ORIGINAL ARTICLE

# Parental Perspective Regarding Child Oral Health Related Quality of Life After Dental Treatment Under General Anaesthesia

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## ABSTRACT

**Introduction:** Nowadays, it is not an unusual scenario for paediatric patient with severe oral rehabilitative needs to be treated under general anaesthesia (GA).This study aimed to understand the parent's perception regarding their children's oral health related quality of life (OHRQoL) following dental treatment under GA. **Methods:** This is a cross-sectional study utilising questionnaire as a mean of data collection. Based on retrospective dental records, 113 paediatric dental patients were treated under GA from October 2015 until February 2019, and their parents were contacted and invited to enrol into the study by completing the Parents-Caregivers Perception Questionnaire (P-CPQ) and Cleft Evaluation Profile (CEP). Data was recorded and analysed using Chi-square test in SPSS version 26 (IBM, Inc, Armonk, NY, USA). **Results:** The parental overall mean scores for P-CPQ was 53.55±16.79 reflecting satisfactory and improvement of their children OHRQoL following dental treatment under GA. Most parents (N=50, 89.28%) were also satisfied with the facial features of their children. Parents reported a positive response when asked about their satisfaction towards dental treatment that was provided to their child. **Conclusion:** Dental treatment under GA appears to have a positive effect on the children, improving their oral health and the overall quality of life (QoL) as perceived by parents. Parental age and level of education may have helped in improving their child QoL since they are eager and have the urged to seek treatment for their child.

**Keywords:** General anaesthesia, Oral health related quality of life, Parents-Caregivers Perception Questionnaire, Children, Dental treatment

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## INTRODUCTION

It is challenging to treat young children with early childhood caries (ECC) for health care providers, especially when comprehensive treatment is necessary, or patient has medical or behavioural problem (1). Comprehensive oral rehabilitation under general anaesthesia (GA) is performed in a controlled environment such as a hospital setting for ensuring patient safety, efficiency, and efficacy of dental care (2). The treatments provided includes restorative, extractions or surgical procedures for teeth removal, and preventive procedures (3). This approach is frequently considered as the last option; apart from the fear associated with this modality, other reasons for parental concerns include expenditure, risk-benefit and acceptability (4). However, at times GA may be essential and the only option for qualitative and effective delivery of care (5,6).

The oral health related quality of life (OHRQoL) concept evolves rapidly over the past few decades. It is a multidimensional construct which documents the ease of people while performing daily functions such as eating or sleeping, and social contact in which their self-esteem and satisfaction with relevance to oral health and related functional, psychological, and social factors plus, the impact of pain on their child are being assessed (7,8). Many children due to immaturities fail to express their feelings of chronic pain in which these feelings become their constant complaint over long period. Children may express their pain in daily living by showing difficulties in performing basic functions such as eating, sleeping, lack of concentration and disturbed

behaviour (9).

Study on oral health should place importance on QoL related to oral and dental disease and how these conditions affect QoL since it is important to relate oral health with general health (10). Indeed, a study assessed the child QoL based on parental perception and most parents felt their children had an improved QoL after comprehensive dental rehabilitation under GA especially improvement in feeling of pain, followed by improved abilities to eat and sleep (11). Relief from pain was the greatest interpreter of parents' perception where they reported improvement in their child's QoL post-treatment (11). Furthermore, GA services has long been accepted as one of the methods for comprehensive oral rehabilitation among young children but the assessment towards the quality of life outcomes of these children and parental satisfaction towards the procedures are still lacking (11). In Malaysian scenario, the data availability related to paediatric dental treatment performed under GA is limited due to the accessibility issues since the services is only available in tertiary hospitals with paediatric dental specialties and general anaesthesia services, thus it is difficult to assess parental feedbacks in multiple visits due to travelling and lodging. Besides, not many studies using P-CPQ as QoL assessment after dental rehabilitation under GA and CEP as part of the facial evaluation among non-cleft lip and palate patients. Hence, there is a need to assess the improvement in QoL after dental rehabilitation under GA among children.

Although the gold-standard method to measure pain in any patient is considered to be self-report, but in case of children, its accuracy becomes questionable (12). Young children may report pain with 'some or great uncertainty' which can be due to their age and lower cognitive abilities (13).

