Reviewer’s report

Title: Improving performance in primary care through the meaningful use of electronic medical records: Test of an integrated structural model

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Reviewer: Claus Bossen

Reviewer’s report:

This paper concerns the pertinent and pressing issue of evaluating family physicians’ use of electronic medical records. The authors have developed a structural model of the meaningful use of EMR by family physicians, and based on this model, the authors propose 7 hypotheses. The model and the hypotheses are validated through a survey of Canadian family physicians (n=331, response rate 16%). The survey and statistics seem thorough and solid, but since quantitative methods and statistics are not this reviewer’s strong fields, the following review will focus on more qualitative aspects such as ‘meaningful use’ and the developed model.

Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

An overall concern is the role of ‘meaningful use’ in the paper. It figures centrally in the writing and the developed model is proposed concerns ‘meaningful use’, but the term is not defined nor is it made explicit how it relates to the model and its different elements. This hampers the understanding of the hypotheses and the overall argument and should be remedied. Further, the authors state in the abstract and in the conclusion that they have ‘determined what actually constitutes the “meaningful use” of an EMR system’. However, this is not made explicit.

The need for the developed model and its relationship to the previous models of ISSM and UTAUT should be made explicit. In which ways are they not sufficient? How were which elements in- and excluded? Are there elements of the new model that do not fit with, extent or elaborate ISSM and UTAUT?

Also, in section 3.2 and in Table 2, a tri-dimensional structure of EMRs are proposed. On what basis is this structure proposed and what is its relationship to the develop model of the paper?

Some of the hypotheses require more discussion. What is the argument for “Hypothesis 4 - The greater their EMR system’s ease of use, the more meaningful the EMR use of family physicians.”. Since ‘meaningful’ is not made explicit the hypothesis is difficult to interpret, and it also poses the question whether physicians are lead to use the functionality which is most easy to use rather than functionality which is most meaningful. A similar question arises for “Hypothesis 5 - The greater their EMR system’s ease of use, the greater the
EMR user satisfaction of family physicians.”. Does this mean that user satisfaction is determined more by ‘ease of use’ rather than what is most meaningful use?

The conclusions from the findings should be strengthened. For example, the following recommendation seems self-evident: “…. encourage EMR software designers and vendors to offer systems whose clinical, communicational and administrative functionalities provide greater satisfaction to physicians. And this should be done initially by designing EMRs in such a way that family physicians will perceive their use as being effortless.” (Section 4.2). Which software designer and vendor would not strive for this? Similarly for the following: “… the design of an EMR system should be driven primarily by clinical motivations, that is, by the need to improve clinical practice rather than by simply striving for the “paperless” medical office.” (Section 4.2.) What does the latter mean? Which vendor would design merely for the latter rather than for improving clinical practice? What examples are there to confirm that such a recommendation is necessary? Also, the following conclusion would call for more reflection: “This last result again emphasises the need to conceptualise EMR systems as IT artefacts, and account for their design characteristics in explaining the benefits to be obtained from their use.” (Section 4.2) Why would one not regard an EMR as an IT artifact and attend to its design characteristics? Are there examples of this?

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

How do the authors distinguish between EMR and EHR? (Section 1. Background). It seems as if the former concern general practitioners and the latter national healthcare IT systems. However, this is not a common definition and the authors should make their definition explicit.

How are the three performance improvements arrived at (Section 1. Background)? Is this the authors’ own distinctions? What is meant by ‘logistics’ in the first item? Where would quality of care and continuity of care – which also could be possible improvements – fit into the three items?

The following sentence could be unfolded more or be re-written, since I at present do not understand what the authors mean: “The intended consequences of EMR adoption and assimilation in primary care settings are thus found to have an added artefactual/cognitive determination, that is, irrespective of the behavioural/conative and attitudinal/affective determinations previously demonstrated.” (Section 4.2)

Based on which argument or similar surveys is the 16% response rate deeming to be satisfactory.”.

Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

Section 3.2. “…a list of twenty-four EMR functionalities”. It would be helpful with a reference to Table 1 here.
Section 3.2. “a set of 26 potential individual (physician) and organizational (medical practice) impacts of EMR systems”. Presumably this are the 24 items listed in Table 2. Please insert a reference to the table here and correct the number of items (if this is the correct table. Otherwise, a list of the 26 impacts should be added).

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests