Author’s response to reviews

Title: Caries experience and oral health-related quality of life (OHRQoL) of children and adolescents with cerebral palsy in a low-resource setting

Authors:

Rahena Akhter (rahena.akhter@sydney.edu.au)
Nur Hassan (nhassan@csu.edu.au)
F Martin (elizabeth.martin@sydney.edu.au)
Mohammad Muhit (mmuhit@hotmail.com)
Hayley Smithers-sheedy (HSmithersSheedy@cerebralpalsy.org.au)
Nadia Badawi (nadia.badawi@health.nsw.gov.au)
Gulam Khandaker (gulam.khandaker@health.nsw.gov.au)

Version: 1 Date: 06 Nov 2018

Author’s response to reviews:

Reviewer reports:

Guaré Renata De Oliveira, PHD (Reviewer 1): This investigation was intended to evaluate the association between dental caries experience and oral health related quality of life (OHRQoL) among children with cerebral palsy (CP) in a low-resource setting. However, the age group is 2-17y, and should be add "children and adolescents with cerebral palsy (CP)". Also, the title should be revised.

This is an interesting paper with important applications in low-resource setting group with cerebral palsy.

Response: Thanks. We have now included children and adolescents with cerebral palsy (CP) in the title Page 1 line 1 as well as throughout the manuscript.
1. The abstract should be rewritten and remove page 3 and line 23. "No studies focusing on the Oral health conditions on the OHRQoL with CP children" is not true. Also, on discussion this information remains confused- page 8 line 190- "one of the first studies". It is important to rewrite and check this information.

Response: Yes we did rewrite the sentence Page 2 line 4, “there are very few studies focused on the oral health conditions on the Oral Health-Related Quality of Life (OHRQoL) of children and adolescents with cerebral palsy”. Also in the discussion page 13 line 2-3 we have changed to ", this is first study showing the association of ".

2. The Introduction is well structured and presents the subject in an engaging manner.

Response: Thank you.

3. Regarding the methodology section some questions must be clarified:

- Studied population - The studied population included 90 children and adolescents with CP. The inclusion criteria should add that all individuals included in present study had a clinical medical diagnosis of cerebral palsy (International Classification of Diseases and Related Health Problems 10th, ICD-10)”, for example.

   a. Data collection. The classification of cerebral palsy varies a lot, and the authors should present in this paper the CP classification based on. The authors mention GMFSC but the information about CP type is not presented. It should be interesting once the CP’s quality of life could be different according to muscular problem.

   b. CPI index- This index should be better described. Also, the kappa index to this variable. (Only DMFT kappa was described).
Response:

Yes, all individuals included in this study had a clinical medical diagnosis of cerebral palsy. Now we have included “The neurological classification of CP included spastic, dyskinetic or ataxic movement motor types based on clinical assessment by a pediatrician. Spasticity was further classified into mono/hemiplegic, diplegic, triplegic and quadriplegic. Children’s functional motor impairment was assessed using a five level classification system, the Gross Motor Functional Classification System (GMFCS) (palisano et al, 1997)”. We have included this information on Page 4 line 19-23.

a. Yes, we do agree that the classification of cerebral palsy varies a lot. Please find below Here is the supplementary table in regards to GMFCS and CP type frequency in our studied CP population. We have included this table on page 7, line 21-27 and page 8 line 1-11.

b. CPI index was not analysed in this study therefore this information has been deleted from page 5 line 18 and page 6 line 3.

Supplement table 1 Frequency and percentage of children and adolescents with cerebral palsy according to the motor type and level of functional motor impairment

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Characteristics</th>
<th>Total number of children with CP, n=90</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor type and topography</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spastic</td>
<td>Monoplegia/Hemiplegia</td>
<td>33</td>
<td>36.7</td>
</tr>
<tr>
<td></td>
<td>Diplegia</td>
<td>16</td>
<td>17.8</td>
</tr>
<tr>
<td></td>
<td>Tri/Quadriplegia</td>
<td>19</td>
<td>21.1</td>
</tr>
<tr>
<td></td>
<td>Dystonic/Dyskinetic CP/ Unclassified</td>
<td>22</td>
<td>24.4</td>
</tr>
</tbody>
</table>
Gross motor function classification system (GMFCS, severity of CP, raw data)

<table>
<thead>
<tr>
<th>GMFCS I</th>
<th>34</th>
<th>37.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMFCS II</td>
<td>17</td>
<td>18.9</td>
</tr>
<tr>
<td>GMFCS III</td>
<td>16</td>
<td>17.8</td>
</tr>
<tr>
<td>GMFCS IV</td>
<td>7</td>
<td>7.8</td>
</tr>
<tr>
<td>GMFCS V</td>
<td>16</td>
<td>17.8</td>
</tr>
</tbody>
</table>

4. The results are well presented with qualified statically analyses. However, CP type based on GMFSC could be presented in a table with correlations to OHRQoL also.

