Author’s response to reviews

Title: Clinical consequences of untreated dental caries assessed using PUFA Index and its covariates in children residing in orphanages of Pakistan

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Author’s response to reviews:

Reviewer # 1

We wish to thank the Reviewer for their time and valuable comments for improvements in our manuscript. Following is the point-by-point response letter that we are required to submit with our manuscript.

Title:

Comment: The scope of the study is far beyond what the topic represents. It is important that the title reflects the scope of the study. Also the title needs to be modified to prevent the use of stigmatizing phrases. The use of the phrase 'orphanage children' should be changed to children resident in orphanages.

Response: We have modified the title as suggested. The title has been changed to: “Clinical consequences of untreated dental caries assessed using PUFA Index and its covariates in children residing in orphanages of Pakistan.”

Abstract:

Comment: The study objective is not clear. What associations did the authors plan to establish?

Response: We have amended the sentence in Abstract section, Page 3, line 4-6.
Comment: The authors noted they will determine an association of something (see point above) with demographic, behavioural, dental pain and dental visiting pattern related variables. However, in the plan for analysis, only the association between dental decay, child's dental visiting and pain was established.

Response: Association between decay (assessed by DMFT/dmft index) and untreated decay (assessed by PUFA/pufa index) with demographics (including age, gender and type or orphanage) dental pain experience and dental visiting were carried out and are detailed in the results section both in text (pages 10 and 11) and tables given at the end of the manuscript.

Comment: The authors stated an untreated caries ratio of 49.1% and refer to this as moderate in the conclusion. This is an underatement.

Response: We have corrected this. Moderate levels of decay were found in the sample (38.9%), however, the alarming fact is about half the decay (49.1%) has progressed to involve the pulp. Abstract section, page 4, lines 5-7.

Comment: Please provide a reference for the statement - Orphans are particularly at risk of untreated decay due to lack of parental support and neglected oral health care.

Response: Reference provided in Introduction section, page 5, line 10.

Comment: Please provide reason(s) for the statement - UNICEF, UNAIDS & USAID reported that orphanages can be unfavourable for a child's growth and development [5].

Response: Reasons provided in Introduction section, page 5, lines 11-14.

Comment: The authors wrote: Data collected through this index can have impact on decision taken by dental practitioners and decision makers, which cannot be obtained by DMFT index alone. How does pufa/PUFA improve clinical decision making? Please include references.

Response: DMFT index assesses decay at the dentine level. It does not distinguish whether the decay has just entered the dentine or has spread to involve the pulp or has caused any infection indicated by abscess or fistula formation. Treatment options differ when only dentine is involved, and when the decay has spread far enough to cause infection resulting in abscess or fistula. Hence, when used in conjunction with the DMFT index, PUFA index can help select the best treatment option. Reference provided (Introduction section, page 6, line 23).
Comment: The introduction could be significantly improved if the authors provided information on caries status of children and adolescents in Pakistan, as well as caries status of children resident in orphanages around the world. It is also important to have a conceptual framework that helps us learn how residence in orphanages increases the risk for caries. This framework should also help readers conceptualise how a vicious cycle for and of caries can be broken in children resident in these orphanages.

Response: We have added information about caries status of children and adolescents in Pakistan and also caries status of children living in orphanages around the world (Introduction section, page 5, lines 6-22. Page 6 lines 1-6). How residence in orphanages can increase risk of caries has been discussed in detail in the ‘Discussion’ section at the end (page 14, lines 7-16).

Methods

Comment: The lower age limit stated here is 6 years while in the abstract it is 4 years. This differences needs to be reconciled. The upper age limits also differed.

Response: We have rectified the error (Materials and Methods Section, page 7, line 9).

Comment: What was the age range for this study wide? The authors noted their reference for study conduct was WHO. WHO clearly identifies age categories for epidemiological study. This study had not adhered to this recommendation. Would the authors like to provide a justification - derivable from the introduction - why such a large age range was included in this study? This ranged from the mix dentition stage to the permanent dentition stage.

Response: The age range for this study is wide because we wanted to study the clinical consequences of untreated decay and its covariates in both the primary and permanent dentition. Also, as there is hardly any data available regarding oral health status of children resident in orphanages in Pakistan, we naturally wanted to make information about it available, as much as possible. Moreover, we followed WHO guidelines only for carrying out oral examinations and how DMFT index should be scored. Similar studies have been conducted in children resident in orphanages that sampled children aged 4-12 years in Saudi Arabia and 4-17 years in China (Introduction, page 6, lines 4-6).

Comment: Please what formula (ref) was used to calculate this sample size? Was a prevalence value not needed to calculate this sample size. What prevalence value was used?
Response: Sample size was calculated using 80% power, 95% confidence level and 5% confidence interval with the help of online sample size calculator at http://www.surveysystem.com/sscalc.htm

This online calculator helps in estimating minimum sample size even when the population/prevalence is unknown. Reference: Sample Size Estimation by Original Author: Jonathan Berkowitz PhD and PERC Reviewer: Timothy Lynch MD.

