EFFECTS OF ORAL HEALTH IN QUALITY OF LIFE AMONG CHILDREN AFTER DENTAL TREATMENT UNDER GENERAL ANESTHESIA

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Abstract

Objective: This study aimed to determine the effects of dental treatment under general anesthesia (GA) on oral health related quality of life (OHRQOL) among children and their parents in short and long time follow ups.

Methods: This was a clinical trial conducted on 90 parents/children dyads aged three to six years old who received dental treatment under GA. The participants completed a questionnaire which was a combination of the Early Childhood Oral Health Impact Scale (ECOHIS) and the Parental-Caregiver Perceptions Questionnaire (P-CPQ) pre and post treatment in two follow up groups. The first follow up was 2 to 4 weeks after dental treatment and the second follow up was three months post treatment. The questionnaire consisted of two subsections: The child impact section (CIS) and the family impact section (FIS).

Results: The child sample consisted of 47 boys (52.2%) and 43 girls (47.8%) with a mean age of 3.1 years old. The mean dmft score was 9.7 ± 2.3. The mean post treatment scores (follow up 1) showed significant decrease (P< 0.001) and the score of the second follow up was lower than the first follow up (P< 0.001). Before the treatment, eating disturbances (93.3%), feeling disturbance and impatience (78.8%), pain (77.8%), drinking problems (77.8%) and oral malodor (77.8%) were respectively the most frequently reported complications in child impact section. Feeling guilty (82%) was the most frequently reported complication in the family impact section. Eating disturbances and feeling guilty in parents were the most common complications after the treatments in both follow up periods.

Conclusion: Our findings showed oral-health-related quality of life in children and parents has significantly been improved after dental treatment under GA.
Keywords: General anesthesia, Quality of life

Introduction

The prevalence of dental caries has decreased in recent years, but in developing countries, it remains one of the most prevalent health problems in children (1-4). It is known that tooth decay, especially early childhood caries (ECC), had negative effect on quality of life for many years, which resulted in feeling pain, having difficulty in conversation and social function and lead to psychological problems (5-9).

Children with severe caries may need dental treatment under general anesthesia (GA). Comprehensive dental rehabilitation under general anesthesia (DRGA) is a way to provide safe treatment for young children with extensive dental problems, who have behavioral management problems and do not accept treatment in office (10). The most common reason that parents accept treatment under GA for their child is the failure of previous efforts to carry out dental treatment due to child’s dental fear and pain (11).

Dental treatments under GA provide efficient and high quality restorative dental care in a single session (12). There are different tools to measure the oral health-related quality of life (OHRQOL) (13, 14). Child oral impact daily performance (child-OIDP) (15, 16), child perception questionnaire (CPQ) (17, 18), parent –CPQ , early childhood oral health impact scale (ECOHIS ) and child oral health impact profile (COHIP) (19-21). This study was designed to evaluate the effects of dental treatment under GA on children aged 3-6 years old and their parents by using translated ECOHIS and P-CPQ in Ahvaz, Khuzestan, Iran.

The purpose of this study was to evaluate the changes in children’s oral health-related quality of life and their parents after dental treatment under GA.

Materials and Methods

The ethics committee of Ahvaz Jundishapur University of Medical Sciences approved this study. One hundred and eight children/parents from three therapeutic centers such as Imam and Mehr Hospitals and Pars Clinic in Ahvaz participated in this study but only 90 parents completed the pretreatment and post treatment questionnaires in two follow-ups. Children who had severe medical condition or mental retardation, older or younger than 3-6 years old, were excluded from the study.

The treatment of these children was unsuccessful in dental office due to their fear or management problems. All patients received medical, dental and anesthetic assessments before GA. In this study, we used a questionnaire which was a combination of early childhood oral health impact scale (ECOHIS), and parent–child perception Questionnaire.
(P-CPQ). The reliability and validity of data were assessed by five pedodentists and SPSS, respectively. Cronbach alpha was 0.86.

