Author's response to reviews

Title: Satisfaction with Web-Based Training in an Integrated Healthcare Delivery Network: Do Age, Education, Computer Skills or Attitudes Matter?

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Version: 2 Date: 27 June 2008

Author's response to reviews: see over
We thank the reviewers for their valuable suggestions.

- The specific changes are marked with MS Word Tracking Tool in the document web_based_training_CHANGES.doc.

- The final version of the manuscript is named as web_based_training_REVISED.

Specific point-by-point response to comments (italicized) are detailed below:

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**Editor**

*We would be grateful if you could address the comments in a revised manuscript and provide a cover letter giving a point-by-point response to the concerns.*

*Please also do the following:*

(1) Document, within your manuscript, the name of the ethics committee which approved your study.

The study was approved by the Cleveland Clinic Institutional Review Board (sentence at page 8, para 3 has been revised to include the name of the committee).

(2) Document, within your document, whether informed consent was provided to you by your study participants.

The IRB waived the requirement for informed consent as the survey involved “no more than minimal risk” to the respondents. This sentence is now included in the manuscript (page 8, para 3).

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Reviewer A
Title: A Survey of Web-Based Training in an Integrated Healthcare Delivery Network: Do Age, Education, Computer Skills or Attitudes Matter?
Version: 1 Date: 21 April 2008
Reviewer: Shaun Treweek

General
As the authors state, the internet offers the possibility of using web-based systems to deliver CME and other training. The key word, of course, is ‘possibility’ and it is good to see that the authors are studying the actual uptake of their CME program. I don’t have any major concerns about the paper, and those I have ought not to be hard to deal with. My specific comments are listed below under the headings used by Biomed Central.

Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)
None

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests.

Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)
None.

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

Title
The primary outcome of the study is satisfaction and I think this should be mention in the title. The easiest way to do this would be to change the ending of the title to ‘...attitudes matter for satisfaction?’. The authors may have a better suggestion but as it stands the title suggests that effectiveness was measured, which is not the case.

We agree that the primary outcome of the study is satisfaction as reflected in the abstract, results and conclusions. Based on reviewer's suggestion, we have modified the title to "Satisfaction with Web-Based Training in an Integrated Healthcare Delivery Network: Do Age, Education, Computer Skills or Attitudes Matter?"
Figures

1. There is no reference in the text to Figure 3. I think it would be fine to drop this

Figure 3 shows the effect of education level on satisfaction with web-based training. However, we do not strongly feel that this figure has to be included in manuscript. We have removed it from the revised version and renumbered Figure 4 to Figure 3.

2. The figure labels (ie. Figure 1, Figure 2 etc) obscure parts of some figures, which needs to be sorted out. Also, while colour helps on-screen to discriminate between, say, different sexes, when printed out on a black and white printer (as I did) it is impossible to tell the difference. The same is true of the categories of Figure 1. It would be useful to use, say shading (Figure 1) and different shaped symbols (Figure 2) to make it easier to tell what is what.

We have reformatted the figures 1 and 2 by using different shades and colors to ensure the distinction between the groups is clear in black and white prints. The modified figures are resubmitted with the revised version of the manuscript.

3. Figure 2 has a symbol ‘se’; it is not clear what this is and, as far as I can see, could be removed without losing useful information.

'se' stands for standard error. Since, the figure is self-explanatory, we have removed ‘se’ from the figure.
**Reviewer B**

Title: A Survey of Web-Based Training in an Integrated Healthcare Delivery Network: Do Age, Education, Computer Skills or Attitudes Matter?
Version: 1 Date: 22 April 2008
Reviewer: Vernon Curran

Reviewer's report:

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Needs some language corrections before being published
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'

Major Compulsory Revisions

1. There were some grammatical errors and omissions and the authors should conduct a thorough review to ensure these are corrected.

All corrections are individually marked with MS Word Tracking Tool in the document web_based_training_CHANGES.doc. Major corrections are also mentioned below:

a) page 4, para 2: "Future studies should aim to measure long-term outcomes of effectiveness of web-based training" is revised to "Future studies should aim to measure the long-term outcomes of web-based training."

b) page 5, para 2: "Moreover, it can also result in substantial time savings for the faculty and instructors" is revised to "Moreover, it can also substantially save time for the faculty and instructors"

c) page 5, para 2: "Furthermore, many hospitals and clinics are upgrading their information technology infrastructure as they increasingly adopt electronic health records." is revised to "Furthermore, many hospitals and clinics are upgrading their information technology infrastructure as they increasingly adopt electronic health records."

d) page 6, para 1: "There has been concern that web-based training may not be suitable for all learners as they may have different learning styles, education levels, computer skills and attitudes towards technology. The question as to whether web-based training is a practicable option in a healthcare setting remains to be answered and must be explored before web-based training is adopted on a large scale." is revised to
"Is web-based training suitable for all learners with different learning styles, education levels, computer skills and attitudes towards technology? This question much be addressed before web-based training is adopted on a large scale."

e) page 7, para 2: “drag and drop” “multiple choice questions” is revised to “drag and drop,” “multiple choice questions”

f) page 8, para 1: "The database also helped us assign users to appropriate training role (i.e. clinician, administrator, or other) based on their job profile." is revised to "The database also helped us assign users to appropriate training roles (i.e. clinician, administrator, or other) based on their job profiles."

