

Effect of Parental Dental Anxiety Level on Acceptance of Non-Pharmacological Behavior Management Strategies used in Pediatric Dentistry

Beenish Abbas, Aroma Irfan Qureshi, Maida Waseem and Amna Talaat

ABSTRACT

Objective: To determine the effect of parental dental anxiety level on acceptance of non-pharmacological behavior management strategies used in pediatric dentistry

Methodology: This cross-sectional study was conducted at the Pediatric department of FUCDH Pakistan over five months. It was carried out through a pre-validated questionnaire. Behavior management techniques with audiovisual aids were explained to the participants. Patients reporting for routine dental check-ups, on follow up of ongoing dental treatment were included in the study whereas patients with dental trauma, unwilling to be a part of this research, undergoing general anesthesia and medically compromised patients were excluded from the study. Patients are grouped based on age to determine parental behavior in different age groups.

Results: 302 parents participated in this study including 130 (43.0%) fathers and 172 (57.0%) mothers. The mean age of children was 7.81 ± 1.92 years, with an age range of 4-12 years. The majority of the parents, 297 (98.3%) agreed with behavioral management techniques with 293 (97.0%) parents agreed that the dentist should show videos of behavior management techniques for their understanding. 254 (84.1%) parents agreed to consent for use of sedation and anesthesia. Refusal to sedation technique was significantly more common among parents of children of younger age group as compared to children of older age group ($p < 0.001$).

Conclusion: Modest anxiety levels were recorded in parents accompanying pediatric dental patients irrespective of age group thus expressing eagerness for non-pharmacological behavior management strategies with prior explanation and demonstration. However, reluctance to sedation and anesthesia modalities were deciphered by parents particularly evident in parents of younger age group patients.

Keywords: Anxiety, management, parental, pedodontics.

Published Online: January 29, 2023

ISSN: 2684-4443

DOI : 10.24018/ejdent.2023.4.1.231

B. Abbas*

Foundation University College of Dentistry, Islamabad, Pakistan.

(e-mail: beenishabbas1982@gmail.com)

A. I. Qureshi

Foundation University College of Dentistry, Islamabad, Pakistan.

M. Waseem

Foundation University College of Dentistry, Islamabad, Pakistan.

A. Talaat

Foundation University College of Dentistry, Islamabad, Pakistan.

**Corresponding Author*

I. INTRODUCTION

The pedodontics triangle is equally divided between dentist, parent, and child. There should be constant and balanced dialogue in this triangle for pleasant delivery of dental care to the pediatric dental patient [1]. Non-pharmacological behavior management strategies like positive reinforcement, tell-show do technique, voice control, modeling, audiovisual distraction, systematic desensitization, and protective stabilization are essential components [2] of outpatient pediatric dental care [3]. Conventional behavior management modalities are effective in guiding the child's behavior, invasiveness involved in some techniques may limit parental acceptability [4]. Acceptability of behavior management technique depends on many factors like child treatment needs, age of the child, the urgency of dental treatment, ethnicity, socioeconomic status, and parental anxiety level [5].

Parents nowadays are more aware regarding the rights of

their children as patients so there is an ever-increasing demand for informed consent and child safeguarding. Mounting evidence suggesting that informed parents are more likely to accept behavior management strategies [6]. Previous studies in which parents were shown videos reveal that physical restraints, pharmacological behavior management strategies, and hand over mouth techniques were highly unacceptable [7] to most parents, while positive reinforcement, modeling, and tell show do techniques were increasingly acceptable [8]. In very few cases where the child is more stubborn and hyper motive more aversive behavior management technique is needed as an adjunctive or alternative technique to make efficient delivery of dental care possible [9].

Advanced pharmacological behavior management techniques like General Anaesthesia and nitrous oxide /oxygen inhalational conscious sedation techniques are available for cases not manageable by non-pharmacological behavior management techniques [10]. Within the

pharmacological behavior management continuum American academy of pediatrics dentists' members prefer general anesthesia followed by nitrous oxide/oxygen sedation [11]. Individualized behavior shaping can be catered for depending on the treatment needs of each patient by applying a variety of behavior management techniques however pharmacological behavior management techniques have more adverse effects, not cost-effective resulting in decreased parental acceptance [12].

Reports from previous literature call for ongoing research on parental acceptance of behavior management techniques to accommodate societal changes [13]. Cultural background, socioeconomic status parental dental anxiety level, and parents' own traumatic dental experiences and whether they were informed or not through video demonstration can affect parental acceptance of specific behavior management techniques [14]. The rationale of the current study is to evaluate the effect of the various variable on parental perception of behavior management techniques used to carry out dental treatment on their child.

II. METHODOLOGY

This cross-sectional study was conducted at the Pediatric department of FUCDH Pakistan over five months after approval from the ERC committee. Participants were enrolled with a non-randomized convenience sampling technique. Patients reporting routine dental check-ups (caries, pain), on follow up of any ongoing dental treatment were included in the study. Patients reporting conditions that require emergency treatment such as trauma patients, unwilling to be a part of this research, undergoing treatment under general anesthesia and medically compromised patients were excluded from the study.

Patients were divided into three groups, based on their child's age, where parents of 4-6 years old children belonged to Group, 7-9 years to Group 2, and 10-12 years to Group 3 to determine the difference in parental behavior in the case of different age groups. Informed consent was taken from patients/parents and patient identity was kept confidential. The consent form was generated in the native language for easy understanding on part of the patient/parent. Verbal consent was also verbally obtained after an adept explanation. All procedures were carried out after the conforming patient has not been symptomatic in the last two weeks. Patients underwent treatment with their assigned doctors by the hospital and research members explained behavior management techniques to be used during treatment and observed the response of patients and parents to various behavior management techniques used during treatment. Visual and audio aids were used to explain techniques. Adequate consideration was given to the ongoing threat of COVID-19 infections with strict implementation of SOPs. Doctors who carried out procedures were mandatory PPEs. The results were recorded and evaluated using a pre-validated questionnaire.

