Author's response to reviews

Title: The Role of organizational context and individual nurse characteristics in explaining variation in use of information technologies in evidence based practice

Authors:

Diane M Doran (diane.doran@utoronto.ca)
Brian R Haynes (bhaynes@mcmaster.ca)
Carole A Estabrooks (carole.estabrooks@ualberta.ca)
Andre Kushniruk (andrekk@uvic.ca)
Adam Dubrowski (adam.dubrowski@gmail.com)
Irmajean Bajnok (ibajnok@rnao.org)
Linda McGillis Hall (lmcgillishall@utoronto.ca)
Mingyang Li (xiaogang.li@utoronto.ca)
Jennifer Carryer (doran.research@utoronto.ca)
Dawn Jedras (dawn.jedras@gmail.com)
Yu Qing Bai (yuqing.bai@utoronto.ca)

Version: 2 Date: 23 July 2012

Author's response to reviews: see over
Re: The Role of organizational context and individual nurse characteristics in explaining variation in use of information technologies in evidence based practice

We would like to thank the reviewers, Dr. Honey and Dr. Thomas, for their very helpful review of our manuscript. We have revised the manuscript in response to the issues raised by the two reviewers. I have summarized our response below.

Reviewer's report
Reviewer: Michelle Honey

Reviewer's report:
Major Compulsory
1. Abstract – When reading the abstract first, terms such as ACT do not make sense. Edit to remove abbreviations and increase clarity in results section.
   - We have removed abbreviations such as “ACT” and increased clarity in the results section.

There are 3 measures you used – the RNAO BPGs, Nursing +, and Lexi/PEPID, but your abstract only mentions 2.
   - We have included the research findings for Lexi/PEPID.

For conclusions consider if your results truly indicate that accessing information resources supported nurses’ evidence-based practice. I don’t believe you looked at practice, rather just information accessing. A further study might be needed to show accessing evidence does impact on practice.
   - We revised the conclusion to the following: “Access to PDAs and Tablet PCs supported nurses’ self-reported use of information resources.”

2. Clarify actual numbers in study, not just sample size. In the Abstract and Methods you mention sample size and response rate as a percentage; then numbers under results. This would help the reader make sense of your tables.
   - We have revised the way sample numbers are reported. To avoid confusion we report on 710 who participated at time 1 and 469 participants for whom complete data were available at time 2. All analyses were conducted on the 469 who participated at both time 1 and time 2. The tables have been revised accordingly.
3. Methods – please clarify timing. How long after T1 was T2?
   - Timing has been clarified on page 11.

4. Survey development – please provide rationale for inclusion of the concepts and items chosen.
   - A rationale has been provided for inclusion of the study concepts and approach to measurement (see page 13).

5. Did you pilot the surveys used at T1 and T2? If so describe this, and if not why not?
   - We explain on page 13 that because the surveys had been used in several previous studies, some of which involved nurses, we did not pilot them for use in our current study.

6. Results – You had complete T1 and T2 data for 504 participants. Is this all that you used for your results? It seems to read so. Please clarify.
   - Although there were 504 participants who participated at time 2, there were 469 for whom complete data were available. Analysis was conducted on the 469 participants. In order to avoid confusion we have revised the sample description and clarified that analysis was conducted on 469 respondents.

7. Check table 2, as numbers do not match T2 numbers.
   - There were 119 respondents who failed to report device use and 36 respondents indicated they used both a PDA and Tablet PC. 97 respondents indicated they never used a mobile device during the study. So we did not count them as the participants of this study. For these 97 respondents, their responses were not included in the Chi-square analysis because it was not possible to determine which type of device they had been provided.

8. 97 did not use the devices at all. This seems an important point and needs to be explained.
   - We provide an explanation on page 17 and discuss the findings on page 21.

9. You submitted 3 figures but fail to refer to them in text. There are figures for 2 of the 3 measures RNAO BPGs, Nursing +, but not Lexi/PEPID, why?
   - We have made reference to the figures in the text (p. 20) and have included a figure for the Lexi/PEPID outcome.

10. Table 4 does not include Lexi/PEPID, why?
    - The ICC and DE are now included for Lexi/PEPID.

11. Study implications – do not all seem to directly draw from your study.
Minor Essential
    - The study implications have been revised.
1. You need to be consistent with the terms you use. Keywords indicate “mobile computing”, so if you prefer go with this term, instead of mobile, handheld and portable, all which you use interchangeably.
   - We have changed mobile computing to mobile technology.

2. Please check and edit your use of abbreviations and carefully follow usual conventions throughout. This lack of attention to detail detracts from the readability of your work.
   - We removed unnecessary and potentially confusing abbreviations.

