Author's response to reviews

Title: Prevalence and association of self-reported anxiety, pain, and oral parafunctional habits with temporomandibular disorders in Japanese children and adolescents: A cross-sectional survey

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Author's response to reviews: see over
Dear Dr. Schimmel,

I, along with my coauthors, would like to re-submit the enclosed manuscript entitled “Prevalence and association of self-reported anxiety, pain, and oral parafunctional habits with temporomandibular disorders in Japanese children and adolescents: A cross-sectional survey” (1363344090147071) for publication in BMC Oral Health as a research article.

The manuscript has been carefully reviewed for language, and appropriate changes have been made in accordance with the reviewers’ comments. The responses to the reviewers’ comments are also enclosed below. We believe these changes have significantly improved the quality of the manuscript, and hope that the revised manuscript is now suitable for publication in your journal.

I look forward to your reply.

Sincerely,

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Prevalence and association of self-reported anxiety, pain, and oral parafunctional habits with temporomandibular disorders in Japanese children and adolescents: A cross-sectional survey

We are grateful to the reviewers for their critical comments and useful suggestions, which have helped us significantly improve our manuscript. As indicated in the responses below, we have considered all comments and suggestions in the revised version of our manuscript; the relevant changes are highlighted in the revised document (as indicated below).

Reply to comments from Reviewer 1

Minor Essential Revisions:
1. Line 81: Please specify the reasons why you focused on 11-15 year old individuals. (Do you have any reasons why you couldn’t study 10 year old children and younger, and 16 year old children and older? Was there a readability problem in the questionnaire for younger children? If you tried to contact older children, did you have any problems accessing them?)

Response: Thank you for pointing out this omission. Our recent study (Karibe et al., Cranio 30(2): 114-120, 2012) reported that 16- to 18-year-old adolescents with TMDs experience higher pain intensity in the orofacial region and greater difficulty in their activities of daily living than 13- to 15-year-old adolescents with TMDs. In addition, the symptoms of TMDs in the 16- to 18-year-old adolescents were very similar to those experienced by adults. Therefore, we hope to develop factor-specific preventive programs for TMD in juvenile and early adolescent individuals. However, the prevalence of TMD in children who are 10 years old or younger is relatively low, and the use of our questionnaire is problematic with these young children, as the validity of the Japanese version of STAIC has not been confirmed for children who are <10 years old (Soga, Jpn J Psychology 54(4): 215-221, 1983). Thus, in the present study, we focused on 11- to 15-year-old individuals, as they could all complete the questionnaire without assistance.

We have inserted the missing details, as follows (lines 73–88):

Our recent study [12] reported that 16- to 18-year-old adolescents with TMDs experience higher pain intensity in the orofacial region and greater difficulty in their activities of daily living than 13- to 15-year-old adolescents with TMDs. In addition, the symptoms of TMDs in the 16- to 18-year-old adolescents were very similar to those experienced by adults.
Furthermore, to develop appropriate factor-specific preventive programs for TMD in children and early adolescents, it is important to carefully evaluate the associations between multiple factors and TMD symptoms during childhood. However, the prevalence of TMD in children who are \( \leq 10 \) years old is relatively low [13], and these younger children may be unable to read the research questionnaire [14]. Therefore, we aimed to investigate the prevalence of TMD symptoms in Japanese children and adolescents who were 11–15 years old, and to assess the relationships between TMD symptoms and other orofacial pain conditions, daily activities, and trait anxiety in a population-based, cross-sectional survey. In this study, we tested the hypothesis that, even in a young population, TMD symptoms are associated with head, neck, and tooth pain; trait anxiety; postural imbalance; and parafunctional habits.

2. **Line 82:** Please provide the selection process of how you chose the school. (Were the schools selected randomly?)

   **Response:** Thank you for pointing out this omission. We have added the following sentence on lines 94–96:
   
   Among the 43 elementary and 23 junior high schools that we approached, these 6 schools were selected because the administration consented to participate in this study.

