Author’s response to reviews

Title: Quality analysis of smart phone sleep apps in China: Can apps be used to conveniently screen for obstructive sleep apnea at home?

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Author’s response to reviews:

Dear Editors and Reviewers:

Thank you for your letter and for the reviewers’ comments concerning our manuscript entitled “Quality analysis of smart phone sleep apps in China: Can apps be used to conveniently screen for obstructive sleep apnea at home?” (ID: MIDM-D-19-00187). Those comments are all very valuable and very helpful for revising and improving our paper as well as the important guiding significance to our researchers. We have studied comments carefully and have made corrections which we hope meet with approval. Revised portions were marked in yellow in the paper. The main corrections in the paper and the responds to reviewers’ comments are listed below.

Reviewer 2 Adam Dunn

1) Respond to comment “Remove all contractions from the manuscript”

Answer: We have moved all contractions from our manuscript according to reviewer’s comments.

2) Respond to comment “Check carefully for errors throughout, including line 375 "it's" - most of the new changes to the manuscript have introduced new errors in grammar and typos. Always thoroughly check your revisions to meet the expected standard, it is definitely the worst time to introduce new errors into the manuscript after the work has already been deemed "potentially acceptable".”
Answer: We have sent this manuscript to recommended English editor American Journal Experts (http://bit.ly/AJE_BS) to check and correct the errors in grammar and typos.

3) Respond to comment “The authors state that "One assessor (XZF) conducted all the app quality evaluations, and the results were verified by a second assessor (LYY)." This does not mean that the results were independently examined and measures of inter-rater reliability are thus inappropriate. It means that the second assessor was not blinded to the initial evaluation and simply decided when they disagreed with the original. Given that these scales are the central contribution of the research, there is a critical flaw in the evaluation of the scale and the authors cannot claim that the method they used to assess the apps is reliable. This would need to be very clearly specified in the limitations and carefully described in the discussion. I would not accept a change in the writing to suggest that the evaluation was independent after this has been stated in two versions of the manuscript.”

Answer: It’s really true as Reviewer suggest that the evaluation procedure of this study was not clearly described in this manuscript and the limitation of our study should be specified. Line191-194 “One assessor (XZF) conducted all of the app quality evaluations and calculated the primary evaluation score, and the results were verified by a second assessor (LYY). If there were differences between the two assessors, the results would be discussed by the two assessors and obtain the final evaluation score.” was added to clarify the evaluation procedure in our study. Line 390 to 394 “In our study, the ICC of the evaluation scale was quite high, meaning that the inter reliability of our evaluation scale was good. However, only two assessors conducted the evaluation procedure in our study, and the second assessor was not blind to the primary results; thus, more assessors should be recruited in the future to test the consistency of the evaluation scale.” in Discussion part and Line 400 to 405 “In our study, the evaluation procedure was conducted by one assessor the first time, after which the results were verified by a second assessor. If there were differences between two assessors, the results would be discussed by two assessors to obtain the final evaluation score. Therefore, the second assessor was not blind to the initial evaluation, which may have affected the accuracy of the results and the inter reliability.” in Limitation part was added to describe the evaluation procedure in our study and pointed out the limitation of our study.

4) Respond to comment “Spearman's rho is an unusual choice for measuring inter-rater reliability, and I would suggest instead using something that will be more familiar to readers such as Cohen's kappa. No measure of inter-rater reliability is especially useful but go with the standard. When reporting kappa avoid calling it "coefficient of accountability" and instead say "Cohen's kappa for the accountability criterion was 0.XX (p=0.00X)"
Answer: It’s really true as reviewer suggested that the Spearman’s rho is unusual for measuring inter-rater reliability. To solve this question, we consulted a statistical expert in Public health department in Sun yat-sen University. As the expert suggested that, in our study, there were three domains in our evaluation scale. The scores of evaluation scale were ordinal categorical variables. According to the advice of statistical expert and previous study (see reference 17), Intraclass correlation coefficient (ICC) was more suitable for ordinal categorical variables compared to Cohen’s Kappa which was commonly used in binomial variable or non-ordinal variable. Therefore, in our study, we chose Intraclass correlation coefficient (ICC) to analyze the inter reliability of our evaluation scale. The inter reliability of evaluation part was rewritten. Line 297 to 304 “Two researchers analyzed the quality of these apps using the same evaluation scale. According to previous study[17], we used intraclass correlation coefficient (ICC) to analyze the inter reliability of the primary evaluation score and the final evaluation score. The ICC for the total score was 0.844 (P<0.001), the ICC for scientific basis was 0.762 (P<0.001), the ICC for functionality and usability was 0.715 (P<0.001), and the ICC for accountability was 0.957 (P<0.001). The scale we designed had a relatively high reliability.” was added.

5) Respond to comment “Adrian A. Ong ect” - when mentioning an author use the family name not the given name, include the citation directly after the name, and remember that "ect" should be "et al." not "etc." and definitely not "ect". For example, in this case it should be "Ong et al.[10] evaluated the functionality of 51 selected sleep apps in 2016 and found that ..."

Answer: We have rewritten this part according to reviewer’s comments. Line 149 we have changed “Adrian A. Ong ect” into “Onge et al.[10]”

We tried our best again to improve the manuscript and made some changes in the manuscript. These changes will not influence the content and framework of the paper. We list the changes and marked in yellow in revised paper.

We appreciate for Editors/Reviewers’ warm work earnestly, and hope that the correction will meet with approval.

Once again, thank you very much for your comments and suggestions.

Your sincerely,

Yinyan Lai

2019.08.21