Author's response to reviews

Title: Contextual and Individual Assessment of Dental pain period prevalence in adolescents: a multilevel approach

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Version: 3 Date: 9 July 2010

Author's response to reviews: see over
Dear Natalie,

On behalf of all authors, I am submitting the revised third version of the manuscript of **Contextual and Individual Assessment of Dental pain period prevalence in adolescents: a multilevel approach** to your appreciation and to editorial analysis of the *BMC Oral Health*, as to the possibility of its publication.

The text has been revised according to indications of reviewers. We thank comments and suggestions, which we truly believe contributed to improve the text. We have prepared a response to the reviewers, addressing each of their comments. Each of the modification is in bold words in the new version of the manuscript.

The manuscript has not been published before, and is not being considered for publication elsewhere. We agree to assign exclusive copyright to the *BMC Oral Health* if and when the manuscript is accepted for publication.

Yours sincerely,

Marco Aurélio Peres
REVIEWER 1

Reviewer: Anne Nordrehaug Astrom

Review of the revised ms: Contextual and individual assessment of dental pain period prevalence in adolescents: a multilevel approach

The authors have done a thorough revision of their manuscript. I have still some questions and notification as to the manuscript in its revised current form;

1) The authors should rearrange the number of tables as they have inserted a new table (table 1) and also provide a short description of the results of Table .

Authors: We would like thank the reviewer for her very important commentaries and suggestions. We rearranged the tables according to the reviewer recommendation.

2) I am still confused with respect to the approaches to multivariable analyses and the multilevel Poisson regression utilized. In Table 2 (should be table 3) there are three values for PR of the HDI variable, which reportedly has only two categories. This should be explained. Moreover, I am not satisfied with the way this table has been arranged and will urge the authors to look at the example for presentation provided by them in their reply to the review of Sabbah (example in Kuhnene et al 2009). By arranging the results in this manner it provides a good explanation regarding what is happening from step to step – both with respect to confounding and mediation of effects. As the multilevel analysis is presented now it is not easily interpretable. At least the readers should be informed whether the figures provided pertain to the final step in the analyses. Although controlling for HDI by multilevel Poisson regression, most individual variables maintained their statistical significance. The stratified analyses, however, show a different result – namely that most socio-economical factors loose their effect. Why using two different approaches (i.e.multilevel and stratification) to control for confounding effect of HDI? The authors should be concerned with the different results from those two approaches and provide some explanation in the discussion part. Could it be due to reduced statistical power in the stratified analyses?. Moreover, I still will encourage the authors to verify any suggested interaction or modification of effect by testing interaction terms for statistical significance. Comments regarding the maintenance of effect of HDI on page 19 should be inserted under description of the results depicted in Table 2.
Authors: We followed all of the review’s suggestions. Table 1 shows the main characteristics of the sample. Table 2 displays the prevalence of dental pain for each of studied variable. Finally, Table 3 shows, side by side, unadjusted and adjusted Poisson multilevel regression. The changes in the Prevalence Ratios estimates for each variable from unadjusted to adjusted analysis are clearly identified. In this new version - Results section - we informed the formal p value for the interaction test between Human Development Index and per capita family income. We also eliminated the stratified analysis. Once again we would like to thank you for your help.