3. **Line 80-89:** The report of the number of subjects is unclear. Please provide the number of students that were invited, participated, excluded due to the exclusion criteria (such as mentally challenged), didn’t complete the questionnaire, and the final sample size (1415 students).

   **Response:** Thank you for pointing out this omission. We did not include schools that had mentally challenged or learning-disabled students enrolled. We have revised the methods as follows (lines 97–99):
   
   Among the 1,678 students who were invited and participated in this study, data from 263 students who missed 1 or more questionnaire items were excluded. Therefore, the final sample was comprised of data from 1,415 students.

4. **Line 87:** Please provide any reasons for the 263 students who couldn’t complete the questionnaire. (Were they capable of completing the questionnaire or was there a reading comprehension issue? Were there any problems with the questionnaire that prevented completion? Did their
response have “Missing Completely At Random”? Were there logistics problems?

Response: Thank you very much for this valuable comment. As we mentioned in our response to Question #3, we excluded the data if the student missed 1 or more items in the questionnaire. However, all 1,678 students successfully completed the questionnaire; none of the responses had MCAR and there were no logistics issues. However, the total number of questionnaire items ranged from 41 to 59, depending on the student’s specific symptoms (i.e., If a student has more than 1 symptom in the orofacial region, he/she needed to answer 3 additional questions regarding frequency, onset, and school absence). Therefore, the data for the 263 students you mentioned were excluded only due to missing responses.

5. Line 96: Double check the name of the questionnaire, “the Research Diagnostic Criteria for Temporomandibular Disorders, History Questionnaire.” It was “the Research Diagnostic Criteria for Temporomandibular Disorders”, wasn’t it?

Response: Thank you for this suggestion. The correct name was “the Research Diagnostic Criteria for Temporomandibular Disorders”, and we have revised this name on lines 111–112.

6. “The Research Diagnostic Criteria for Temporomandibular” was written in English. Please provide how to develop the Japanese version or a reference/article, which introduced the Japanese version of the Research Diagnostic Criteria for Temporomandibular.

Response: Thank you for this valuable comment. We have added the following commentary on lines 112–133:

This questionnaire consisted of 6 questions: 3 questions regarding TMD symptoms (i.e., jaw pain, TMJ sounds, and limited jaw opening) during the previous 3 months, and 3 questions regarding related pain conditions (i.e., headache, neck pain, and toothache) during the previous 3 months. As the questionnaire was originally developed in English, and Japanese was the common language for the study subjects, the questionnaire was translated into plain Japanese by the authors. To confirm that the English and Japanese questionnaires had the same contents, the initial translation into Japanese was re-translated into English by bilingual faculty members, and the contents of the original English and re-translated English versions were compared to ensure consistency in the questions. All versions were also analyzed and compared by the authors, a final version was obtained, and the equivalence of its language
was assessed using the test-retest method. According to this method, 16 volunteer received 2 versions (English and Japanese) of the questionnaire, and they were instructed to complete the first version (English or Japanese) on the same day they received the questionnaires, and to complete the second version (Japanese or English) on the next day, without referring to the previous questionnaire. The kappa coefficient was used to evaluate the language equivalency, and 5 of the 6 questions provided an average kappa value of 0.75. Among these questions, 1 question provided a kappa value of 1, while the other 4 questions provided kappa values of 0.53 to 0.87. For the remaining question, it was not possible to calculate the kappa coefficient, as all volunteers provided identical responses to this question for both versions. These results indicated a good equivalency between the 2 versions of the questionnaire.

7. Please provide the availability of the questionnaire for researchers who would like to use it.

Response: Thank you for this valuable comment. We have inserted the following statement (lines 133–135):

(A copy of the Japanese questionnaire is available to interested researchers from the corresponding author.)

8. Please provide the number of items in the questionnaire and readability level.

Response: As mentioned in the response to Question #6, a total of 6 items were included in the questionnaire, and the average kappa value for 5 questionnaire items was 0.75.