Parents are requested to answer questionnaires since they could offer an unbiased evaluation of their child's physical, mental state and social well-being considering parents a valid proxy (14). Besides, even if children can report for themselves, their caregiver's approval to this reporting is still needed. Parents are the child's prime advocate in all health care situations, hence their perspective should be considered and understood more clearly as well (15,16). Parents' assessment of the child's OHRQoL together with their agreement on all treatment aspects suggest that the sole decision maker regarding child's health are parents/caregivers (17). Therefore, assessing parent's perceptions regarding their child oral health problems and the impact of dental treatment on their children's OHRQoL is vital. Different types of OHRQoL questionnaires for children have been developed and used in clinical studies (17,18). Hence, this study aimed to assess the parental perception on their child OHRQoL following dental treatment under GA using the Parental-Caregivers Perceptions Questionnaire (P-CPQ) and Cleft Evaluation Profile (CEP).

## MATERIALS AND METHODS

This cross-sectional retrospective study was approved by the Internal Review Board (IRB), Human Ethics Committee, Universiti Sains Malaysia (USM/JEPem/18090437) which was obtained prior to contacting the parents. Records of 113 paediatric patients who had undergone dental treatment under GA from October 2015 until February 2019 were retrieved from Record Unit, Advanced Medical and Dental Institute, USM. From these patient's records, parent's information was obtained. They were contacted and invited to participate in the study. Once they agreed, consent forms were distributed through email, and postal with stamp envelopes, and they were asked to return it. The research was undertaken with the understanding and written consent of each participant and has been conducted in full accordance with ethical principles as stated in the IRB guidelines. The sample size needed for this study with the objective to assess the parental perception on their child OHRQoL following dental treatment under GA using the Parental-Caregivers Perceptions Questionnaire (P-CPQ) and Cleft Evaluation Profile (CEP) was calculated using single proportion formula (19) as shown in Equation 1 below where $z=1.96$, $\Delta= 0.1$, $p= 0.2$ based on Jokovic et al. (8), the sample size needed was 68 subjects with 10% dropout rate.

$$n= (z/\Delta)^2 p(1-p) \qquad \text{Equation (1)}$$

However, based on the questionnaires that we had received, only 56 questionnaires were included as mentioned in the results section below.

The P-CPQ consisted of oral symptoms (OS), functional limitations (FL), emotional well-being (EWB) and social well-being (SWB) domains, and two questions for global rating (GR) (8). The P-CPQ was developed by Jokovic and co-worker in 2002 and had undergone a few modifications from original form to the short form (20) and had been translated to Indian and Cambodian languages and are well received by the communities (21,22).

The CEP originated from the Royal College of Surgeons Cleft Lip and Palate Audit group and used in this study for assessing parental perceived satisfaction related to overall facial features of their child. CEP consisted of eight items (speech, hearing, teeth, lip, nose, breathing through nose, facial profile, and chewing) with responses option and score ranging from Very Satisfactory [score of 1] to Very Unsatisfactory [score of 7] (23). The CEP was used in the current study since the facial features highlighted are almost similar with items in global rating (teeth, lip, jaw and mouth) and based on the data as reported previously (1), one patient was diagnosed with cleft lip and palate and had the lip reparative surgery when she was 6-month-old at a different hospital.

The P-CPQ were translated into Malay language from

English version and re-translated again according to International Linguistics guidelines under the supervision of Malay speaking individuals, who knew both English and Malay language. An expert panel was established to critically analysed content and construct validity of the P-CPQ through forward and backward translations. The first Malay version of the P-CPQ was first pre-tested among ten participants not related to the study, and then modifications were made accordingly. The questionnaire was again translated to English with the help of two linguistic individuals who were not a part of the research team. Second pre-test of the questionnaires were performed among ten participants to evaluate further and highlight any disparities. Final changes were made after running the internal consistency and test-retest reliability analysis (between 0.6 to 0.9%) for all domains and subscales along with making sure that the final translated draft was easy to be understood for both Malay and English versions. The first 33 items of the P-CPQ had Likert scale response options from 1 to 5 comprising of Never [1], Once/Twice [2], Sometimes [3], Often [4], Everyday/Almost Everyday [5]. These scores were calculated and summed-up to obtain the final score. The minimum score for 33 items was 33 and maximum score was 165, while the middle score was 99. Two questions for assessing parent's satisfaction were added; [1] Are you satisfied with the dental treatment done under general anaesthesia on your child with selection of "Yes" and "No", and [2] Could you kindly rate your satisfaction based on the alternative below which consist of "Very Satisfied", "Least Satisfied", "Not Satisfied" and "Very not Satisfied".