Parents completed the first questionnaire before the treatment. The second questionnaire was completed by parents in postoperative follow-up about 2 to 4 weeks after GA. The third questionnaire was completed 3 month after GA. If parents failed to attend follow up appointments, the questionnaires were completed via telephone interview by the same interviewer. The questionnaire consisted of two parts: The child impact section (CIS) and the family impact section (FIS).

CIS consists of four domains:
1. Child symptom Domain (CSD): pain, gingival bleeding and oral malodor
2. Child function Domain (CFD): problems of eating, drinking, missing Preschool
3. Child psychology Domain (CPD): having trouble sleeping, being irritable, being sensitive, shy and requesting more attentions
4. Child self-image and social interaction Domain (CSID): avoiding to smile or talk, feeling distressed of not being beautiful and feeling distressed of having friends, feeling distressed of participating in group activities.

FIS consists of two domains:
1. Family Distress Domain (FDD) and
2. Family Function Domain (FFD)

The questions were answered and scored 0 (don’t know), 1 to 4 (never to very often). Higher scores indicated more problems. Demographic information such as patients’ age and sex, parent’s educational level and treatment plan were registered for each child. Data were analyzed by SPSS version 21.

Results

Ninety children included in the study and received dental treatment under GA. There were 47 boys (52.2%) and 43 girls (47.8%) with a mean age of 3.1 years old (0.76 ± SD) and age range of 3 to 5.9 years old. Seventy three of mothers were house wive and most of the parents had secondary or higher educational level. The mean dmft score was 9.7 ± 2.3. Sociodemographic information is shown in Table 1.

Table 1. Sociodemographic Information

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child’s Demographic Characteristics</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>43 (47.8)</td>
</tr>
</tbody>
</table>
Data in table are presented as No. (%)

Pulp therapy (4.43±2.78) and stainless steel crowns (4.5±2.08) were the most common treatments used. The range of treatments provided under GA is shown in Table 2. The mean of post- treatment scores (follow up 1) showed significant decrease (P< 0.001) and the score of the second follow- up was lower than that of the first (P< 0.001). The domain of child psychology had the highest score, whereas the domain of family distress had the lowest one before the treatment. Table 3 shows the changes of scores in each domain from baseline (before treatment) to the second follow-up. According to Table 3, CIS scores, FIS scores and total scores decreased significantly (P< 0.001). Table 4 presents the prevalence of the most frequently reported domains, before and after the treatment in two follow-ups.

Table 2. The Number of Treatment Items Received Under GA

<table>
<thead>
<tr>
<th>Treatment item</th>
<th>Mean ± SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraction/anterior</td>
<td>0.9 ± 1.4</td>
<td>1-6</td>
</tr>
<tr>
<td>Extraction/posterior</td>
<td>1.06 ± 3.38</td>
<td>1-7</td>
</tr>
<tr>
<td>Pulp therapy</td>
<td>4.43 ± 2.78</td>
<td>1-13</td>
</tr>
<tr>
<td>Stainless Steel Crown (SSc)</td>
<td>4.5 ± 2.08</td>
<td>1-8</td>
</tr>
<tr>
<td>Amalgam filling</td>
<td>0.6 ± 1.15</td>
<td>1-5</td>
</tr>
<tr>
<td>Composite filling</td>
<td>2.6 ± 1.88</td>
<td>1-8</td>
</tr>
</tbody>
</table>

Table 3. Changes of Scores in Each Domain, before and after Dental Treatment under GA.

<table>
<thead>
<tr>
<th>Domains</th>
<th>Before treatment</th>
<th>After treatment (follow 1)</th>
<th>After treatment (follow 2)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child impact section</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child symptoms</td>
<td>6.5 ± 2.16</td>
<td>4.47 ± 1.73</td>
<td>4.14 ± 1.50</td>
<td>0.001</td>
</tr>
<tr>
<td>Child function</td>
<td>7.08 ± 2.45</td>
<td>4.28 ± 1.49</td>
<td>3.67 ± 1.25</td>
<td>0.001</td>
</tr>
<tr>
<td>Child psychology</td>
<td>10.33 ± 4.06</td>
<td>7.95 ± 2.71</td>
<td>6.92 ± 2.49</td>
<td>0.001</td>
</tr>
<tr>
<td>Child self-image and social interaction</td>
<td>Pre treatment</td>
<td>Post treatment (Follow up 1)</td>
<td>Post treatment (Follow up 2)</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>--------------</td>
<td>-------------------------------</td>
<td>-------------------------------</td>
<td></td>
</tr>
<tr>
<td>7.77 ± 2.85</td>
<td>6.81 ± 1.90</td>
<td>6.91 ± 2.38</td>
<td>0.004</td>
<td></td>
</tr>
</tbody>
</table>