9. Line 104: I assume that the authors have developed the questionnaire for daily life for this research purpose. Please provide the source of questions if it is available. I recommend using “To assess ordinary daily life, a questionnaire was developed based on ...(references)...by the research team. This questionnaire consisted of 15…” instead of “To assess ordinary daily life, …”

Response: We agree with your comment and have revised the Methods accordingly (lines 137–139):
To assess ordinary daily life, a questionnaire was developed by the authors based on the contents of a patient education and self-management program regarding the musculoskeletal system [1, 16].

10. Line 121: There is a misstatement: “the measurement of state and trait anxiety” ; this should be written as “the measurement of trait anxiety”.

Response: We agree with your comment and have revised the sentence accordingly (lines 153–155):
To assess trait anxiety, the participants completed the relevant scales from the State-Trait Anxiety Inventory for Children-Trait (STAIC-T) questionnaire [18], which are comprised of self-reported scales for measuring trait anxiety.

11. Line 204-: There is a problem in the sentence “The higher proportion of girls in the TMD group may cause a significant difference in STAIC-T scores.” The multivariate logistic regression model analysis consisted of both age and STAIC as covariates. Thus, the results of STAIC was calculated with controlled gender. So, the effect of the proportion of girls in TMD cancelled to compute the effect of STAIC. I recommend you re-consider the sentence.

Response: We agree with your comment, and have deleted the sentence below:
“The higher proportion of girls in the TMD group may cause a significant difference in STAIC-T scores.”

12. Line 252-: Could you state why you think the study is still valid after each limitation?

Response: Thank you for this valuable comment. We have revised the last paragraph in the Discussion section to address this issue (lines 307–311):
Although there are several limitations in this population-based, cross-sectional study, we observed a relatively high prevalence of TMD symptoms in 11- to 15-year-old Japanese children and adolescents. Based on our results, other pain conditions and parafunctional habits may exist that are related to TMD symptoms, even in this young population, and these factors should be managed swiftly.
Discretionary Revisions:

13. Line 30: The words of “presence/absence of TMD symptoms” are used many times in this manuscript, however these terms might mislead some readers; “presence” or “absence” were decided based on the student’s perception instead of dentist’s examination. Some readers might believe “present symptoms” exist. So, “reported” might be better wording instead of “presence/absence.”

Response: We agree with your comment and have replaced “presence/absence” with “reported” throughout the manuscript.


Response: Thank you for your careful review. We have corrected the term “anxiety trait” to “trait anxiety” throughout the manuscript.

15. Line 33: I recommend “Subjects were dichotomized into two groups, TMD group and control group, based on whether they reported at least one TMD symptom” instead of “On the basis of the presence/absence of TMD symptoms, 2 groups were formed.”

Response: We agree with your comment and have revised that sentence accordingly (lines 35–36 and lines 135–136).

16. Line 83: What does “general schools” mean? Does it mean “public schools” or “elementary schools and junior high schools”? 

Response: We apologize for this lack of clarity. We have replaced “general schools” with “elementary schools and junior high schools” (line 101).

17. Line 97: I recommend using “This questionnaire consisted of (the number of questions) questions in TMD symptoms (i.e., jaw pain, TMJ sounds, and limited jaw opening) during the previous 3 months” instead of “All subjects
self-reported the presence/absence of TMD symptoms (i.e., jaw pain, TMJ sounds, and limited jaw opening) during the previous 3 months.”

Response: We agree with your comment and have revised that sentence accordingly (lines 112–115).

This questionnaire consisted of 6 questions: 3 questions regarding TMD symptoms (i.e., jaw pain, TMJ sounds, and limited jaw opening) during the previous 3 months, and 3 questions regarding related pain conditions (i.e., headache, neck pain, and toothache) during the previous 3 months.