Comment: Why was the sample size 377 and the sample collected 750. This is almost a 100% increase. The margin allowable for sample size increase is 20%. What was the justification for an almost 100% increase?

Response: We have amended it. The minimum sample size required to test associations is 383. This is the minimum limit. When we went to the orphanages to examine children, every single child present agreed to participate. We had such valuable data available, the like of which is not available for Pakistan. Also, it provided us with a big sample to study the effects of decay in both the primary and permanent dentition (progression of decay and its effect take a long time to be visible unless they are rampant caries) Hence, we included all the children examined, in our analysis.

Comment: The authors noted that - The children were also informed about the study and were asked for their consent at the beginning. How did this happen? How did children 6,7,8,9,10,11 give consent for study participation.

Response: After obtaining consent for the study conduction from the caretaker/head of the orphanage, all children were explained the purpose of the study in local language and were asked to give their verbal consent. Those who did not wish to participate were given the option to opt out. All children present agreed to participate. (Materials and Methods section page 8, line 10-11).

Comment: Was there any inter- and intra-examiner reliability conducted for the two examiners who conducted the data collection? If not, please include this information as a limitation for the study.

Response: Included in the Materials and Methods section, page 8, lines 14-19.
Comment: What is a ‘usual’ chair?
Response: Changed to ‘normal’ chair. Meaning not a dental chair. (Materials and Methods section page 8, line 20).

Comment: How was gauze pads used for visual examination?
Response: Gauze pads were used to remove debris from the surfaces of the teeth. Included in the manuscript in Materials and Methods section page 8, line 22).

Comment: The dental caries prevalence cannot be determined using the DMFT/dmft index. Prevalence is determined by counting number of persons with and without caries. This information needs to be corrected in the manuscript.
Response: Prevalence means both old and new cases. DMFT provides prevalence because it reports new decay as ‘D’ and old decay as filled or missing teeth that were treated for decay.

Comment: The authors note: The PUFA score per person is calculated in the same cumulative way as for the dmft. However, we the readers were not informed about the cumulative way the dmft is computed.
Response: We have included the information that DMFT is a cumulative Index (Introduction section, page 6, line 10).

Comment: The authors noted the questionnaire was self administered. Do they imply that children below 8 years old were able to comprehend the questions and appropriately write their responses for the questionnaires? Was the questionnaire administered in English or was it also translated into the local language?
Response: We have amended this statement and included all information about the questionnaire in Materials and Methods section, page 10, lines 5-7.
Comment: Please describe the study instrument - what questions were asked? What response options did they have? What is an adapted tool or newly developed tool? How was the validity and reliability of the instrument determined?

Response: The study instrument has been described in Materials and Methods section page 9, lines 18-22 and page 10, lines 1-3.

Comment: What were the categorical variables for this study?

Response: Information added in Materials and Methods Section, page 10, lines 13-14.

Comment: Why did the logistic regression analysis determine only the impact of only decay and pain on dental visiting? Is there a reason why the regression analysis was limited to two variables?

Response: Logistic regression analysis was carried out for those variables that showed significant association on initial analysis.

Results

Comment: The authors noted that the sample size calculated was 377. They however increased the number to 750. Here, they noted they actually collected data from 753. Any reason(s) for these variations in sample size numbers?

Response: The errors have been rectified in the manuscript (Results section, page 10, line 18). The numbers are now consistent throughout the manuscript.

Comment: Was there any decline for study participation?

Response: No, all the children agreed to participate in the study (Results section, page 10, lines 20-21).
Comment: Once again, we see disparity in the age. The inclusion criteria states age of inclusion was 6 years to 15 years. Now the age range of study participants is 4 years to 17 years. Will the authors help explain this?

Response: This has been rectified throughout the manuscript.

Comment: dmft and DMFT are not scored in percentage. It is therefore not clear how the authors derived a percentage dmft/DMFT score for the study participants. Same comments for the pufa/PUFA score.

Response: It is a common practice to present dmft/DMFT and pufa/PUFA in percentages. Below are examples of two studies that have listed prevalence of dmft/DMFT and pufa/PUFA in percentages. One study is by the developers of PUFA index.


Comment: Table 1: First the authors obtained a mean score for since lesions. It is difficult to understand how a mean of a single entity could be obtained (mean of F is 0.006 and mean of f is 0.007). Also difficult to understand how the percentages were calculated. dmft/DMFT and pufa/PUFA are tooth level related indices. The authors will need to count the number of teeth in the mouth and not the individuals to determine the proportion of teeth that were decayed. This Table is not clear.

Response: Again, it is common practice to present mean values of decay, filled and missing teeth and those of pufa individually. Mean values are average of all the cases. Mean value of ‘d’ means average of all the deciduous teeth with decay. Similarly for all the individual components
of dmft and pufa. Below listed are examples of some of the studies that have presented mean values of individual components of dmft and pufa and also expressed them in percentages.


Comment: Please can the precise p valued be quoted throughout the manuscript?
Response: Precise p values have been quoted in the results section, page 11, lines 8-19.

