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FAMILY IMPACT SCALE AFTER FULL MOUTH REHABILITATION UNDER GENERAL ANESTHESIA IN A GROUP OF EGYPTIAN CHILDREN WITH SPECIAL HEALTHCARE NEED: A BEFORE AND AFTER STUDY

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ABSTRACT

Aim: To assess the family impact scale (FIS) after full mouth rehabilitation (FMR) with a group of Egyptian children with special healthcare needs under general anesthesia.

Participants and method: The caregivers were given the FIS questionnaire at baseline and 6-month postoperative visits. Medical and dental histories were collected.

Results: The study comprised 17 caregivers, the average age of the caregivers was (36.4 ± 7.4), and the average age of children was (7.16 ± 3.3). Mothers were the primary caregivers (82.4%). The family impact scale was reported adversely prior to FMR under GA and considerably enhanced in all aspects tested (P<0.05) post FMR.

Conclusions: Treating children with special healthcare needs who have extensive dental caries under general anesthesia results in significant improvements for the entire family, not just the child.

KEYWORDS: FIS, Family impact scale, Quality of life, oral health, full mouth rehabilitation, general anesthesia, Children with special healthcare needs.

INTRODUCTION

Children with special healthcare needs (CSHCN) are prone to poor oral hygiene, which is associated with toothache, pain, changes in body mass, and development, and has an adverse influence on the oral health and the quality of life of children and their families/caregivers[(1)]. Due to their poor sensorimotor coordination, most CSHCNs rely on their parents or caregivers for general care [(2)].

Dental caries may further impact families,

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whereby parents/caregivers feel a sense of guilt for their child's condition. Further concerns include treatment costs, the ability to access care, and stress related to the attention of the affected child. These quality of life issues may affect families daily, leading to sleep loss, time lost from school and work, exhausted wages, travel expenses, and expenditures related to pain medication and other medical costs[3].

Comprehensive oral rehabilitation (COR) performed while under general anesthesia (GA) is necessary to offer high-quality dental care for many CSHCNs who have significant dental involvement. Successful treatment in the standard care context is particularly difficult for these patients.

Numerous instruments have been created to evaluate the quality of life of children and their families in relation to dental health. The Child Oral Health-Related Quality of Life (COHQoL) questionnaire, which contains the Child Perceptions Questionnaire (CPQ), the Parental-Caregivers Perceptions Questionnaire (P-CPQ), and the Family Impact Scale, is the most often utilized of these. FIS is crucial because oral health issues have a detrimental effect on a children functional, psychological, and social well-being, which is felt by the child and their family. Therefore, the family must be included in the measurement of children's OHRQoL[4]. This study aims to assess the family impact scale after full oral rehabilitation under general anesthesia in a group of Egyptian children with special healthcare needs.

PARTICIPANTS AND METHODS

Participants

Caregivers with their CSHCNs attending General Anesthetic unit in Pediatric Dentistry and Dental Public Health Department, Faculty of Dentistry, Cairo University, Egypt. According to inclusion and exclusion criteria, children were assessed for a diagnosis of their principal complaint and participated in this research.

Eligibility Criteria

Inclusion Criteria

1. Children's ages range from Three to Fourteen years old.
2. Children with intellectual, cognitive, or physical impairments.
3. Children who had not received treatment in the preceding year.

Exclusion Criteria

1. Enrollment in any other ongoing study.
2. The presence of serious medical issues or communicable infections.
3. Children whose parents had no means of communication to enable postoperative contact.
4. Parent that will not sign the consent form.

Sample size determination

The sample size was determined to include 14 children based on a prior publication by El-Meligy et al.[5]. To account for losses during follow-up, this number was raised by 20% to a sample size of 17. Power and Sample Size Calculation Software was used to do this calculation. 3.1.2 Version (Vanderbilt.University, Nashville, Tennessee, USA).

