Author's response to reviews

Title: Assessing changes in quality of life using the Oral Health Impact Profile (OHIP) in patients with different classifications of malocclusion during comprehensive orthodontic treatment

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Author's response to reviews: see over
Dear reviewers:

Thank you for your letter and for the reviewers’ comments concerning our manuscript entitled “Assessing changes in quality of life using the Oral Health Impact Profile (OHIP) in patients with different classifications of malocclusion during comprehensive orthodontic treatment”. Those comments are all valuable and very helpful for revising and improving our paper, as well as the important guiding significance to our researches. We have studied comments carefully and have made correction which we hope meet with approval. The main corrections in the paper and the responds to the reviewers’ comments are as follow:

**Responds to Manoharan Andiappan’s comments:**

**Comment 1:**
The spelling errors have been checked and corrected.

**Comment 2:**
It is really true as Reviewers suggested that we can use either repeated measures ANOVA or random effects models to model the scores at various time points. However, the transformation of abnormal distribution data may cause accurate loss. Hence, Both parametric test and Wilcoxon signed rank test can be applied to our data.

**Comment 3:**
According to Reviewer’s comments, the word “poisson distribution” has been removed.

**Comment 4:**
The p values have been adjusted for reducing possibility of Type I errors. A Bonferroni correction with $P<0.005$ was used to declare significance. Based on Bonferroni correction, the changes in physical disability in Class I patients at T2-T3 and changes in psychological disability in Class III patients at T2-T3 show no significant difference in revised manuscript.

**Comment 5:**
We are very sorry that the last sentence in the first paragraph of discussion is not clear. What I would like to declare here is why we choose the Chinese version of OHIP-14 as research tool in our study. The reasons was explained in the first paragraph of our discussion.

**Comment 6:**
What I want to express is why the initial period is not included in ur study. This transient and significant deterioration was commonly existed in patients who undergo orthodontic treatment. There is no difference among patients with different classification of malocclusion.

Comment 7:
Considering the Reviewer’s suggestion, we have revised the last but one paragraph in discussion. On the one hand, orthognathic surgery performed on patients can lead to an extreme change in appearance and a radical change in facial profile. Therefore, changes in social disability domain were more likely to be detected in orthognathic surgery group than orthodontic group. On the other hand, it has been reported that patients with severe class III malocclusion tent to experience more social disabilities and exhibit higher levels of psychological stress in social situations than patients with mild skeletal class III malocclusion before receiving treatment. Hence, with regard to social disability domain , the contradiction between our findings and previous results might due to inconformity of initial status.

Comment 8 and 9:
The word “individualization treatment” and the last sentence have been removed in the process of revising the last paragraph.

Comment 10:
The sample size problem: Patients with Class III jaw deformities were often accompanied by serious aesthetic problem such as mandibular prognathism, asymmetry and maxillary deficiency. Therefore, most patients with Class III jaw deformities have strong desire for orthognathic surgery if financial condition permitted. Only small amounts of patients with Class III jaw deformities choose orthodontic treatment for the purpose of camouflaging skeletal discrepancy. This kind of compromised treatment plan may cause many periodontal problems. It is very complicated to collect group 3 subjects. In spite of this, the collection of subject is still continuing.

Comment 11:
Missing data: The missing data was distributed among former two group. It has absolutely no affect on group 3. Details about missing data have been mentioned in first paragraph in result section.

Minor revision comments
We have made correction according to the Reviewer’s minor revision comments.

You are really serious and responsible. Thank you very much for your comments.

Responds to Tim T Newton’s comments:

Comment 1:

Characteristics of the participants: Table 1 showed the information on gender and age of the individuals. Significant difference wasn’t founded in three group.

Comment 2:

Information about time period: According to this comment, we have added Table 2 which analysis the difference of time period among three group.

Comment 3and 4:

Add some post hoc analysis of power and decrease the possibility of Type I errors: Bonferroni correction is one of post hoc analysis. A Bonferroni correction with $P<0.005$ was used to declare significance. This method can effectively decrease the possibility of Type I errors.

Comment 5:

With respect to non-treatment control group, it is really difficult for us to collect the data. Because most patients with malocclusion have strong desire and perceived need to receive orthodontic treatment. we will not hesitate to record related data, if there were any patients which conform to this standard.

It is really true as reviewer suggested that Hawthorne effect and response shift may has a role in effect of study. These two aspects has been added in the discussion of investigative limitations. These limitations can be my new research direction. Thank you very much for your guidance.

In all, I found the reviewer’s comments are quite helpful, and I revised my paper point-by-point. We sincerely hope this manuscript will be finally acceptable to be published on BMC oral health. We look forward to hearing from you soon.

Best regards.

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