Author's response to reviews

Title: Evaluating vision-related quality of life in preoperative age-related cataract patients and analyzing its influencing factors in China: a cross-sectional study

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Version: 4
Date: 10 October 2015

Author's response to reviews: see over
Reviewer  Haidong Zou

Comments to the Author:
The authors are to be congratulated for their thoughtful response to my critique. I believe they have addressed my concerns and have several small changes I recommend they make before final acceptance.

Answer: Thank you very much for your comments. According to your recommendations, we revised the manuscript. Please see the following paragraphs.

Minor Essential Revisions
1) They indicate that a Cronbach's alpha over 0.7 represents an acceptable reliability. The citation they given was not an adequate mathematical source for this, or if they prefer change the wording to, "...we considered a Cronbach's alpha score over 0.7 to represent a reliable scale."

Answer: Thank you for your suggestion. It made the description more clear and accurate by changing the wording. We have revised the sentence as “We considered a Cronbach's $\alpha$ coefficient over 0.7 to represent a reliable scale.” Please see the first paragraph of reliability and validity (page 8).

2) I think I understand now that they used BCVA instead of presenting visual acuity. I would recommend they explain the reasons in the manuscript. Another question about the visual acuity is what kind of score they used in the regression model: the Snellan equivalent or the logmar score?

Answer: Thank you very much. We explained the reasons in the section of visual acuity testing of the manuscript. The revisions were made as “BCVA in the better eye was used to represent the presenting visual status of the patient in this study. The BCVA was sourced from the patient’s medical records which ensured consistent measurements that were undertaken by doctors. It also further facilitated, on the basis of BCVA, compliance of categorization of visual impairment divisions as specified by
the World Health Organization (WHO).” Please see the section of visual acuity testing.

In the regression model, the visual acuity was used as categorical variable. At first, we tried to express visual acuity in decimal notations and use visual acuity as continues variable. But we found a problem that finger counting, hand movement, and light perception were difficult to be expressed in decimal notations. So we had to use visual acuity as categorical variable. We divided the patients into four groups according to the BCVA in the better eye. Patients with blindness belonged to the first category; patients with low vision belonged to the second category; patients with monocular visual impairment belonged to the third category; patients with mild visual impairment belonged to the fourth category. We had pointed out this in the manuscript using the sentence “All the potential influencing factors were incorporated into the model as categorical variables.” Please see the last sentence in the first paragraph in Page 9.

3) Is the reliability reported in the present study superior to the original Hongkong study? It might still be good in the Discussion section to comment on how the results of the two studies compared.

Answer: Thank you very much for your suggestion. We compared the reliability of our study with that of the Hong Kong study. We found that the Cronbach $\alpha$ coefficients in our study were similar or better than those in Hong Kong study, except for the distance vision activities subscale. We commented the results of the two studies in the first paragraph of the discussion. The revisions were made as the following: The Cronbach $\alpha$ coefficients of the multi-item subscales in our study were similar or better than those of the original Chinese version in the Hong Kong study with the exception of the distance vision activities subscale. The Cronbach $\alpha$ coefficient in the driving subscale, as in the original study, was lower than 0.7.
Reviewer  Yi Lu

Comments to the Author:

The authors have revised their manuscript according to the reviewers’ suggestions. There are several questions still need further explanation and revision.

Answer: Thank you very much for your comments. We revised the manuscript according to your suggestions. Please see the following paragraphs.

1. In abstract, conclusions, “Demographic characteristics, including sex, age, and educational attainment…”, are there any other factors should be added, for example, income? Or the authors should be more specific: “Among all the demographic characteristics, sex, age, and educational attainment…”

Answer: Thank you very much for your suggestion. It made our description more clear and accurate. We have revised the sentence as “Among all the demographic characteristics, including sex, age, and educational attainment, influenced the quality of life in cataract patients.” Thank you again!