Comment: Please can the p values be quoted even when no association was established?
Response: Done.

Comment: Table 2: What does all ages mean? Also, again dmft/DMFT and pufa/PUFA do not have prevalence values but mean values. So the associations conducted using chi-test is completely wrong
Response: ‘All ages’ has been amended to show the ages of children who took part in the study (Table 2 at the end of manuscript, page number 23). Also, as stated earlier, it is common practice to express dmft and pufa prevalence as percentages and to conduct chi square test of categorical data.
Comment: Please could the appropriate computations and the appropriate statistical analysis be conducted?

Response: Tests conducted are appropriate. Please refer to responses provided above.

Comment: Table 3 highlights types of orphanages. This is a completely new variable that comes from the blues. Why is this now a variable for the study and why is the distinction needed. The audience was not set to see the need for this distinction in the introduction.

Response: We had mentioned earlier in the introduction section that we shall be analysing children’s demographics. Perhaps we have not been very clear. Hence, we edited it and have now clearly mentioned ‘demographics including type of orphanage’ (Abstract, page 3, line 5 and Introduction section, page 7, line 6).

Comment: Table 3 also discusses pain location (teeth) and pain time (night). How did these variables arise? Nothing prepared us for this in the introduction and also nothing prepared us for this in the methodology either.

Response: It was mentioned both in the abstract and introduction that association of dental pain with dental visiting shall be studied. Dental pain means pain in teeth, hence readers would have been able to understand that pain location is analysed. However, to include the pain time, the statement has been edited to ‘dental pain experience’ in order to include pain location and time (Abstract section, page 3, line 6 and Introduction section, page 7, line 7).

Comments: The authors also compute row total rather than column total which makes it difficult to understand and interpret the p value obtained in their analysis.

Response: It is mentioned in the heading of the columns that p value is listed at the end after number (n) and percentage (%). There are many characteristics in columns of the table such as DMFT, dmft, PUFA and pufa each with their own set of p values of association with variables listed in the rows of the table, hence, listing p value for each of them in a column at the end was not feasible.

Comments: The authors stated in their abstract and the methodology they planned to conduct logistic regression analysis. The results do not reflect this was conducted.
Response: The logistic regression analysis was conducted and results mentioned only in text in the results section and were not tabulated. On reviewer’s recommendation, they have been now presented as Table 4 at the end of the manuscript.

Comment: Please present the information shared in the last line in the result section as a table.
Response: Done. Results of logistic regression analysis presented in Table 4.

Discussion:
Comments: The authors keep referring to the 'orphanages of the twin cities, Rawalpindi and Islamabad'. However, the profile of the cities and the range of orphanages in the twin cities were not discussed in the introduction. Why the twin cities and no other cities in Pakistan? Which orphanages were selected for this study and from which sampling framework? What was the sampling strategy for the orphanages and the children who met the inclusion criteria in these orphanages?
Response: The Materials and Methods section has been edited to include the profile of the Twin cities of Pakistan, the sampling framework, the sampling strategy employed and inclusion and exclusion criteria (Materials and Methods section, page 7, lines 13-22 and page 8, lines 1-6).

Comments: Please refer to the STROBE guideline on how to report a cross sectional study. The first paragraph of this section should be a summary of the results.
Response: Checked. Summary of results is provided in this section and compared with other studies conducted in various parts of the world.

Comments: The discussion is largely based on findings in the result sections that need to be redone. Also, the discussion does not focus on addressing any study objective(s). There is a large section discussing about government owned and private owned orphanages which was not a study objective. There are also details introduced into the discussion which are not data collected for this study. An example is: The children had come to the orphanages at different ages and some even visit their relatives in vacations, this can also be attributed for presence of untreated decay as when children are away from the orphanage, their dietary and oral hygiene practices may differ.
Response: The discussion has been edited. The type of orphanage variable has been included earlier in the manuscript in abstract and introduction sections. The details that have not been collected in this study which could have a contributing effect to untreated decay, have been mentioned as limitation of our study. That is the reason they are discussed in the discussion section because as per the STROBE guidelines, limitations of the study should be mentioned.

Other Comments

Comments: The manuscript needs to be extensively edited. The grammar is poorly written and so are the syntax. The authors need a professional editor. I think the authors have the study data. They however need to re-calculate and resent their results in ways that it is understood by their peers and colleagues reading the manuscript. This manuscript will require a major modification. The authors will need to revise and re-submit the paper.

Response: Manuscript editing has been done and is ready for resubmission.

Comments: Manuscript needs to conform to BMC style. These include the need for tables to be repositioned at the end of the manuscripts. The referencing style within the manuscript should be addressed.

Response: Done.

Reviewer # 2:

Unfortunately we were sent Reviewer # 2 comments on some other manuscript titled, “Impact of use of denture on fraility among older adults”. We wrote twice to point out the mistake and requested to be sent Reviewer # 2 comments on our manuscript but both the times we were directed to the same comments. Hence we could not do anything about it.