**Family impact section**

<table>
<thead>
<tr>
<th>Family distress</th>
<th>Pre treatment</th>
<th>Post treatment (Follow up 1)</th>
<th>Post treatment (Follow up 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.26 ± 1.67</td>
<td>3.10 ± 1.43</td>
<td>2.90 ± 1.26</td>
<td>0.001</td>
</tr>
<tr>
<td>Family function</td>
<td>4.51 ± 2.0</td>
<td>2.93 ± 1.30</td>
<td>2.21 ± 0.81</td>
</tr>
<tr>
<td>Total score</td>
<td>40/47±11/46</td>
<td>29/56 ± 6/34</td>
<td>26/76 ± 5/89</td>
</tr>
</tbody>
</table>

Table 4. Pre–operative and post-operative Surveys of Quality of Life Measures.

<table>
<thead>
<tr>
<th>Child impact scale</th>
<th>Pre treatment</th>
<th>Post treatment (Follow up 1)</th>
<th>Post treatment (Follow up 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having pain in teeth, mouth, jaw</td>
<td>70 (77.8)</td>
<td>32 (35.5)</td>
<td>20 (22.2)</td>
</tr>
<tr>
<td>Having troubles drinking hot and cold beverages</td>
<td>70 (77.8)</td>
<td>27 (30)</td>
<td>9 (10)</td>
</tr>
<tr>
<td>Eating disturbances</td>
<td>84 (93.3)</td>
<td>48 (53.3)</td>
<td>35 (38.8)</td>
</tr>
<tr>
<td>Missing pre school</td>
<td>19 (21.1)</td>
<td>6 (6.6)</td>
<td>1 (1.1)</td>
</tr>
<tr>
<td>Having trouble sleeping</td>
<td>61 (67.7)</td>
<td>20 (22.2)</td>
<td>4 (4.4)</td>
</tr>
<tr>
<td>Feeling disturbance and impatience</td>
<td>71 (78.8)</td>
<td>34 (37.7)</td>
<td>11 (12.2)</td>
</tr>
<tr>
<td>Avoiding to smile</td>
<td>37 (41.1)</td>
<td>17 (18.8)</td>
<td>10 (11.1)</td>
</tr>
<tr>
<td>Avoiding to talk</td>
<td>30 (33.3)</td>
<td>13 (14.4)</td>
<td>11 (12.2)</td>
</tr>
<tr>
<td>Having gingival bleeding</td>
<td>20 (22.2)</td>
<td>24 (26.6)</td>
<td>16 (17.7)</td>
</tr>
<tr>
<td>Having oral malodor</td>
<td>70 (77.8)</td>
<td>32 (35.5)</td>
<td>29 (32.20)</td>
</tr>
<tr>
<td>Being sensitive or irritable</td>
<td>53 (58.8)</td>
<td>44 (48.8)</td>
<td>36 (40)</td>
</tr>
<tr>
<td>Feeling shy</td>
<td>24 (26.6)</td>
<td>16 (17.7)</td>
<td>16 (17.7)</td>
</tr>
<tr>
<td>Feeling Distressed of not being beautiful</td>
<td>21 (23.3)</td>
<td>16 (17.7)</td>
<td>17 (18.8)</td>
</tr>
<tr>
<td>Being Abandoned by friends and feeling lonely</td>
<td>12 (13.3)</td>
<td>7 (7.7)</td>
<td>7 (7.7)</td>
</tr>
<tr>
<td>Having Problem with participating in group activity</td>
<td>11 (12.2)</td>
<td>7 (7.7)</td>
<td>3 (3.3)</td>
</tr>
<tr>
<td>Feeling Distressed of having friends</td>
<td>4 (4.4)</td>
<td>6 (6.6)</td>
<td>6 (6.6)</td>
</tr>
<tr>
<td>Requesting more attention</td>
<td>53 (58.8)</td>
<td>54 (60)</td>
<td>40 (44.4)</td>
</tr>
</tbody>
</table>