Ethical approval

The Research Ethics Committee, Faculty of Dentistry, Cairo University, granted ethical permission with approval number 20-3-2018.

Setting and Location

- The study was conducted in the General Anesthetic unit in Pediatric Dentistry and Dental Public Health Department, Faculty of Dentistry, Cairo University, Egypt.
- The parent or caregiver provided demographic information (age and gender), socioeconomic information (household income, caregivers' educational level, and employment status), disability history, medical history, and dental history.

Follow up

- Parents/caregivers were given the questionnaire at the baseline and at 6-month postoperative visits.

Data and sources measurements

The questionnaire applied in this study was divided into two sections: the Demographic Data Collection and Family Impact Scale (FIS).

The short-form FIS, which is part of the child OHRQoL questionnaire, was used in this study. Its purpose is to examine parental attitudes on their children's oral health and the implications for the family. The FIS included eight variables that evaluated the influence of a child's oral health across three domains: parental and family activities, parental emotions, and family conflict as shown in table 1.

Data and Statistical Analysis

Data were statistically represented as mean, standard deviation (SD), median, range, interquartile range (IQR), or frequencies (number of cases) and percentages where relevant. The Wilcoxon. signed-rank test was used to compare the baseline and 6 month numerical values. The Chi-square test was used to compare categorical data. When the anticipated frequency was less than 5, the Fisher Exact test was used. The McNemar test was used for paired data. The Spearman.Rank correlation equation was used to calculate correlations. *P* values less than 0.05 were considered statistically significant.

RESULTS

Socio-demographic characteristics of the caregivers

The study population comprised 17 caregivers (one caregiver per child), and the average age of the caregivers was 36.4 ± 7.4 years. Most of the caregivers (47%) were between 33-40 years, followed by 29.4% who were in the 29-32 years age group, and then 23.5% were in the 41-49 years age group. Most caregivers were mothers (82.4%), and fathers were 17.6%.

Children in this study had different types of disabilities. Figure 1 shows the proportion of children by type of disability.

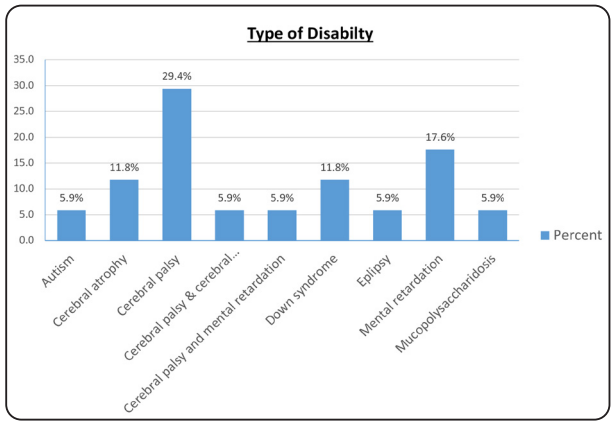

Fig. (1): A bar chart showing the proportion of children by type of disability

Figure 2 shows the socio-demographic characteristics of the caregivers by the level of education, employment status, living, source, and scale of income.

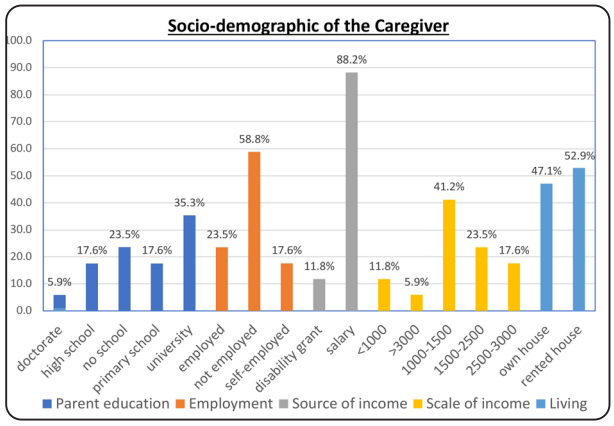

Fig. (2): A bar chart showing the proportion of caregivers by socio-demographic characteristics.

