Reviewer's report

Title: Merits, features, and desiderata to be considered when developing electronic health records with embedded clinical decision support systems in Palestinian hospitals: a consensus study

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Reviewer: Stephanie Medlock

Reviewer's report:

Summary of the paper: The paper presents a Delphi study conducted with 76 participants, seeking to establish consensus on the potential advantages and desirable features/configuration of electronic health records and clinical decision support systems integrated into them. The main result is a list of 110 perceived advantages, features, and desiderata, sorted into 9 categories and prioritized within those categories. The paper also (partially) reports a systematic literature review and an interview study which were used to generate the initial item list given to Delphi participants.

==Major remarks==

The most important issue with this paper is that the methods are not reported clearly, and the second important issue is that not all results are reported (or in some cases, are reported but are not clear). Specifically:

Methods:

1. The methods for the literature review hint that a formal systematic review was performed to identify literature for input to the Delphi panel, but the methods are not reported completely. The authors have two choices: (1a) Report the literature review following the PRISMA guidelines. Specifically, the search itself should be included (in the main text or as an appendix), the number of reviewers should be reported, the inclusion/exclusion criteria should be clarified, and the authors should specify what data was extracted, if a data extraction form was used, and who did the extraction (and if more than one reviewer did any step, how discrepancies were resolved). OR (1b) Choose a more qualitative approach: State that a thorough (but not systematic) search of the literature was performed to identify potentially important items as input for the Delphi panel. Describe the role/qualifications of the person or persons performing the search. If a systematic search of the literature was indeed performed, then option (a) is preferable.

2. The methods for the interviews are not complete. Please use the COREQ checklist as a reporting guide. Specifically, the authors need to add: How were subjects chosen/recruited for the interviews? How was the number of subjects determined? How was the interview guide developed? What questions were asked? Was it structured, semi-structured, or open? Who
conducted the interviews? How was the interview data collected and processed? Were any steps taken to reduce the risk of bias (e.g. member checking)? Please also indicate the scope of participants who were invited. (Are they all Palestinian? All from hospitals, or also regional clinics? All from academic hospitals? All from one hospital?) See also the comment related to this in the Results section.

3. The section "Responding to the questionnaire in the first Delphi round" can be deleted. However, the authors should add information on how the questionnaire was distributed (paper or digital), and whether reminders were sent.

4. The definition of consensus is a bit unclear: "...when the median score was within the range of 1-3 and the IQR was less or equal 2 of at least 75% of the panelists, the item was not considered as important..." If responses are between 7 and 9 then the IQR for those responses will (by definition) be <=2, so I think you mean "when the median score was within the range of 1-3 for 75% of the panelists, and the IQR for all responses was <= 2". Please clarify this definition.

5. 2nd Delphi round: who summarized the qualitative comments? Were any steps taken to reduce potential bias in this step? The results appear to contain a summary of qualitative comments, thus this step should be clarified.

6. After reading the Results it is clear that there were not just two sub-rounds in the 2nd Delphi round, but an iterative process in which items which were equivocal in the previous iteration are included in the subsequent iteration. It appears this was continued for 3 iterations. Please add this information to the methods, including why three iterations was chosen (rather than 2, 4, "until consensus was reached", etc.).

7. How were the participants for the Analytical Hierarchy Process chosen? This section also mentions that the items were grouped into categories - who made this grouping, and at what step in the Methods?

8. I'm not sure that ANOVA is the right choice of statistical test. I'm not sure that it's wrong, either, but I cannot find any other examples of analyzing Analytical Hierarchy Process data that use ANOVA in this way. Please check that this is the correct analysis to use. If it is, then no changes need to be made. If it is not, then consider omitting this analysis, as it is not critical to interpretation of the results.

