Author's response to reviews

Title: Comparison between observed children's tooth brushing habits and those reported by mothers

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Author's response to reviews: see over
Dear Dr. Boy
The BioMed Central Editorial Team

We are enclosing the revised manuscript “Comparison between observed children’s tooth brushing habits and those reported by mothers” (MS: 5845938625136848).

The suggestions from the reviewers were very important to the improvement of the paper. We are very thankful. Our responses to the topics addressed are presented below:

Reviewer #1: Ivar Espelid
Major Compulsory Revisions

1. Methods: We agree with the comment and excluded 5 children as they were in ages between 9 and 21 months and ask questions such as “Who disperses dentifrice on toothbrush?” and “Who brushes the child’s teeth?” could imply in an information bias. Thus, we re-analyzed the data and Cohen’s Kappa coefficient, overall agreement and McNemar tests were re-calculated. Changes were made in Table 1 and are depicted in blue. Overall results did not change significantly with the exclusion of these children.

Methods and abstract were also rephrased as the final sample was 201. At the end, children were aged between 24 to 48 months (mean =41.3).

2. We detailed the inclusion criteria, sample size calculation, drop-outs and external validity of the study (Pages 4 – last paragraph; and 5 - 1st paragraph) as follows:

“The present study was conducted as part of a larger cross-sectional study on fluoride intake by dentifrices among children from Montes Claros, MG, Brazil. Eight day care centres in the city of Montes Claros were randomly selected from a list of day care centres compiled by the Municipal Department of Education. The directors of the centres were contacted and gave consent for the conduction of the study. A meeting was initially set up with parents, at which time the mothers received information on the objectives and signed terms of informed consent authorising participation in the study. It was made clear that the presence of mothers was preferred over fathers and, thus, only mothers were present at the meeting. The following were the inclusion criteria to take part in the study: mothers must be present at the meeting and their children must be between 24 to 48 months of age. Five mothers had children less than 24 months of age and were excluded from the study. The initial sample was comprised of 203 mothers, among whom two failed to complete the questionnaire and were excluded from the study. The final sample was comprised of 201 pairs of mothers and children (0.98% of drop-outs). The mean age of the children was 41.3 months. The sample was selected by convenience.”
3. We agree with the observation of the reviewer and re-calculated the Kappa value for the item “Amount of dentifrice dispersed on brush” using plain Kappa, with final value of 0.22. We also agree that weighted Kappa tends to manipulate the value to be closer to 1. Thus, at the end we adopted the plain Kappa for all items. Changes were made in the whole text and in the Table 1.

4. We agree with the reviewer that re-testing the questionnaire would provide data of variation of mothers’ responses. However, due to circumstance of the calendar of the day care centres of Montes Claros, it was not possible to administer the questionnaire again. This point was discussed as a limitation of the study on page 13, 1st paragraph, lines 5-10:

“In the scholastic programme of the day care centres surveyed, there is only one meeting with parents per semester. It was not possible to schedule other meeting in order to re-administer the questionnaire, which rendered a re-test assessment impossible. Although no intra-mother agreement test was performed, the sample was consistent for the investigation of agreement between mothers and observer.”

5. We clarified that the examiner was an experienced paediatric dentist who underwent a training process which could enable a good observation of the tooth brushing (page 6, 3rd paragraph):

“The observation method has been used as the gold standard to evaluate another method in a previous study [8]. The examiner was an experienced paediatric dentist who underwent a training process for the observation of tooth brushing. The calibration process is described below.”

Minor Essential Revisions

6. We agree that the term prevalence is not adequate to describe the tooth brushing habits, and it was replaced with ‘frequency’ in the whole manuscript depicted in blue.

7. We clarified the cultural context of Brazilian mothers (page 9, last paragraph and page 10, 1st paragraph):

“Parental opinion is considered a valuable tool for the assessment of children’s conditions. A previous Brazilian study tested the validity of mothers’ opinions regarding their child’s life [17]. The choice of collecting data at day care centres was based on the fact of many mothers leave their children at such centres while working rather than leaving them with nannies or grandparents. Moreover, it is possible to find all types of mothers at day care centres. Brazil is a predominantly catholic country with married, divorced and single mothers. Many married woman work to help with family’s expenses. Some have a lower salary than their husbands, whereas others have a higher salary. There are also married mothers who do not work and only take care of the family. In the case of divorced women, Brazilian law gives the woman the priority regarding the guardianship of the child. There is also a portion of single mothers who live with their parents or who are the head of the family.

A previous study carried out in Brazil demonstrated mothers’ comprehension regarding their children’s cognitive, psychological, emotional and physical development. The study also found that mothers consider their presence of
great importance to raising and educating their children and consider their presence more important than that of the father in the tasks of care and education, whereas the presence of the father is considered important as a male role model [18].”

