Reviewer’s report

Title: Web-based family history assessment for colorectal cancer (CRC) risk analysis - satisfaction and efficiency comparison of two interfaces

Version: 3 Date: 23 June 2015

Reviewer: Siyu Qian

Reviewer’s report:

The manuscript has been improved. However, there are still some issues to be addressed.

Major compulsory revision

1. Title. It will be better to mention that the comparison is between a diagram-based interface and a questionnaire-based interface.

2. Abstract. My previous comment about the inconsistency between the abstract and the main body of text is not sufficiently addressed. The abstract, although revised, is still not consistent with the main text. For example, in the abstract, the authors mentioned accuracy and effectiveness of the tool, however these were not examined in this paper. The main finding about the efficiency of the tool is lacking in the abstract.

3. Background. There is no response to the 2nd comment for major compulsory revision in my previous comments.

4. Background. In the 2nd paragraph, there is an 8-line long sentence “The New Zealand Guidelines Group (NZGG), later replaced by the Colorectal Cancer Working Group instituted by... enter a patient in an endoscopic surveillance program for CRC should be based [4].” This sentence needs to be broken down into 2 or 3 sentences to increase readability.

5. Background. In the 4th paragraph, it is better to explicitly tell the reader that the two interfaces are diagram-based interface and questionnaire-based interface. I’ve made this comment previously.

6. Background. In the 10th paragraph, it is better to restate that the two interfaces are diagram-based interface and questionnaire-based interface. Otherwise, it is still unclear what are the “both versions”.

7. Methods. 2nd paragraph, the aim developing “an assessment algorithm” is not consistent with the aim you mentioned in the Background “to develop a web-based tool”. The development of the algorithm is part of the development of the web-based tool. The second aim is not accurately stated.

8. Methods. D. Usability Evaluation 3. Method 1) Task, 2nd paragraph, the meaning of this paragraph is not clear.
9. Methods. D. Usability Evaluation 3. Method 5) Statistical analysis, I think you should not conduct t-test, because your data did not follow normal distribution. Why did you conduct t-test, then normality test, and finally Mann-Whitney test? Shouldn’t the normality test be done before deciding on whether a t-test or Mann-Whitney test to use?

10. Results and Discussion, 1) Efficiency Evaluation, in this section, I think you only need to present the results of normality test and Mann-Whitney test. See my comment about statistical analysis above.

11. Results and Discussion, 1) Efficiency Evaluation, when conducting the statistical comparison, did you exclude the outliers shown in the boxplot? If not, why?

12. Results and Discussion, 2) Satisfaction Evaluation, 9th paragraph, the meaning of this discussion paragraph is not clear. The 3rd and 4th sentences do not make sense. The last sentence needs references to Simon et al. and Becker et al.

13. Results and Discussion, 3) Other Findings, 1st paragraph, “the question asking for error messages was not answered by 12 subjects carrying out the questionnaire-based interface and 8 subjects with the diagram-based interface.” It is not clear what exactly this question is.

14. Results and Discussion, 3) Other Findings, 1st paragraph, can this finding imply the effectiveness of the family history assessment? If it can, is the assessment effective nor ineffective?

Minor essential revision

15. Methods. Some information was repeated. The information presented in D. Usability Evaluation 3. Method 1) Task, 5nd paragraph, “In addition, all information entered by a subject ...” and the whole 6th paragraph, has been presented in D. Usability Evaluation 2. Subject. You only need to present it once.

16. Methods. D. Usability Evaluation 3. Method 2) Questionnaire, please add one sentence to tell the reader that two questionnaires were used: an after-scenario questionnaire and a participant demographic questionnaire.

17. Results and Discussion, 1st paragraph, This information “a Science Festival event in Dunedin, New Zealand volunteered to participate in this study.” should be moved to the Subject section.

18. Results and Discussion, 2nd paragraph, again you repeat the information “A one-sided printed piece of paper showing the risk level of CRC, corresponding recommendations and a summary of familial medical history for each subject was given as a reward upon conclusion of the test.” that has been presented in Subject section.
19. Results and Discussion, 1) Efficiency Evaluation, 1st paragraph, please move the information about alpha level to the statistical analysis section.

20. Results and Discussion, 2) Satisfaction Evaluation, again repeating information “The after-scenario questionnaire was used to collect data for the user satisfaction evaluation of each interface in this study.” which has been presented. Please delete it.

21. Results and Discussion, 2) Satisfaction Evaluation, this information “The negatively worded scale items in the questionnaire were recoded before the data were analysed.” should be moved to statistical analysis.

22. Results and Discussion, 2) Satisfaction Evaluation, 3rd paragraph, do you mean Cronbach’s “alpha”? you also need to add this information in Statistical Analysis. Don’t need to mention “seventeen items” in the end of this paragraph again.

23. Results and Discussion, 2) Satisfaction Evaluation, 7th paragraph, you have mentioned this information before “SPSS advises to use the Shapiro-Wilk test when sample sizes are below 50”, you do not need to mention it again.