2. The introduction is a little bit redundant. This part should be shortened, better within one page.

Answer: Thank you very much. We have revised the introduction and shortened it. The revised introduction was as the following:

Cataracts are the leading cause of visual disability in China, accounting for over 60% of these disabilities. Cataracts are primarily an age-related disease. Of those with visual disability due to cataracts, 90.9% are aged 60 years or older. Compared with other common age-related conditions, visual impairment has greater impact on the quality of life of older adults, including increased difficulties in daily activities, increased depression and social isolation, and an increased risk of falls and fractures. However, little is presently known about the impact of visual impairments on the quality of life of Chinese age-related cataract patients.

The National Eye Institute Visual Function Questionnaire-25 (NEI-VFQ-25) is a reliable questionnaire used to evaluate vision-related quality of life. The original
NEI-VFQ-25, which was a shortened version of NEI-VFQ-51, was developed by Mangione and co-workers, and was widely used by many countries throughout the world. The Chinese version of NEI-VFQ-25 (CHI-NEI-VFQ-25) was developed by Chan and co-workers in Hong Kong. They showed that this questionnaire was an effective means in assessing the vision-related quality of life in Chinese patients with eye diseases. The purpose of our study was therefore to evaluate the vision-related quality of life in preoperative age-related cataract patients in mainland China, using the CHI-NEI-VFQ-25, together with identifying its influencing factors. The results will help the Chinese public understand the impact of age-related cataracts on the quality of life in China, so that they will have more impetus to maintain their visual health.

3. The authors chose age-related cataract patients as subjects. So it should be more specified in description. Please add “age-related” in title, abstract and relevant part in the manuscript.

Answer: Thank you very much. According to your suggestion, we have added “age-related” in title, abstract and relevant part in the manuscript. For your convenience, we present the sentences where we added “age-related”:

1) The title was revised as “Evaluating vision-related quality of life in preoperative age-related cataract patients and analyzing its influencing factors in China: a cross-sectional study”

2) In the abstract, the revisions were made as “To evaluate vision-related quality of life in preoperative age-related cataract patients in China, u…” (background);

“Among all the demographic characteristics, including sex, age, and educational attainment, influenced the quality of life in age-related cataract patients.”(conclusions)

3) In the background, the first paragraph “However, little is presently known about the impact of visual impairments on the quality of life of Chinese age-related cataract patients.”; the second paragraph “The purpose of our study was therefore to evaluate the vision-related quality of life in preoperative age-related cataract patients in
mainland China, using the CHI-NEI-VFQ-25, together with identifying its influencing factors. The results of this study will help the Chinese public understand the impact of age-related cataracts on the quality of life in China,…”

4) In the section of Instruments and interview, the first paragraph “We used the CHI-NEI-VFQ-25 to assess the quality of life of age-related cataract patients”.

5) In section of conclusion, “The results of the present study suggested that visual impairment due to age-related cataracts significantly decreased the vision-related quality of life.”; “Overall, this study provides information describing the vision-related quality of life in Chinese age-related cataract patients, …”.

4. On page 5, Methods, Population, the inclusion criteria, “patients aged 40 years or older; the presence of age-related cataract…”. Age-related cataract should be diagnosed in old patients, so the age of the patients should be limited as the aged people. Furthermore, “the presence of age-related cataract…” , “Diagnosed as age-related cataract…” should be more proper.

Answer: Thank you very much for your comments and suggestion. We agree with your comments. “40 years and older” was a little young for selecting age-related cataract patients. But it was only the first step for selecting potential patients. And then, the doctors would examine these potential patients and make sure whether they had age-related cataracts. The whole criteria ensured that we could select the right patients. According to your suggestion, we have revised the sentence as “patients diagnosed as age-related cataract(s) without other major eye diseases, such as glaucoma, macular degeneration, or diabetic retinopathy”.

5. On page 6, paragraph 1, “which provided the diagnostic basis for selecting eligible patients” should be deleted.

Answer: Thank you for your suggestion. We have deleted “which provided the diagnostic basis for selecting eligible patients”. The revised sentence was “All of the cataract patients had a complete ophthalmic and physical examination before the
operation.” Please see the first paragraph of population on page 5 in the revised manuscript.