Distribution of child disability according to the socio-demographic profile of caregiver

The study found no statistically significant association between disability and several socio-demographic factors of the caregiver, such as age, level of education, work status, source of money, and scale of income.

Family impact scores (FIS)

This score was made up of 8 items that measured the effect of a child's oral condition across three domains: parental and family activities, parental emotions, family conflict. Each of the eight individual questions received a score. The composite FIS score can vary from 0 to 32, with each domain ranging from 0 to 16, and each item ranging from 0 to 4 as shown in table 1.

The baseline data showed "the child requiring more attention" to be the most frequent impact in the parental/family activity domain (where eight children from a total of 17 children (47.1%) required more attention almost every day) and "being upset" to be the most common impact reported in parental emotions domain. The frequencies of the postoperative impact for all the scale items were significantly lower than those reported preoperatively. Table 2 summarizes the distribution of (FIS) responses in all the domains.

Table 3 shows a statistically significant difference in the average scores for the overall scale and the subscales (Parental/family activity and Parental emotions) before and six months after full oral rehabilitation under GA.

It was discovered that age had no significant relationship with the overall FIS score ($p>0.05$) or the caregiver's degree of education, employment position, living environment, means of income, and income scale. Only the parental/family activities component indicated a statistically significant variation in perceived mean score by caregiver

TABLE (1): FIS Questionnaire with its three domains

	Never	Once or twice	Sometimes	Often	Every day/ almost everyday	Don't know
	0	1	2	3	4	0
Parental/family activity Total score (0-16)	☐	☐	☐	☐	☐	☐
1. Have you or the other parent taken time off work? (0-4)	☐	☐	☐	☐	☐	☐
2. Has your child required more attention from you or the other parent? (0-4)	☐	☐	☐	☐	☐	☐
3. Have you or the other parent had less time for yourselves or other family members? (0-4)	☐	☐	☐	☐	☐	☐
4. Has your sleep or that of the other parent been disrupted? (0-4)	☐	☐	☐	☐	☐	☐
Parental emotions Total score (0-16)						
5. Have you or the other parent been upset? (0-4)	☐	☐	☐	☐	☐	☐
6. Have you or the other parent felt guilty? (0-4)	☐	☐	☐	☐	☐	☐
Family conflict Total score (0-16)						
7. Has your child argued with you or the other parent? (0-4)	☐	☐	☐	☐	☐	☐
8. Has your child blamed you or the other parent? (0-4)	☐	☐	☐	☐	☐	☐
Total FIS score				**0-32**		

gender and employment position (p = 0.003, p = 0.036). Meanwhile, there was a statistically significant difference (p = 0.025) between total FIS and caregiver gender. Table 4 summarizes the relationship of the domains and overall scores of FIS to demographic variables and disability.

TABLE (2): Distribution of the FIS responses before and after full oral rehabilitation under GA

	FIS item	Pre-treatment n=17		Post-treatment n=15	
		Median	IQR	Median	IQR
	Parental/family activity				
1-	Have you or your partner taken any time off from work?	0	0-2	0	0-1
2-	Is it required for you or the other parent to give your child extra attention?	3	2.5-4	2	1-2
3-	Have you or your partner reduced your time spent with yourself or other family members?	3	2-3	1	1-2
4-	Has one or both parents' sleep ever been disturbed?	2	1-3	0	0-0
	Parental emotions				
5-	Have you or the other parent been distressed?	0	0-2	0	0-0
6-	Do you or your partner feel guilty?	0	0-0	0	0-0
	Family conflict				
7-	Is your child having a disagreement with you or the other parent?	0	0-0	0	0-0
8-	Is your child holding a grudge towards you or the other parent?	0	0-0	0	0-0

TABLE (3): FIS overall and subscale scores for the study participants at baseline and 6-month follow-up visits

