Reviewer’s report

Title: Oral Health Related Quality of Life of Patients with Class III Skeletal Malocclusion Before and After Orthognathic Surgery

Version: 1 Date: 28 Aug 2019

Reviewer: Reviewer 2

Reviewer's report:

PEER REVIEWER ASSESSMENTS:

OBJECTIVE - Full research articles: is there a clear objective that addresses a testable research question(s) (brief or other article types: is there a clear objective)?
Yes - there is a clear objective

DESIGN - Is the current approach (including controls and analysis protocols) appropriate for the objective?
No - there are major issues

EXECUTION - Are the experiments and analyses performed with technical rigor to allow confidence in the results?
No - there are major issues

STATISTICS - Is the use of statistics in the manuscript appropriate?
No - there are issues with the statistics in the study

INTERPRETATION - Is the current interpretation/discussion of the results reasonable and not overstated?
No - there are major issues

OVERALL MANUSCRIPT POTENTIAL - Is the current version of this work technically sound? If not, can revisions be made to make the work technically sound?
Maybe - with major revisions

PEER REVIEWER COMMENTS:

GENERAL COMMENTS:
The authors aim to investigate "oral health-related quality of life of patients with class III skeletal malocclusion before and after orthognathic surgery." This is a clear goal. The research question is important and interesting.
The authors used three instruments to answer the research question: 1) oral health impact profile-14 (OHIP-14), 2) multidimensional body self-relations questionnaire (MBSRQ), and 3) orthognathic quality of life questionnaire (OQLQ). They conclude "Orthognathic surgery significantly improves most of the quality of life domains in skeletal class III patients. The improvement in the quality of life and satisfaction after surgery was significantly greater in female patients in our study compared to males."
REQUESTED REVISIONS:
The conclusions need to be modified and the methods and results should be changed accordingly. I recommend that the authors declare one on the used instruments as their primary measure of interest. According to the aim, the authors want to investigate oral health-related quality of life (OHRQoL). Therefore, the OHIP should be used because it is an OHRQoL. Body self-relations are not OHRQoL. This questionnaire should be omitted because it does not measure OHRQoL. The orthognathic quality of life questionnaire is a specific dental patient-reported outcomes measures. It measures OHRQoL; however, because the OHIP is more widely used and its psychometric properties are better investigated, OHIP results should be the primary results. OQLO results can accompany them, but there are less important.

If the authors chose OHIP as the primary outcome measure, the analyses need to be modified. The authors apply a scoring system for OHIP-14 that is not recommended anymore. OHIP-14's seven domain scores should be avoided. According to John 2014 (J Oral Rehabil), the original 7 domains are not valid and OHIP-14 results should be presented with one summary score only.

From Table 2, it can be seen that one summary score is sufficient to describe the results because all domain score analyses show an effect and are statistically significant (which is to be expected when only the summary score is valid.) As a next step to simplify the paper, the OHIP domain score analyses should be deleted (Table 2 in particular). Only the last line of Table 2 should be retained because it describes the summary score analyses. Results can be presented in the text.

Next, the clinical relevance of the findings it not clear. Unfortunately, the authors focus on statistical significance; however, this has nothing to do with clinical relevance. Therefore, I recommend to consult Locker 2003 (Assessing the responsiveness of measures of oral health-related quality of life) and Reissmann German Dental Journal 2009 (Assessment of clinically significant changes in oral health - Results from the German short version of the Oral Health Impact Profile (OHIP-G14). According to both benchmarks, OHRQoL change is clinically relevant. This demonstrates that orthognathic surgery matters to patients.

Results of the manuscript would be clearer. Right now the authors have a lengthy results section that does not address the aim and does not interpret the magnitude of changes. "Results: Significant differences were found in fitness evaluation (P=0.042), body areas satisfaction (P=0.031), functional limitation (P=0.041), psychological discomfort (P=0.001), physical disability (P=0.001), social disability (P=0.002), handicap (P=0.050), dentofacial esthetics (P=0.008), and oral function (P=0.001). The mean score of the following parameters was significantly different between males and females: fitness orientation, self-classified weight, body areas satisfaction, physical pain, psychological discomfort, social disability, facial esthetics, oral function and awareness of facial esthetics. Differences in other parameters were not statistically significant among the groups (P>0.05)."

The results section would simply read: "OHRQoL changed from 14.5 prior to orthodontic treatment to 23.4 prior to surgery and during orthodontic treatment to 5.4 after surgery. These OHRQoL changes were clinically relevant according to the Oral Health Impact Profile's Minimal Important Difference and they were statistically significant (P<0.001)."

Conclusions would be straightforward. "Orthognathic surgery matters to patients with class III skeletal malocclusion. It improves oral health-related quality of life to a clinically relevant degree."
I would recommend omitted the term quality of life because you did not investigate this concept. You should also omit the term satisfaction. This is a different concept and you have not investigated this. The gender difference does not seem to exist for OHRQoL.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

No

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

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