Data were collected over a period of six months. Data were entered and analysed using SPSS version 26 (IBM Corp., Armonk, New York, USA). Descriptive and analytical statistics were performed where P<0.5 is considered significant with a 95% confidence interval and a 5% error due to chance. The interpretations of levels of agreement for the weighted kappa statistic was used to illustrate the frequency of matched ranks awarded by the parents for the satisfaction with their treatment outcome (24). For the overall satisfaction to facial features, the cut-off value was 32; any total score less than or equal to 32 showed that the parents were satisfied with their child facial features (23).

## RESULTS

Questionnaires were used as means to assess parent's perception regarding their child's OHRQoL following dental treatment under GA. Parents were contacted and asked to fill the questionnaire either by physically coming to clinic or through email as per their convenience, in which from 113 parents, only 80 parents responded (70.8%), and after screening, only 56 questionnaires were included in the analysis with low response rate of only 49.5% (56/113 parents). Majority of the respondents were Malay (98.2%) and only 1.8% was Chinese, in which more female parents (57.1%) responded as compared to male parents (42.9%). The parental age group range from 25 to 56 years old where 69.6% are under the age of forty as shown in Figure 1. Most parents (89.28%) received secondary level of education (college/universities) and they are employed (working full time) by either government or private agencies (91.1%). Majority of the income groups are from B40 category (60.7%), followed by M40 category (33.9%) and the least from T20 category (5.4%) as shown in Table I. The income group classification is based on the average monthly income in Malaysian Ringgit (MYR) from one household, in which for B40 is under MYR4,850.00, M40 ranging from MYR4,851 to MYR10,970.00, while T20 received an average of more than MYR10,970.00 monthly (25). Based on the parental feedback, 37.5% of their children were under the aged of 6 years old, 51.8% aged between 7 to 12 years old, and 10.7% aged between 13 to 18 years old (mean age, 8.42±3.65).

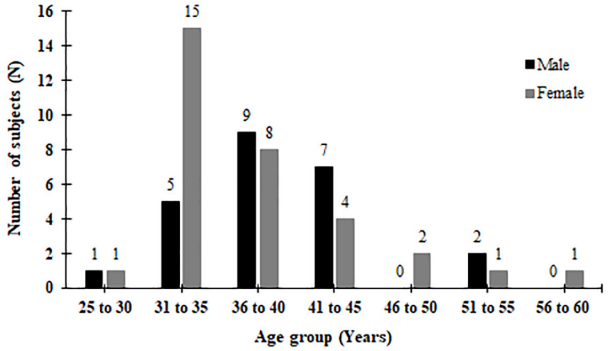


**Figure 1: Parental Age Group**

**Table I: Parental demographic profiles**

| Variables | Number of subjects | | Total | *P*-value* |
|---|---|---|---|---|
| | Male (N) (%) | Female (N) (%) | | |
| Gender | 24 (42.9) | 32 (57.1) | 56 (100.0) | |
| Race | | | | |
| Malay | 24 (43.6) | 31 (56.4) | 55 (100.0) | 0.382 |
| Chinese | 0 (0.0) | 1 (100.0) | 1 (100.0) | |
| Level of education | | | | |
| Primary | 4 (66.7) | 2 (33.3) | 6 (100.0) | 0.212 |
| Secondary | 20 (40.0) | 30 60.0) | 50 (100.0) | |
| Occupation | | | | |
| Employed/Full Time | 23 (45.1) | 28 (54.9) | 51 (100.0) | 0.279 |
| Un-employed/Part Time | 1 (20.0) | 4 (80.0) | 5 (100.0) | |
| Monthly income (MYR) | | | | |
| T20 | 1 (33.3) | 2 (66.7) | 3 (100.0) | 0.089 |
| M40 | 12 (63.2) | 7 (36.8) | 19 (100.0) | |
| B40 | 11 32.4) | 23 (67.6) | 34 (100.0) | |