6. On page 6, paragraph 3, “All patients were questioned…”, “evaluated” should be better.
   Answer: Thank you for your suggestion. We revised the sentence as “All patients were evaluated in an interview, using the CHI-NEI-VFQ-25, by the interviewer (Min Zhu) the day before surgery.”

7. On page 7, paragraph 2, first sentence does make sense and redundant, please delete.
   Answer: Thank you for your suggestion. We have deleted the first sentence (The best-corrected visual acuity (BCVA) in each eye was the best vision after appropriate eyeglass correction.).

8. On page 13, paragraph 1, cataract surgery mostly operated on outpatients in Taiwan and Japan. So the difference between “outpatient” and “inpatient” may not be the major reason which caused the difference in scores. Are there any other possible reasons?
   Answer: Thank you for your comments. We read the two references about Taiwan and Japan studies carefully and compared our study with those two studies respectively. We also thought that the original reason was actually unsuitable to explain the differences in the composite scores. We feel very sorry about that. Through comparing with the studies of Taiwan and Japan, we thought that the main reason was that the characteristic of cataract patients in our study was different from that in Taiwan and Japan studies. Patients in our study were about to receive cataract surgery and were expected to have lower visual acuity and lower NEI-VFQ scores, while the patients in Taiwan and Japan did not necessarily receive cataract surgery, and their visual acuities may not have been seriously impaired. As you commented, there were some other reasons. In order to make our arguments persuasive, we
compared our study with the Greek study. The characteristics of the patients with mild visual impairment in our study and Greek study were very similar, but the score were different. So it was reasonable to conclude that the vision-related quality of life not only correlated with visual acuity, but was also influenced by other factors, such as socioeconomic level, cataract surgical service, and support from family and society.

We have revised the manuscript as the following:

The composite score of Chinese cataract patients (63.0) was lower than those in Taiwan (73.5, n=53) and Japan (66.0, n=96), respectively. It should be noted that the patients who undertook this study were about to undergo cataract surgery which was expected to result in lower visual acuity and lower NEI-VFQ scores. Alternatively, patients in Taiwan and Japan may not have undergone cataract surgery or their visual acuities may not have been seriously impaired. Another study by Labiris et al. assessed the quality of life for cataract patients waiting for cataract surgery in Greece. The composite score of the Greek cataract patients was higher than the Chinese patients with mild visual impairment, whose age (62.5 years, n = 85) and BCVA (0.3-0.8 in both eyes) were similar or even better than the visual acuity of the Greek cataract patients. It followed that vision-related quality of life not only correlated with visual acuity, but was also influenced by other factors, such as socioeconomic level, cataract surgical service, and support from family and society.

9. On page 13, line 11 and 18, the authors compared the difference between their research and the study in Greece. Why discussed separately? Should the authors add the detailed description of patients in line 11, because they had done in line 18.

Answer: Thank you very much. We are sorry for the redundant description. The characteristics of the patients with mild visual impairment in our study were similar as the patients in the Greek study. So those two groups of the patients would be comparable. In order to make the description more clear, we compared the composite score between the patients with mild visual impairment in our study and the patients in the Greek study. The revisions were made as the following:
Another study by Labiris et al. assessed the quality of life for cataract patients waiting for cataract surgery in Greece. The composite score of the Greek cataract patients was higher than the Chinese patients with mild visual impairment, whose age (62.5 years, n = 85) and BCVA (0.3-0.8 in both eyes) were similar or even better than the visual acuity of the Greek cataract patients. It followed that vision-related quality of life not only correlated with visual acuity, but was also influenced by other factors, such as socioeconomic level, cataract surgical service, and support from family and society.

10. The discussion is still too long, please refine it. Shorten by 30% would be more appropriate.

Answer: Thank you very much for your suggestion. We have revised the discussion and do our best to refine it. Please see the discussion in the revised manuscript. Thank you again!