3. Multiple typographical errors – where you have table instead of tablet (in text and tables).
   - We have corrected typographical errors.

4. Check referencing and apply consistently. Journal title is in italics, not the article. Also Reference 11 – check second author surname. Inconsistent use of journal abbreviations.
   - Corrections have been made to the reference format.

Discretionary
1. Given you make the point about the participants coming from 3 sectors, it would be helpful to present individual characteristic results by sector.
   - Individual characteristics in this study did not have a strong role in explaining variation in the use of information resources. For this reason and because the manuscript was already long, we chose not to report the individual characteristic results by sector.

2. Check dated reference ie Reference 25, Lacey 1994 – is this really the best reference here, given this work is over 15 years old.

3. I believe lack of choice of participation and also in device may be important but you don’t discuss this at all.
   - We have added discussion about why nurses chose not to use their devices on page 21 of the paper. Unfortunately we have limited knowledge of why nurses chose not to participate in the study.

4. Under Background you note that the RNAO launched a best practice program in 1999. It would be worth explaining why funding of mobile devices is occurring 10 years later. Was there a poor uptake?
   - We note on page 6 of the manuscript, that while the RNAO launched the Nursing Best Practice Guidelines Program in 1999, it was only at the time the Ministry of Health and Long-Term Care launched their PDA initiative that the guidelines were adapted for PDAs and smartphone use. Until that time, the BPGs were only available as Adobe PDF files or in hard copy.
5. You are using 3 measures - RNAO BPGs, Nursing +, but not Lexi/PEPID. Suggest you state this clearly and maintain consistency in how you refer to them throughout.
   - We chose to add the analysis of the Lexi/PEPID outcome to the paper.

6. The first paragraph under Related Literature would read well as an introduction. Much of the following paragraph does not seem to be directly relevant until you come to mention the UK work of Honeybourne. You report this work in some detail, but with minimal critique. It seems as though the sample size was small.
   - We have moved the first paragraph of the related literature to the introduction and have added a comment about the small sample size of the Honeybourne paper.

Reviewer's report

Reviewer: Alan Thomas

Minor issues not for publication
1. In Abstracts, Results first sentence refers to Table PC rather than Tablet PC. Also in the Methods section the same ‘Table for Tablet’ error is repeated in Data Collection Tools section in the fourth sentence. Also in Results, paragraph three, in sentence two, and also sentence three has the Table for Tablet error. Also in Discussion section, Organization Context, in discussion about the negative relation to staff slack time, (or Table PC) is used rather than Tablet PC (sentence eight).
   - We have corrected all places where table was used instead of Tablet.

2. It would be useful to know what devices were used in the study, such as the types of PDA, Smartphone, Tablet PC (notebooks, laptops or true tablet PCs or iPads?).
   - We agree with this comment however it was not possible to consistently track the brand names of all devices and because the study was about difference between PDA/smartphone and Tablet PC, we chose not to publicize the manufacturers for whom we had knowledge. It would be difficult to profile some (i.e., BlackBerry and iPhone) and not others.

3. Was the different device and network performance taken into account?
   - Not specifically. Nurse respondents did not always know what network was being used in their organization for wireless communications. We did examine differences by type of device but not by specific models or manufacturers because there were too many to have adequate cell size for such analysis. Even among the BlackBerry users there were multiple models used.

4. The authors state that the Tablet PC’s were shared, but do not give any ratios to assess how easily a nurse could access the PC. If such data were available it would be useful. Do they have any data on how much of a barrier sharing the Tablet PC was?
   - This is an excellent point. Unfortunately we can only hypothesize about the implications of nurses sharing devices as opposed to having their own dedicated device. This observation came from qualitative data. We have noted in implications for future
research that it would be useful to incorporate a measure of ease of access where nurses are sharing devices (pg. 24).

5. How was the reference material given to the nurses? Was the drug and medical books installed onto the devices or accessed on line? It would possibly have implications for speed of access and thus frequency of use.
   • On page 5-6 we have clarified the format for accessing the electronic resources.

6. Also consider including discussions of similar findings of other studies such as the UK study into Organisational influences on nurses use of clinical decision support systems, by Randell & Dowding (Int. J. of Medical Informatics 79 (2010) 412-421
   • Thank you for the suggestion. We have added the Randell and Dowding paper to our discussion on pages 23-24.

Thank you for reviewing our manuscript. I trust our revisions satisfy the excellent points raised by the two reviewers.

Sincerely

Diane Doran, RN, PhD, FCAHS
Professor,
Lawrence S. Bloomberg Faculty of Nursing
University of Toronto
155 College Street, Toronto, ON
M5T 1P8