FIS scale	Pre-treatment		Post-treatment		p-value
	Median	IQR	Median	IQR	
Subscales					
Parental/family activity	9	7.5-10	4	2-5	0.000
Parental emotions	0	0-2	0	0-0	0.022
Family conflict	0	0-0	0	0-0	-
Total FIS score	10	7.5-12.5	4	2-5	0.000

**** p value significant when it less than 0.05 ($p < 0.05$).***

TABLES (4): The relationship of the domains and overall scores of FIS to demographic variables, disability and caries status

Demographic variables		FIS scale		
		Parental/family activity	Parental emotions	Total FIS
Age	r	0.312	0.290	0.350
	p-value	0.222	0.259	0.168
Gender	r	0.673	0.105	0.541
	p-value	0.003	0.688	0.025
level of education	r	-0.015	-0.223	-0.107
	p-value	0.955	0.389	0.683
employment status	r	0.511	0.029	0.372
	p-value	0.036	0.911	0.141
source of income	r	0.114	-0.145	0.038
	p-value	0.664	0.579	0.886
scale of income	r	0.057	-0.184	-0.040
	p-value	0.829	0.480	0.880
living	r	-0.196	-0.053	-0.158
	p-value	0.452	0.838	0.545

***** p value significant when it less than 0.05 (p < 0.05).***

DISCUSSION

The total study population consisted of caregivers and their children. Females were the primary caregiver, consistent with Pani et al. and Abanto et al. [6,7], as they reported having more females as caregivers. This is due to the worldwide social standards, where females are regarded as primary caregivers[8].

A significant percentage of the caregivers were from the low socioeconomic level, which may be due to the socioeconomic level of most caregivers, as the University where the sample was collected is governmental and with free or little service treatment fees. In addition, the majority of parents\caregivers were unemployed, because only one parent was working while the other took care of their children.

This study employed the FIS measures of children's oral health-related quality of life in order to emphasize the situation of oral health quality of life among a population of CSHCN and its impact on their families, everyday lives, and overall wellbeing. According to Locker et al.[9], when it comes to the consequences of oral and oro-facial issues in children, two comprehensive concepts must be addressed: the child's oral health-related quality of life and the impact of the child's condition on the family.

The most frequent impact in the parental/family activity domain in the FIS scale was "the child requiring more attention," where the majority of the participants required more attention almost every day, and "being upset" was the most common impact reported in parental emotions domain. The lowest scores were found in the family conflict domain because most children had limited communication skills and difficulties with comprehension, as this section is about having a conversation or arguing with a family member. Corresponding with the findings of this study, Baens-Ferrer et al.,[10] stated that CSHCN family/caregivers describe a variety of oral symptoms, daily living obstacles, and parental concerns about their child's oral health, all of which impair the child's and family's QoL.

The frequencies of the postoperative impact for all the scale items were significantly lower than those reported preoperatively. The changes in mean summary scores indicate that oral rehabilitation under general anesthesia was effective at minimizing or alleviating oral symptoms, daily life problems, and parental concerns. Numerous prior research demonstrated that OHRQoL improved following dental treatment under GA in every facet of our investigation[5,10,11, 12]. The provision of dental care under GA for CSHCN is associated with substantial and highly significant improvements in both children's OHRQoL and the effect on their families, according to Baens-Ferrer et al., El-Meligy et al., Al-Nowaiser et al., and Farsi et al. [5,10,11 ,12]. Treatment under general anesthesia of CSHCN with extensive carious lesions improves OHRQoL not just for the child but also for the family, with improvements noticeable at both the overall FIS level and the individual items that comprise the FIS.

CONCLUSIONS

Full mouth rehabilitation under general anesthesia reduces parental anxiety and correlates with significant improvements for the entire family, not just the child. Following FMR under GA, the quality of life for special needs children and their families improved dramatically in all aspect.

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