g) page 10, para 1: To apply this method to the continuous predictor “age” is revised to To apply this method to the continuous predictor “age,”

h) page 11, para 1:"A majority of the respondents (92.3 %) had used a computer before but only 50% previously participated in web-based training." is revised to "Most of the respondents (92.3 %) had used a computer before but only 50% had previously participated in web-based training."

i) page 12, para 1: " At the 0.01 level of significance and using a 0.99 bootstrap reproducibility measure, multivariable ordinal regression model found all the identified constructs excepting Computer Proficiency as significant predictors " is revised to "At the 0.01 level of significance and using a 0.99 bootstrap reproducibility measure, multivariable ordinal regression found that all the identified constructs except Computer Proficiency were significant predictors"

j) page 15, para 1: "Although other institutions may require additional resources and expense, web-based training can still prove to be cost-effective when compared to traditional learning." is revised to "Although other institutions may require additional resources and expense, web-based training can still prove to be cost-effective when compared to traditional learning methods."

2. As well, the conclusions made by the authors are not in fact entirely correct - they suggest that "web-based training....can be used to satisfactorily train...". The authors did not assess or demonstrate that the web-based training product under study had in fact resulted in knowledge gain or behavioral change, so it is not possible to make the inference they do in this statement. Rather, they should state something like "the study findings suggest that web-based training was perceived as a satisfactory mode of learning by an interprofessional group of healthcare providers in (subject y).....". This would need to be changed in the abstract, intro and conclusions.
The main outcome of the study is satisfaction with web-based training and not knowledge gain or behavioral change. We have mentioned this in various sections of the study and emphasized in discussion and conclusions. E.g.

- "Future studies should aim to measure long-term outcomes of effectiveness of web-based training." (Conclusions- page 4, para 2)
- “Several potential limitations of this study need to be addressed. First, our study was designed to measure satisfaction and did not test for actual change in knowledge or behavior. " (Discussion section- page 15, para 2).

In order to further highlight this aspect, we have made the following revisions in abstract, introduction and conclusions

a) Included the word "Satisfaction" in title and key words.

b) Abstract section (page 4, para 2)
"Conclusions: The study shows that web-based training, when tailored to learners’ background, can be used to satisfactorily train a broad spectrum of healthcare professionals, irrespective of their age, education level or prior computer experience." is revised to
"The study shows that web-based training, when tailored to learners’ background, is perceived as a satisfactory mode of learning by an interdisciplinary group of healthcare professionals, irrespective of age, education level or prior computer experience."

c) Discussion Section (page 13, para 1)
"This large-scale study demonstrates that web-based training can be satisfactorily deployed for healthcare workforce spread over different geographic areas" is revised to
"This large-scale study demonstrates that web-based training can be deployed for healthcare workforce spread over different geographic areas, without compromising learner satisfaction."

3) The authors also suggest that the literature on web-based training in healthcare setting is limited, which in fact is not correct. There is significant literature regarding web-based CME, including a number of review studies on the effects and evaluation of web-based CME (see Chumley-Jones, Curran and Fleet). I would also not agree with the assumptions made by the authors in paragraph 3 under Discussion section "There are many successful case studies....but most of these evaluated students...." (review of web-based CME literature would question this assumption) and "This limits their adoption...." (again more attentive review of web-based CME literature).

We agree with the reviewer that there is an existing literature on web-based CME (see references 31 and 37). However, it is not generalizable to other settings since learners in web-based CME are highly self-selected group of learners who are generally computer-savvy and have advanced education level. One of the main strengths of our study is that
we studied satisfaction across a wide-spectrum of healthcare employees with different education levels, computer skills and attitudes towards technology. In addition, our study does not suffer from selection bias seen in web-based CME studies, since compliance with HIPAA Privacy rule required all employees to take this course.

To reflect reviewer's viewpoint on web-based CME, we have made the following revisions-

a) Background section (page 6, para 1) "However, most of the literature supporting web-based education and training involves small groups of learners with similar backgrounds and high education status, such as students attending off-campus programs" is revised to "However, most of the literature supporting web-based education and training involves small groups of learners with similar backgrounds and high education status, such as students attending off-campus programs or professionals attending web-based continuing medical education (CME)."

b) Discussion section (page 14, para 2) “There are many successful case studies on web-based training reported in the literature but most of these evaluated students in a special environment such as university campuses or are limited to certain specialties like dermatology, radiology or anatomy” is revised to “There are many successful case studies on web-based training reported in the literature but most of these evaluated students in a special environment such as university campuses or were restricted to computer-savvy professionals in certain specialties or settings (such as web-based CME).”

4) I would also be interested in further comments from the authors on how generalizable their findings are to other types of web-based training and subject areas?

Our study sample included physicians, clinical researchers, pharmacists, nurses, secretarial staff etc. with varying levels of computer skills and education. Hence, we feel our study findings are generalizable to a wide spectrum of healthcare employees with varied job roles and education levels. We did not have enough sample size for employees with less than high school education and cannot draw any definite conclusions for this subset of healthcare workers.

Our lessons were designed in a series of case-scenarios using several familiar interactive modalities including “drag and drop”, “multiple choice questions” and “hotspots”. These aspects are generalizable to other settings and subject areas. As mentioned in the limitations section, student- instructor and student-student communication was not part of our online training. Hence, we cannot draw conclusions about satisfaction with online training where two-way communication is a key piece of instruction (such as online discussion boards, chat, webcasts).
Thanks
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(corresponding author)