**Family impact scale**

| Feeling guilty                                         | 74 (82.2)    | 39 (43.3)                     | 35 (38.8)                     |
| Taking work time off                                   | 60 (66.6)    | 26 (28.8)                     | 6 (6.6)                       |
| Being financially impacted                             | 58 (64.4)    | 32 (35.5)                     | 7 (7.7)                       |
Feeling upset of having child in public places | 15 (16.6) | 5 (5.5) | 0 (0)

In all domains, the scores before and after the treatment in the first follow-up had been decreased significantly (P<0.001). After the treatment, the scores of the first and the second follow-ups had been decreased significantly in all of domains (P<0.001) except for these two domains: family distress domain (P<0.1) and child self-image and social interaction domain (P<0.6).

Before the treatment, eating disturbances (93.3%), feeling disturbance and impatience (78.8%), pain (77.8%), drinking problems (77.8%) and oral malodor (77.8%) were the most frequently reported complications in child impact section. Feeling guilty (82%) was the most frequently reported complication in family impact section. Eating disturbances and feeling guilty in parents were the most common complications after the treatments in both follow-ups. There was a significant relationship between parents’ educational level and OHRQOL (P<0.02). High educational level was related to high quality of life. No significant relationship was observed between other sociodemographic items and OHRQOL (P>0.4).

Discussion
The aim of this study was to evaluate the effects of dental treatment under GA and determine the improvement of quality of life for children and their families. Dental treatment under GA is commonly used. Some of the children have a significant number of decayed teeth and couldn’t receive treatment in office setting because of being too young or failing to respond to the usual behavior management techniques (10). The benefit of dental treatment under GA is full mouth disinfection treatment in a single session without the cooperation of children. The design of a randomized controlled trial is an appropriate method, but because of ethical consideration, it is impossible to have untreated control group (8, 22). Our findings were based on parents’ report because of children’s age. Higher rate in follow-ups in our study, in comparison to other similar studies, shows the strength of the study (23).

All domains of quality of life in children and their parents showed significant improvement after dental treatment under GA in the child impact section, as seen in other studies, the greatest change occurred in child-function domain (CFD) (10, 24). A minor change occurred in social well-being domain which was similar to the report of a systematic review (23). The comparison of pre-treatment and post-treatment questionnaires in two follow-ups, presented significant improvement in all domains, except for child self-image, social interaction domain (CSID) and
family distress domain (FDD). A Demand for treatment showed parents’ caring about their child and doing treatment which decreased parents’ distress and also most of the children’s problems decreased shortly after the treatment but no more reduction in parents’ distress caused the highest reduction of parents’ distress in the first follow up reported three months after the treatment (follow up 2). By passing the time and also improving the child’s dental problem, feeling guilty in parents diminished. In CSID, the expectations from the treatment had been fulfilled. Using a combination of methods for completing questionnaire via telephone interview or self-administered questionnaire may be a possible weakness in the study but Reissman et al. reported that different modes of data collection did not affect the scores significantly (25). In the present study, it is shown that gender differences had not impacts. Klaassen et al. reported that no gender differences had impacts (22). This finding supports the similar study conducted by Razmiene et al. (26).

The educated parents reported fewer child impacts than did parents with a lower level of education, according to Jankauskiene et al. (24). These were the appropriate outcomes from a therapeutic intervention in a condition called ECC that is common and affect children and their families. In conclusion according to our study, oral-health-related quality of life in children and parents has significantly been improved after dental treatment under GA.

References


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