*Chi-square test

The parental overall score for 33 items was 53.55±16.79 with score ranging from 33 to 112 as shown in Table II. The score for P-CPQ subscales (OS, FL, EWB, SWB) is arranged from the highest mean score towards the lowest score that is reflective towards increasing frequency of event occurrence from Never [1] to Everyday/Almost Everyday [5] in which "bad breath" in OS category

**Table II: P-CPQ overall and subscale score**

| | Number of items | Total score Mean±(SD) | Range (lowest to highest total score) | Cut-off value |
|---|---|---|---|---|
| Overall P-CPQ score | 33 | 53.55±16.79 | 33 – 112 | 99 |
| P-CPQ Subscale | | | | |
| Oral symptoms | 5 | 8.43±2.70 | 5 – 17 | 15 |
| Functional limitations | 10 | 15.57±5.61 | 10 – 31 | 30 |
| Emotional well-being | 8 | 14.11±5.39 | 8 – 26 | 24 |
| Social well-being | 10 | 15.44±6.26 | 10 – 42 | 30 |

received the highest mean score (2.18±1.01).

For global rating (GR), parents felt that their child's teeth, lips, jaws and mouth condition are "not bad" (39.3%), "satisfactory" (33.9%) and "excellent" (14.3%). When asked about how much the condition of their child's teeth, lips, jaws and mouth affects their child life overall, about 42.9% mentioned that their child was affected "a bit only" (Table III). Overall, based on two added questions, 64.3% parents were "Very satisfied" with the dental treatment received under GA.

Regarding satisfaction with facial features, 89.3% parents had total score of less than or equal 32 indicating satisfaction with the facial features of their child as shown in Table IV. Inter item reliability analysis showed

**Table III: Global rating and satisfaction towards dental treatment under GA**

| Variables | Total (N) (%) |
|---|---|
| Would you say that the health of your child's teeth, lips, jaws and mouth is… | |
| Excellent | 8 (14.3) |
| Not bad | 22 (39.3) |
| Satisfactory | 19 (33.9) |
| Not satisfactory | 7 (12.5) |
| | 56 (100.0) |
| How much does the condition of your child's teeth, lips, jaws and mouth affect your child life overall… | |
| Not at all | 11 (19.6) |
| A bit only | 24 (42.9) |
| Much | 13 (23.2) |
| Not much | 4 (7.1) |
| Very much | 4 (7.1) |
| | 56 (100.0 |
| Are you satisfied with the dental treatment done under general anaesthesia on your child? | |
| Yes | 56 (100.0) |
| No | 0 (0.0) |
| Could you kindly rate your satisfaction | |
| Very Satisfied | 36 (64.3) |
| Satisfied | 20 (35.7) |
| Not Satisfied | 0 (0.0) |
| Very not Satisfied | 0 (0.0) |

**Table IV: Satisfaction with facial features**

| Variables | Number of subjects | | Total | *P*-value* |
|---|---|---|---|---|
| | Male (N) (%) | Female (N) (%) | | |
| Less than or equal 32 | 21 (42.0) | 29 (58.0) | 50 (100.0) | 0.708 |
| Equal 33 or more | 3 (50.0) | 3 (50.0) | 6 (100.0) | |
| Total | 24 (42.9) | 32 (57.1) | 56 (100.0) | |

*Chi-Square Test

a significant relationship between the subscale items (P<0.00), where parental perception of child's facial features was in almost perfect agreement (Cα=0.95). Teeth, mastication, and speech were the main concern for their children facial features as perceived by the parents.