Response: This comment is well taken. In this study, we tried to focus on dental caries experience and OHRQoL that’s why we haven’t showed the analysis relation to GMFCS and OHRQoL. Thanks for your understanding.

5. Discussion

Regarding to FIS questionnaire some answers about "drinking, eatings or chewing foods" seems some bias to cerebral palsy condition/ oral health condition. The authors should highlight these limitations about this questionnaire in this population. The answer on caregiver perception sometimes is about cerebral palsy condition - muscle condition and not dental condition (DMFT/CPI). This is important to be mention in my opinion.

Response: Thanks for pointing this. We have now included this limitation on page 14 and line 14-15.

“Moreover, the answer on caregiver perception sometimes is about cerebral palsy condition - muscle condition and not dental condition (DMFT)” and “Regarding to FIS questionnaire some answers about "drinking, eatings or chewing foods" could have some bias to cerebral palsy condition/ oral health condition”.

REVIEWER COMMENTS FROM REPORT: It is an interesting article describing oral health status and oral health related quality of life in patients with CP, however there are a few issues that need to be clarified and added.

REQUESTED REVISIONS:

1. There are several suggestions that I offer for the authors to consider: It is not clear as written, what language the surveys were conducted in, if other than English - Are there valid and reliable versions?

Response: The surveys were conducted in English using validated CPQ and FIS questionnaire and the clinician explained those questions to the participants and parents or carers and collected all those data before clinical examination.

2. The demographics of the children and their families will help. It would interesting to see analyses conducted by age, gender and ethnicity (if more than one).

Response: Please see the frequency table with age and gender (all CP patients from the same ethnicity). We haven’t added this table in the original manuscript.

Supplement Table 2 Frequency and percentage of children and adolescents with cerebral palsy according to their age group and gender.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total number of children with CP, n=90</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-6 years</td>
<td>20</td>
<td>22.2</td>
</tr>
</tbody>
</table>
7-11 years 37 41.1
12-17 years 33 36.7

Gender
Male 56 62.2
Female 34 37.8

Education father
None 36 40.0
Primary 32 35.6
Secondary 16 17.8
College 6 6.7

Education mother
None 34 37.8
Primary 34 37.8
Secondary 19 21.1
College 3 3.3

3. It is not clear if the person who performed the examinations was calibrated by a gold standard examiner; if yes, what was their agreement? It is not clear where the examinations took place.

Response:

Thanks for this helpful comment. Lead investigator of this study Dr Rahena Akhter (a registered Dentist in Australia) was considered as the gold standard examiner. A local Dentist (Dr Md Haque) from Bangladesh was recruited and trained by Dr Rahena Akhter on the study protocol and assessment procedures.
Regarding the agreement we have calculated the intra-examiner reliability as weighted kappa. Weighted kappa considers close matches and accounts for disparity in ratings. The strength of agreement was very good, and the numeric kappa value was 0.90. Please see page 6 line no 1-3.

We have now acknowledged Dr Md Haque for his contribution in the study (page 15 line 15-16).

The examinations took place in a local primary school or NGO centre at northern part of Bangladesh (i.e. Shahjadpur sub-district) with the patient sitting on a traditional chair.

4. The F component in the DFMT index was 0, please comment on prior dental visits as it appears these children who experienced dental caries did not have any of it treated.

Response: CP population of this study was from a rural area (Shahjadpur) located in the northern part of Bangladesh, consisting of a poorer socioeconomic group (average monthly family income is <70 US$) where most of the participants had no history of visiting a dentist or dental clinic (Please see below the table). In addition, poorer families would be more likely to delay dental treatment and interact less with health services to obtain preventive treatment (Santos. et al 2009). We have already described this on page 13, line 12-15. We haven’t included this table in the original manuscript.

5. Lastly, comparison of the demographic variables should be presented for caries-free vs caries active children

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Caries free, n=43 (%)</th>
<th>Caries present, n=47 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-6 years</td>
<td>13 (65.0)</td>
<td>7 (35.0)</td>
</tr>
<tr>
<td>7-11 years</td>
<td>11 (29.7)</td>
<td>26 (70.3)</td>
</tr>
<tr>
<td>12-17 years</td>
<td>19 (57.6)</td>
<td>14 (42.4)</td>
</tr>
</tbody>
</table>
Gender
Male  28 (50.0)  28 (50.0)
Female  15 (44.1)  19 (55.9)

Caregiver’s educational level

Carer mother
No education  18 (52.9)  16 (47.1)
Primary (elementary)  18 (52.9)  16 (47.1)
Secondary/tertiary (college)  7 (31.8)  15 (68.2)

Carer father
No education  17 (47.2)  19 (52.8)
Primary (elementary)  6 (27.3)  16 (72.7)
Secondary/tertiary (college)  20 (62.5)  12 (37.5)

Frequency of dental visit
No visit  34 (43.6)  44 (56.4)
1 time or more visit/year  9 (75.0)  3 (25.0)