Reviewer's report

Title: Effects of breastfeeding on three-dimensional dental arch relationships in primary dentition

Version: 1  Date: 4 July 2014

Reviewer: Fernando Jose Herkrath

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The theme addressed in this paper is relevant and the manuscript is well written. My suggestions aim to contribute with the improvement of the study.

Major Compulsory Revisions

1) Consider expanding the Background section with the inclusion of evidence on the effect / interaction of breastfeeding with deleterious oral habits and development of malocclusion as the study focuses on breastfeeding. Although the authors have addressed it in the Discussion section, in Introduction they presented only the relationship between deleterious oral habits and malocclusion.

The following references could be used, in addition to those cited in the Discussion:


2) The sampling focuses specifically on the sample size, but the authors do not elucidate how the 17 kindergartens and the participants were selected (e.g. was it a one-stage random cluster sampling?). This information is important for statistical inference. In addition, I suggest clarifying the description of sampling. Sample size was calculated to be 609 considering 20% of losses and non-responses. So, shouldn’t the sample size be 507 (without 20%)? If so, the reader cannot get it through the data presented in the text.

The type II error was addressed but the type I error was not.

The reference study used for sample calculation is from an Italian population that assessed the normal three-dimensional occlusal development between 3 and 6 years. Would it be the most appropriate?
3) The exclusion criteria were not explicitated. Children born preterm, children with syndromes or systemic diseases, those who experienced premature loss of deciduous teeth or underwent orthodontic treatment, among others that can affect breastfeeding and/or the occlusal outcomes were included in the sample? Would it influence the study results?

4) The criteria for grouping the variables like duration of breastfeeding or dental arch relationships (e.g. categories of incisal relationship and overjet lesser or greater 3.5 millimeters) must be described in the Methods section. Some of these explanations appear only in the Results and Discussion sections.

5) It is not clear which group the children breastfed for 6 months belong to. The groups are described as “never been breastfed”, “less than 6 months” and “more than 6 months” in the Results section. The tables 3 and 4 reproduce it, although the tables 1 and 2 suggest that children breastfed for 6 months are in the 0-6 months group. In the Discussion section, 6th paragraph, it seems that individuals breastfed for 6 months are included in the latter group, while in the tenth paragraph the term "more than 6 months" was used again. Is there any scientific evidence for including 6 months along with those individuals who breastfed exclusively for 1, 2 or 3 months?

6) Methods, Statistical Analysis, 2nd paragraph: check out whether the word “associations” is suitable for referring to the analysis of variance, since it expresses mean differences. Consider detailing the logistic regression analyses (e.g. which variables were included in the models for adjustment) in the Methods section.

7) Might the diverse patterns of craniofacial growth that could be present in the sample influence the occlusal measures obtained in the study? Is there any reason to believe that individuals with distinct patterns were randomly distributed in the studied groups? Wouldn’t the authors consider appropriate a discussion about this issue?

8) Two statements in the Discussion “…breastfeeding could be implemented as one of the orthodontic preventive treatment in order to minimize the time and cost of active orthodontic treatment” and “Pure breastfeeding for more than 6 months is recommended, as it reduces the chance of developing abnormal dental arch relationships…” seem not be supported by the findings of the study.

9) The authors mentioned that the long-term effects of the occlusal changes found are still unknown. Thus, in relation to the “positive effects” mentioned in the study conclusions, further discussion about the benefits of occlusal traits found in the group breastfed for more than six months is necessary. The magnitude of mean differences that, although significant, was lesser than 1 millimeter should also be considered.

Minor Essential Revisions

10) Introduction, last paragraph: the sentence “As the occlusal status of primary
dentition is believed to be important to the occlusal development of permanent dentition…” must be referenced.

11) Results, 1st and 2nd paragraph: as the difference between males and females was 10.7%, I suggest removing the statement “ratio was roughly 1:1”. Likewise, remove “slightly more” (2nd paragraph, 2nd line).

12) I propose the inclusion of a table with the descriptive data of the study, including the measures for each group of breastfeeding.

13) It is not necessary to put “>0.05” when p-values are expressed in the Results, as the established significance level was already described in the Methods section. P-values, mean differences / OR and 95% CI might be included for all the analyses, including those whose association were not statistically significant.

14) Check the values of pairwise comparison “> 6 months / < 6 months”, since the mean difference (0.813) is not within the 95% confidence interval.

15) It sounds weird beginning the discussion presenting another study. It might be rearranged, starting from the study results and then comparing them with the literature.

16) Discussion, 6th paragraph, last sentence: the statement must be referenced.

17) Considering the suggestions above mentioned, please improve the abstract.

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

**Quality of written English:** Acceptable

**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