24. Results and Discussion, 3) Other Findings, 5th paragraph. This paragraph is about limitation. Suggest to make it an individual section.

25. Conclusion, 2nd paragraph, “While the diagram-based interface had only one web page to enter related information, with the questionnaire-based interface there were at least eleven pages to fill in and even forty five at most depending on how extensive the family history was. The structure required the subjects to put more effort (i.e. more mouse clicking and reading the pages) on the assessment so that the task time could not be efficient in the end.” These are new interpretations that are not presented in the discussion. Need to move this information to discussion.

26. Conclusion, 2nd paragraph, please explicitly tell what the “reason” is.

Discretionary Revisions
None.

Minor issues not for publication
1. Methods, A. Construction of the assessment algorithm 7th paragraph, need to change “lifetime Risk Calculation” to lowercase.

2. Methods, B. Questionnaire based interface development, 1th paragraph, “The questions comprised open field questions and radio buttons relating to when the cancer was diagnosed, whether did he/she have had multiple polyps, and
whether did he/she have had other cancers before.”

3. Methods, D. Usability Evaluation 1. Study Variables, 4th paragraph, “Physical disabilities may also affect a subject’s performance, such as uncorrected vision impairment and physical disabilities of fingers, wrist, arm, shoulders and/or neck, however no participants with these disabilities have been were identified with the demographic survey questionnaire.”

4. Methods, D. Usability Evaluation 2. Subjects, 2nd paragraph “consent from” should be consent FORM.

5. Methods, D. Usability Evaluation 2. Subjects, the “After Scenario Questionnaire” and the “Participant Demographic Questionnaire”. If you capitalize the first letter, you need to consistently do so in the entire manuscript. In the 2) Questionnaires, you used lowercase. Please choose one presenting format and check for consistency in the whole manuscript.

6. Methods, D. Usability Evaluation 3. Method, Need to rename “3. Method”. This second-level subheading is the same to the big heading of this section. It is confusing.

7. Methods, D. Usability Evaluation 3. Method 1) Task, 3nd paragraph, “second degree relative information was be provided on a single web page.”

8. Methods, D. Usability Evaluation 3. Method 5) Statistical analysis, “A Mann-Whitney Test was performed TO detect differences between the two interfaces while the Little’s MCAR test was used to test for randomness of missing data.”

9. Results and Discussion, 2nd paragraph, “None of them had experience with a family history diagram or anything similar for to CRC assessment purposes prior to this experiment while one subject had used a medical assessment tool via the Internet.”

10. Results and Discussion, 1) Efficiency Evaluation, “The participants who performed the assessment with the diagram-based interface took longer TIME (M=89.2, SD=7.05)”

11. Results and Discussion, 2) Satisfaction Evaluation, “Twenty one study participants did not answer a few questions for some reasons,” should be Twenty-one. Please delete “for some reasons”

12. Results and Discussion, 2) Satisfaction Evaluation, 2nd paragraph, “In 1988 Little’s chi-square statistic was introduced to test whether missing values were completely random”

13. Results and Discussion, 2) Satisfaction Evaluation, 8nd paragraph, “The total score of user satisfaction shows that the questionnaire-based interface was found to be more satisfying to the users for the family history assessment than the diagram-based interface; there was a significant difference between in the total scores of between the two interfaces mode.”
14. Results and Discussion, 3) Other Findings, maybe rename it to “Further Findings”, because in the conclusion section you referred to Further Findings which I guess is Other Findings?

15. Results and Discussion, 3) Other Findings, 1st paragraph, “the question asking for about error messages was not answered by 12 subjects carrying out the questionnaire-based interface and 8 subjects with the diagram-based interface.”

16. Results and Discussion, 3) Other Findings, 1st paragraph, “The comments made by 19 subjects out of 20 stated that they did not find any error messages”

17. Results and Discussion, 3) Other Findings, 2nd paragraph, “one subject out of the forty-five subjects”

18. Results and Discussion, 3) Other Findings, 3rd paragraph, “seven subject out of the forty-five subjects”

19. Results and Discussion, 3) Other Findings, 4th paragraph, “To calculate the level of risk to of developing colorectal cancer, we used the recommendations as published by the New Zealand Guidelines Group. These recommendations provided clear scenarios and they were grouped into three distinct risk categories.”

20. Conclusion, 1st paragraph, “We developed a web-based tool for identifying an individual’s risk of developing colorectal cancer based on the person’s family history and compared the diagram-based interface and the questionnaire-based interface of this tool.”

21. Conclusion, 3rd paragraph, “One possible interpretation of our results could be The findings suggest that users should be presented with interfaces which match their prior experience and that new interfaces should be introduced in an iterative and incremental way building on the known experiences of the users.”

22. Multilevel list is still inconsistent between Method and Result. In the Method, you used letters for the first-level sub-heading, but in the Result, you used numbers for the first-level sub-heading.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

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.