some inconsistency in referencing, with author names used more frequently in some paragraphs and only reference numbers in others. | We now use a reference number to refer to a paper. |
| 8. Do the title and abstract accurately convey what has been found? As above. | As above. |</p>
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<td>9. Is the writing acceptable? Generally yes, but improvements to consistency could be made and a couple of sentences could be tidied up.</td>
<td>We have checked the document and removed any inconsistencies.</td>
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<td>Level of interest: An article of importance in its field Quality of written English: Acceptable Statistical review: No, the manuscript does not need to be seen by a statistician.</td>
<td>Thank you for your valuable comments. We believe your suggestions have significantly strengthened the paper.</td>
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