Results:

1. I expect a Results section for each of the Methods outlined above. Thus I expect results of the literature review and interviews as well as the Delphi panel itself. Please use the PRISMA and COREQ checklists to guide what results need to be reported for each. A brief description of the results with an appendix giving more complete results would be fine. (For example: In the main text, report the PRISMA diagram and number of items identified from the literature for the literature review, and the response rate and number of items identified from the interviews for the interviews. Put the rest of the results as recommended by PRISMA and COREQ in an
appendix.) For each item in Table 2, 3, and 4, report whether the item came from the literature, interviews, or both. If you do not remove the ANOVA analysis from your Methods, then the results of the ANOVA should also be added to your Results (p-values), and add a section to the Discussion explaining why you chose ANOVA and what information this analysis adds to the interpretation of your results.

2. The results should also indicate response rate (how many participants were invited and how many accepted or declined) for both the Delphi panel and the Analytical Hierarchy Process step. This information is given in the Discussion for the Delphi panel; it belongs in the Results. Also, indicate whether the participants that you got reflect the range of participants who were invited (for example, if you invited people from all relevant professions but only nurses and IT people participated, the reader needs to know this).

3. The results contain a nice summary of the information from Table 2 (page 10 line 9 through page 11 line 8), but the bulk of the results (Tables 3 and 4) are only reported very briefly, on page 11 lines 11-22. I would like to see a better balance between these two sections, and specifically I'd like to see a bit more detail on the results from Tables 2 and 3. The format used for describing the information from Table 2 is good; you can use this for Table 3 and 4 as well.

Discussion:

1. When the methods are clarified, I expect some additional limitations will need to be reported as well: If the literature review was done by one researcher, then this is a limitation. Ideally this should be done by two people and agreement checked. If the interviews were conducted and analyzed by one researcher, then this is a limitation. Again, it is better if more than one person does this analysis. If the interviews were not recorded (or notes taken independently by two researchers), then this is also a limitation. If no member checking or other methods were employed to reduce bias, then this is also a limitation.

==Minor remarks==

1. The section on the Delphi technique could be moved to the introduction, but it is not really needed. The Delphi method is widely accepted as a method for establishing consensus, which is the goal of this study. The authors need not argue why this study was not designed as an RCT. However, the introduction could provide a stronger argument for why a Delphi study is required. The authors mention later in the paper that the evidence for the benefits and desirable features of EHRs and CDSS is limited and contradictory. There are some expert opinions, but no real guidelines for EHR and CDSS implementers. This is correct, and is a good reason to do this study.

2. The choice to describe participants as "67.1% physicians and IT/programming specialists" is a bit odd, since these are two very different groups in my mind. I assume what you mean is "The largest groups of participants were physicians (42%) or IT/programming specialists (25%)."
3. The statement "The decision as to whether to consider these items or not can be shaped by the individual needs of healthcare providers and decision makers in hospitals" appears to be the authors' opinion, and should be moved to the Discussion (it is not a Result).

4. The description of the items in your study as "safety features" is probably not the best choice of words. I think of "features" as characteristics of the software. Your study was broader than that - you looked at opinions on potential benefits of EHRs/CDSSs as well as features/configuration choices, dealing with usability and other effects on care as well as safety. I'd say "advantages, features, and desiderata" but you may choose other words that encompass the scope of your work.

5. Consider adding the scope of the study to the title, or at least the abstract; e.g. "... in Palestinian hospitals ...

6. There are a few typos and grammatical errors, for example:

   page 3 line 31: deliver (should be delivery)

   page 3 line 41 and elsewhere: HER (should be EHR: turn off autocorrect while editing any document about EHRs!)

   page 4 line 8 and elsewhere: consensual (should be consensus)

The use of English in general is good, but please correct these errors and check the entire document carefully after revision.

--- Comments (no action is required) ---

The choice to use Excel for the statistical calculations is a bit unusual. I would expect this to be done using R (package ahp is designed for doing the Analytical Hierarchy Process). You do not need to change anything for this study, but consider using a more conventional software package for future studies.

Quite a lot of additional information is needed to completely report everything you've done. If it were my study, I would have reported it in two papers: one for the systematic review (assuming the methods are sufficiently rigorous) and one for the Delphi study. A third paper (for the interviews) could even be considered, depending on how extensive the interviews were. Reporting everything in one paper is certainly fine, but it will make for a rather long paper.

I would like to thank the authors for their hard work and congratulate them on this quite interesting result.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.
No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
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Not relevant to this manuscript

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