Author's response to reviews

Title: Development and Validation of a Questionnaire assessing the Quality of Life impact of Colour Blindness (CBQoL)

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Version: 1 Date: 23 May 2017

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Ilana B. Friedman (Reviewer 1): I congratulate the authors on their manuscript. The premise of developing the measure is of interest to the readers of the journal and given that there has never been a measure developed before could be of great benefit to patients and ophthalmologist alike. There are numerous questions and concerns that are raised on diagnosing a patient with color blindness and raising awareness of the issue that may be corrected without undue hardship in the workplace and educational system may have great value.

As mentioned in the paper, there was a possible selection bias of the CB individuals and the controls based on the recruitment methods, but this may be an area of further study now that the measure has been validated, to assess whether the conclusions drawn but this initial paper remain valid in a more controlled sample environment.

The statistics are relatively dense and may be hard for the lay reader to grasp which is the reason for the recommendation that they be reviewed to ensure their validity.

Reply: In the second paragraph of the section ‘Limitations of the study’ we have added: “Future research using the CBQoL might benefit from recruiting from non-online sources (e.g. in clinics) and recruiting more working class participants.”

M. Dominik Fischer (Reviewer 2): General Comments:

In the manuscript entitled "Development and Validation of a Questionnaire assessing the Quality of Life impact of Colour Blindness (CBQoL)" the authors present a well-written study on the development and assessment of a new questionnaire, designed to quantify the effect of colour
blindness on patients' Quality of Life. In this experimental study, the authors address an unmet need for a QoL questionnaire specifically tailored for evaluation of colour blindness impact. In this work, the authors first developed the questionnaire with the help of expert and patient focus groups and then validated it based on correlation with existing validated questionnaires. The questionnaire was then employed to assess the effect of colour blindness on QoL in patients with acquired and congenital colour blindness as well as in normal subjects using an online assessment approach. The study successfully demonstrates the validity of the new questionnaire and correctly addresses the limitations of the online study.

This reviewer only has several minor comments, which might help to further improve the manuscript.

Specific comments for revision:

1. For future revisions, please adjust the line numbers to be better aligned with text.

Reply: Agreed, but I think this is something done by the BMC software.

2. The possible score range of the CBQoL questionnaire is not clear (eg. min & max. values)

Reply: An explanatory comment has been added to the first paragraph of the Results section “The scores on the subscales (Table 2) were converted to means (Table 3) with a maximum score of 6 and minimum of 1.”

3. Page 13. Line 9: It is not clear whether the free text questions will be part of the standard CBQoL or were used here experimentally. If standard, please add details on the way those should be handled and scored. Also, the answers to the open questions (or lack thereof) were not mentioned in the text. 4.

Reply: We have now added a note to the end of the first paragraph of the Results section “For the purposes of this initial research into CVD… and are not part of the CBQoL.” We have also added a note to the end of the first paragraph of the Results section: “these responses did not add a great deal to the statistical information and are not discussed below…”

4. If possible, include statistics regarding the average time-length it took to complete the questionnaire, as this might be relevant for future study designs.

Reply: We have now added a note to the end of the first paragraph of the Results section: “these responses did not add a great deal to the statistical information and are not discussed below…”
5. Page 3. Line 7: The authors suggest that the questionnaire could be used to measure QoL response to treatment, yet the proposed study design does not cover within-patient variability (that would require repeated assessment of same patient) nor a measure of test sensitivity and specificity for change assessment. Based on the relatively small variability around the mean score between the subjects in CB group, the question arises, whether the test will be sensitive enough to detect changes especially when they are small. We would ask the authors to include a few sentences to discuss this issue as limitation of the current study.

Reply: This is a good point. We have changed the sentence on page 3 to “The tool developed here could be useful in future clinical studies to measure changes in CBQoL in response to therapy in conditions where colour vision is affected.” We have also included a sentence in the Discussion section suggesting that future studies might use repeated measures to assess response to treatment.


Reply: We have now removed the second instance.