18. Line 123: Provide the readability level of the Japanese version of STAIC.

Response: Thank you for this valuable comment. We have added the following sentence (lines 159–161):

The psychometric test used in this study was the Japanese version of STAIC-T, and its validity has previously been verified among children who are ≥10 years old [14].
Reply to comments from Reviewer 2

General comments:
1. Aim of the paper was to analyse the association of self-reported TMD with other pain conditions, anxiety, and daily activities in adolescents using a population based sample of 1400 subjects. The topic of the paper is of interest because of the high prevalence of TMD symptoms even in adolescents. However; a clear hypothesis is lacking. The authors assessed a lot of symptoms (15) and calculated associations between oral and non-oral symptoms and conditions. Not surprisingly, some of the conditions (which are correlated among each other) are associated on a statistical significant level. The number of positive findings depends on the number of assessed variables. The majority of symptoms associated with TMD does not show a dose-response relationship. The advantages of the study are the reliable measurements of TMD. Therefore, the paper should focus on the report of the TMD prevalence (symptoms and diagnoses) in Japanese adolescents using the RDC/TMD.

Response: Thank you very much for these valuable comments. We have deleted the hypotheses and revised the last paragraph in the Introduction accordingly (lines 82–88):

Therefore, we aimed to investigate the prevalence of TMD symptoms in Japanese children and adolescents who were 11–15 years old, and to assess the relationships between TMD symptoms and other orofacial pain conditions, daily activities, and trait anxiety in a population-based, cross-sectional survey. In this study, we tested the hypothesis that, even in a young population, TMD symptoms are associated with head, neck, and tooth pain; trait anxiety; postural imbalance; and parafunctional habits.

Specific comments:
2. Table 1 should show all the characteristics of the TMD and control group (not only age and anxiety). i.e. the content of tables 1 and 2 should be presented in one table.

Response: Thank you very much for this valuable comment. We have combined Tables 1 and 2, which are now presented as one table in the revised manuscript. In addition, we have revised the Results section accordingly (lines 178–188):
Table 1 lists the mean age, trait anxiety score, and relevant symptoms for the 2 groups. Subjects in the TMD group were slightly older and reported higher trait anxiety scores than those in the control group (both, \( P < 0.001 \)). In addition, there were significantly more girls in the TMD group than in the control group (\( P = 0.014 \)). The prevalence rates for headache, neck pain, and toothache were significantly higher in the TMD group than those in the control group (\( P < 0.001, P < 0.001 \), and \( P = 0.009 \), respectively). Univariate logistic regression analysis revealed that female sex (odds ratio [OR]: 1.48; 95% confidence interval [CI]: 1.08–2.02; \( P = 0.014 \)), headache (OR: 2.40; 95% CI: 1.74–3.30; \( P < 0.001 \)), neck pain (OR: 2.78; 95% CI: 2.03–3.82; \( P < 0.001 \)), and toothache (OR: 1.80; 95% CI: 1.15–2.82; \( P = 0.010 \)) might influence the TMD symptoms.

3. The content of Table 3 is not very meaningful. The rare significant effects could be mentioned in the text.

Response: Thank you very much for this valuable comment. We have reorganized the contents of Table 3, and only included significant factors that were discussed in the Discussion section. Additional significant effects are now briefly mentioned in the Results section (lines 192–200):

Table 2 lists the frequency distribution of head-forward posture, diurnal clenching, and nocturnal tooth grinding, as well as the univariate OR for the TMD symptoms. According to the univariate logistic regression analysis, gum chewing (always) (OR: 2.01; 95% CI: 0.93–4.35; \( P = 0.076 \)), eating hard foods (always) (OR: 2.39; 95% CI: 1.06–5.38; \( P = 0.036 \)), resting the chin on a hand (always) (OR: 4.22; 95% CI: 2.16–8.25; \( P < 0.001 \)), sleeping in a prone position (always) (OR: 2.11; 95% CI: 1.24–3.60; \( P = 0.006 \)), and voice training (always) (OR: 1.98; 95% CI: 1.06–3.71; \( P = 0.032 \)) might influence the TMD symptoms.