8. We agree that the Kappa formula will be rather explained in the ‘Methods’ section and we moved the formula to this section. We rewrote with more details the paragraph related to the Kappa calculation in the ‘Statistical analysis’ sub-section of the ‘Methods’ section (page 7, 2nd paragraph, lines 4-11):

“To calculate the Kappa coefficient, the following formula was used:

\[ k = \frac{po - pe}{1 - pe} \]

in which po is the proportion of units with agreement:

\[ po = \frac{a + d}{a + b + c + d} \]

and pe is the proportion of units for which agreement is expected by chance:

\[ pe = \frac{[(a + b)(a + c)] + [(c + d)(b + d)]}{(a + b + c + d)^2} \] [11]. Agreement strength was based on the following criteria: 0.00 to 0.20 = ‘poor’; 0.21 to 0.40 = ‘fair’; 0.41 to 0.60 = ‘moderate’; 0.61 to 0.80 = ‘good’; 0.81 to 1.00 = ‘very good’ [12]. Overall agreement considers the proportion of total agreement divided by the total (po) and not by chance (Kappa).”

The ‘Discussion’ section was reformulated to avoid duplicate information (page 12, 2nd paragraph, lines 10-15):

“Considering the formula given in the Methods section, K= po- pe/ 1- pe [11], the Kappa calculation for this item is expected to be pe = \[(38x1) + (163x200)/201\]^2 = 0.81; K= 0.81 – 0.81/ 1- 0.81 = 0.0. This explains why this item achieved the lowest Kappa value, while overall agreement was the highest, as overall agreement considers the proportion of agreement by the total (po = 162/201 = 0.81) and not by chance (Kappa).”

9. We agree with the observation of the reviewer and removed the reference (Oliveira et al., 2007) and rewritten the phrase using an adequate reference (page 3, last paragraph, lines 6-7):

“This method was used as the gold standard for comparison to another method in a previous study [8].”

10. We removed the initial phrase of the ‘Abstract’, as suggested by the reviewer.

11. We agree with the reviewer that the method does not permit intra or inter-examiner comparisons and we discussed this point as a limitation of the study (page 12, last paragraph):

“The present study has limitations that should be considered. There was only one observation of the tooth brushing. Video recordings of the tooth brushing could be an alternative to enable more reliable intra-examiner and inter-examiner comparisons [23].”
Reviewer 2: Jorma J Virtanen

1. The use of fluoride was added in the aim as suggested by the reviewer in the Abstract (page 2) and in the Background chapter (page 4, last paragraph):
   “The aim of the present study was to compare agreement between observed children’s tooth brushing habits using fluoridated toothpastes with the habits reported by mothers.”

2. We clarified when the study was performed, as suggested by the reviewer (page 5, 2nd paragraph):
   “Data collection was carried out from October 2007 to June 2008. The study received approval from the Human Research Ethics Committee of the Federal University of Minas Gerais (ETIC 278/07).”

- We also clarified that the sample was selected by convenience and we clarified the participation rate and drop-outs (page 4, last paragraph and page 5, 1st paragraph).
  “The present study was conducted as part of a larger cross-sectional study on fluoride intake by dentifrices among children from Montes Claros, MG, Brazil. Eight day care centres in the city of Montes Claros were randomly selected from a list of day care centres compiled by the Municipal Department of Education. The directors of the centres were contacted and gave consent for the conduction of the study. A meeting was initially set up with parents, at which time the mothers received information on the objectives and signed terms of informed consent authorising participation in the study. It was made clear that the presence of mothers was preferred over fathers and, thus, only mothers were present at the meeting. The following were the inclusion criteria to take part in the study: mothers must be present at the meeting and their children must be between 24 to 48 months of age. Five mothers had children less than 24 months of age and were excluded from the study. The initial sample was comprised of 203 mothers, among whom two failed to complete the questionnaire and were excluded from the study. The final sample was comprised of 201 pairs of mothers and children (0.98% of drop-outs). The mean age of the children was 41.3 months. The sample was selected by convenience.”

- We clarified that observation method was made only one time, as suggested by the reviewer (page 6, 2nd paragraph, last line):
  “The tooth brushing practice of each mother/child pair was only observed once.”

- We clarified how the observation was made, and we explained that the examiner made observations in a sufficient distance, making notes on a structured form which had the same items as the questionnaires with the same options (page 6, 2nd paragraph, lines 7-9):
“An examiner (MJO) observed without intervening and recorded notes on a structured form, which contained the same items and response options as the questionnaire (Table 1).”

3. We changed the title as suggested by the reviewer, changing the word “Agreement” for “Comparison”:
   “Comparison between observed children’s tooth brushing habits and those reported by mothers.”

4. We removed the 0-hypothesis as it was not a suitable hypothesis.

With our best regards,

Saul Martins Paiva