Reviewer’s report

Title: Tooth-size discrepancy and arch form: is there a link?

Version: 2
Date: 20 January 2015

Reviewer: Joanna Janiszewska-Olszowska

Reviewer’s report:

This study attempts to find an association between Bolton tooth size discrepancy, sagittal molar relationship and arch form.

The proper question, however should be, if arch form is influenced by sagittal molar relationship or Bolton tooth size discrepancy.

Thus the title has to be corrected. (minor essential revision)

I consider the results worth publishing, however the paper has to be revised.

First, the authors did not analyse the presence of a malocclusion or “intermaxillary relationships”, but only sagittal molar relationship and this term should consequently be used in the whole paper. (minor essential revision)

Abstract:

Background (minor essential revisions)

The term “specific arch forms” is unclear, the word „specific“ should be removed and „arch form“ should be used in singular form. The term „extreme discrepancies in the intermaxillary tooth-size relationship“ is imprecise and should be replaced by „significant Bolton discrepancy“ or „clinically significant tooth-size discrepancy“. The aim of the study was to find out, if there is an association between Bolton tooth size discrepancy, sagittal molar relationship and arch form.

Methods (minor essential revision)

Second sentence should be reworded, (arch form cannot be studied according to Angle molar classification). It could be:

Bolton ratio has been calculated, sagittal molar relationship has been defined according to Angle classification and possible correlations were analysed using ANOVA, Chi-square and t-tests.

Results: (minor essential revisions)

The first sentence is unclear. No significant differences in the distribution of the three arch forms was seen. Between the sexes?, for different sagittal molar relationship? This should be clarified.

The term “interarch relationships” should be replaced by a more precise term: “sagittal molar relationship” since the authors did not analyse any other features defining interarch relationships (overjet, overbite, canine relationship...).

The sentence beginning with line 7. of the Results section in Abstract “Significant
differences in the arch forms distribution were observed between the Saudi .......
must be removed, since it is not presenting the results of the present study, but
comparing its results to other studies. The proper site for such considerations is
the discussion section.

Conclusions (minor essential revisions)
“sagittal molar relationship” should be used instead of “malocclusion”

Maybe a better conclusion could be: “Arch form is independent from gender,
sagittal molar relationship and Bolton discrepancy.” or : 1. Neither tooth-size
discrepancy nor sagittal molar relationship is influencing the arch form. 2. Arch
form is not dependent on gender.

The second conclusion (on ethnic differences) has not been drawn from the
results of the present study (the authors did not analyse plaster models from
other populations) and thus must be removed.

Keywords (discretionary revision)
“Angle Class” could be added.

Background (minor essential revisions)
The authors should clearly define “specific dimension relationships” as Bolton
overall and anterior ratio.

“Higher prevalence” should be used instead of “greater prevelence” within the
whole text.
Paragraph 3. in Background (minor essential revisions)
Abbreviation TSD is used without an explanation. First use of any abbreviation
should be in parentheses after the whole name e.g. “tooth size discrepancy
(TSD)”. Next time in the text the abbreviation alone can be used.
The sentence beginning with “Uysal et al...” contains a grammatical error. “a
significant sex differences “ should be “significant sex differences”

In the sentence beginning with “The mathematical tooth size ratios...” the word
“as” should be added after “to serve”

In the sentence beginning with Nojima et al. ... “is “ should be added after “arch
form”

Results (minor essential revisions)
The whole second paragraph beginning with “When the distribution of the arch
forms...” has to be moved to the discussion section. Table 3. should belong to the
discussion, citation reference numbers should be provided in the headings of
every column. Table numbering must then be adjusted. (minor essential revision)

In heading of Table 3. The words “comparison of the” should be removed.
“Saudi” should be the last column; instead of citation reference number it should
be described as “present study” (minor essential revision)

Table 2: A better table heading could be: “Distribution of arch forms across
different sagittal molar relationship”. (discretionary revision)
The list of abbreviations is incomplete. It should contain all the abbreviations used or could be removed at all. (minor essential revision)

Discussion

Paragraph 2, sentence 1. The second part of the sentence must be removed, since the authors did not analyse arch forms in other populations (outside the Saudi). (minor essential revision)

Instead “there is no gender differences” there should be “there are no gender differences” (minor essential revision)

A potential limitation of the study should be mentioned in the discussion, which is the fact that sagittal molar relationship is insufficient for the diagnosis of a Class II or a Class III malocclusion. Overjet and skeletal sagittal discrepancy were ignored in this study.

Moreover, sagittal molar relationship can be altered by molar mesial migration. (minor essential revision)

Conclusions (minor essential revisions)

1. There should be “distribution is equal” (not: “equally distributed”). Remove last sentence, since this conclusion cannot be drawn from the present study.

2. The term “malocclusion classification” should be replaced by “sagittal molar relationship”.

3. Remove the first part of the sentence (this has been said in conclusion 2).

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.