## DISCUSSION

Since recently, there has been a substantial attention in assessing oral health-related quality of life (OHRQoL) among children. This study aimed to measure the parental perception on their child OHRQoL following dental treatment under GA using the Parental-Caregivers Perceptions Questionnaire (P-CPQ) and Cleft Evaluation Profile (CEP) where more female parents (mother) responded. This support the notion that mothers were more concerned about their child problems and responded as proxy to their child (26) since children are more reliant on mothers for emotional support (27). Malay parents were the major race seeking treatment and is reflected by the ethnic majority in Bertam area (1). Most parents were government/private employees who worked fulltime and typically belong in the lower income group where treatment costs are being funded by the government/private employees. The lower financial and socioeconomic status may suggest the lack of knowledge regarding importance of oral hygiene practices on parent's end, in which rampant caries has been linked to unsatisfactory effect on the child OHRQoL (28,29). Our previous record showed that children from these parents were diagnosed with ECC prior to receiving treatment under GA (1).

The delivery of dental treatment under GA is related to improvements in children's OHRQoL regardless of the treatment amount received by the children (21). The children OHRQoL and their families condition improved based on questionnaire surveys in all scales following dental treatment under GA (7,30). In concordance with the current study, all parental P-CPQ subscale for OS, FL, EWB and SWB showed that their children OHRQoL improved after receiving dental treatment under GA. However, no significant changes were observed which can be linked to small sample size, convenience sampling, and duration of data collection which was more than three months following dental treatment. The evaluation of child's actual OHRQoL can be conducted within four weeks following dental treatment as

suggested in a recent study for ensuring valid assessment and data collection (31).

Parental concerned for subscale items were "bad breath" in OS, "slow eating in FL, "feeling shy/embarrassed" in EWB, and "asked questions by other children about self-condition" in the SWB. The parental responses are different from previous report where "pain in the teeth, lips, jaws or mouth" from OS, "difficulty biting or chewing firm foods" from FL, "upset" from EWB, and "missed school or preschool" from SWB domains had the highest impact to parents (20). These differences may be due to geographical background, parent's education level, socioeconomic status and the less diverse ethnic groups from the current study.

A small proportion of parents reported unsatisfactory feelings towards their child's teeth, lips, jaws and mouth in global rating (GR) questions. Besides, half of parents felt that the condition of those features affects their child's life overall. Concurrently, for facial features based on CEP, teeth, mastication and speech were the main items for parental attention. CEP was used among cleft lip and palate patients to assess their facial features before and after surgery (23,32). A study compared father and mother scoring facial features satisfaction using CEP and the results showed that the items affected were lip, nose, and teeth (32). The features highlighted in CEP was also assessed in global rating questions. Since there are similarities of the items assessed, the findings from CEP supported the GR results, and parental perception towards satisfaction of these features does reflects what the parents sees in terms of their child's improvement in relation to QoL after dental rehabilitation under GA. The lower CEP score is towards satisfactory (total score less than 32) in which 89.2% of parents scored 1 and 2. Hence, CEP assessment can be included in future study among non-cleft patients to identify selectively facial feature items that contribute towards parental concerned.

Parents regarded their children's' dental treatment under GA experience to be positive, and their child's oral health to be in an excellent condition. Similar results also showed that 72% of parents who had their children treated under GA perceived it as a helpful tool in providing treatment for their children (7). They reported 86% improvement in pain relief, and 69% in eating respectively (7). One study reported that 36% of parents would prefer to choose a safer sedative method rather than GA to complete the treatment. Additionally, poor follow up compliance among children who had undergone comprehensive dental rehabilitation under GA experienced disease relapse which contributed to deteriorating children's QoL (3).

Dental treatment can directly or indirectly improve children's OHRQoL. Results were varied in the literature which can be due to family characteristics especially their socioeconomic position and knowledge about oral health practices or parents understanding of what 'normal' oral health conditions are for children (33). While almost all responses from the parents were observed to be acceptable for the P-CPQ, there were still some aspects of the subscales where no significant positive changes or no changes at all were observed (14,34).

The non-significance results in all P-CPQ domains can be linked to small sample size which regretfully is a limitation of this study. Secondly, email or postal responses from parents may contribute to responses consistency since there is a lack of face to face evaluation. Hence, future studies should include major dental health centres in this area so that substantial results can be obtained. Questionnaires should be administered before and after treatment in order to assess the relationship between treatment under GA from other treatment approaches for improving the OHRQoL of these children.

## CONCLUSION

Comprehensive dental treatment needs that are fulfilled under GA have a positive impact on children as perceived by their parents which symbolises as a constructive effect on the children QoL and their family condition.

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