Data was entered and analyzed by using software IBM SPSS (version 23.0). The descriptive statistics of continuous variables were presented as mean and standard deviation, while categorical data frequencies and percentages were used. Mean values were compared between groups using an

independent t-test or one-way ANOVA, as appropriate. Categorical group comparisons were made chi-square test. A p-value ≤ 0.05 was considered to be statistically significant.

III. RESULTS

302 parents participated in this study. There were 130 (43.0%) fathers while 172 (57.0%) mothers, with mean parent age of 45.94 ± 11.4 years. There were 47 (15.6%) retired army personnel among the participants, 38 (12.6%) doing the private job, 52 (17.2%) government employees, 13 (4.3%) self-employed, and 152 (50.3%) were housewives. Majority of the participants, 126 (41.7%) declared monthly income of 41-50,000 PKR, while 71 (23.5%) had 20-40,000 PKR income, 42 (13.9%) had more than 50,000 PKR income and 63 (20.9%) were income dependent. Most of the parents had secondary school education 122 (40.4%), 46 (15.2%) had primary education, 84 (27.8%) graduated, 39 (12.9%) did post graduation while 11 (3.6%) were illiterate. It was reported by 60 (19.9%) of the parents to have had the fearful dental experience with their children in the past. The mean age of children was 7.81 ± 1.92 years, with an age range of 4-12 years. The parents were divided into three groups, based on their child's age, where parents of 4-6 years old children belonged to Group 1 [77 (25.5%)], 7-9 years to Group 2 [171 (56.6%)], and 10-12 years to Group 3 [54 (17.9%)].

TABLE I: DEMOGRAPHIC CHARACTERISTICS OF PARENTS (N=302)

	Parent Groups on basis of children age		
	Group 1 (4-6y) n=77	Group 2 (7-9y) n=171	Group 3 (10-12y) n=54
Age (mean \pm SD)	46.16 \pm 10.6	46.09 \pm 11.5	45.15 \pm 12.6
Gender			
Male	29 (37.7%)	78 (45.6%)	23 (42.6%)
Female	48 (62.3%)	93 (54.4%)	31 (57.4%)
Employment status			
Housewives	47 (61.0%)	80 (52.6%)	25 (46.3%)
Private job	5 (6.5%)	27 (15.8%)	6 (11.1%)
Govt. Job	12 (15.6%)	31 (18.1%)	9 (16.7%)
Self-employed	1 (1.3%)	9 (5.3%)	3 (5.6%)
Retired from army	12 (25.5%)	24 (14.0%)	11 (20.4%)
Income (PKR)			
Dependent	23 (29.9%)	28 (16.4%)	12 (22.2%)
20-40,000	12 (15.6%)	44 (25.7%)	15 (27.8%)
41-50,000	33 (42.9%)	71 (41.5%)	22 (40.7%)
>50,000	9 (11.7%)	28 (16.4%)	5 (9.3%)
Education level			
Illiterate	5 (6.5%)	5 (2.9%)	1 (1.9%)
Primary	17 (22.1%)	26 (15.2%)	3 (5.6%)
Secondary	26 (33.8%)	67 (39.2%)	29 (53.7%)
Graduation	22 (28.6%)	48 (28.1%)	14 (25.9%)
Post-graduation	7 (9.1%)	25 (14.6%)	7 (13.0%)

For the next day's dental treatment appointment, 132 (43.7%) parents reported to have felt anxious (31.5% slightly anxious, 8.6% fairly anxious, 2.6% very anxious, and 1.0% extremely anxious). While sitting in the waiting room, waiting for the treatment, 132 (43.7%) parents reported to have felt anxious (30.1% slightly anxious, 9.6% fairly anxious, 2.3% very anxious, and 1.7% extremely anxious). At the time of the tooth being drilled, around 146 (48.3%) parents felt anxious (33.8% slightly anxious, 10.6% fairly anxious, 2.6% very anxious, and 1.3% extremely anxious). During teeth scaling and polishing, 142 (47.0%) parents reported to have felt anxious (31.8 % slightly anxious, 11.3%

fairly anxious, 3.0% very anxious, and 1.0% extremely anxious). At the time of getting the local anesthetic injection in the gum, 166 (54.9%) parents felt anxious (29.8% slightly anxious, 15.9% fairly anxious, 7.6% very anxious, and 1.7% extremely anxious). Parents belonging to all three groups felt similar kind of anxiety a day before going for dental treatment ($p=0.781$), while waiting in the waiting room ($p=0.851$), at the time of tooth drilling ($p=0.853$), during scaling/polishing ($p=0.676$) and during anesthetic injection in the gum ($p=0.222$).

TABLE II: RESPONSES OF PARENTS TO ANXIETY QUESTIONNAIRE (N=302)

	Parent groups			P
	Group 1 n=77	Group 2 n=171	Group 3 N=54	
If you were to go to dentists for treatment tomorrow, how would you feel?				
Not anxious	43 (55.8%)	97 (56.7%)	30 (55.6%)	0.781
Slightly anxious	27 (35.1%)	50 (29.2%)	18 (33.3%)	
Fairly anxious	4 (5.2%)	16 (9.4%)	6 (11.1%)	
Very anxious	2 (2.6%)	6 (3.5%)	0 (0%)	
Extremely anxious	1 (1.3%)	2 (1.2%)	0 (0%)	
If you were sitting in the waiting room (waiting for treatment), how would you feel?				
Not anxious	42 (54.5%)	97 (56.7%)	31 (57.4)	0.851
Slightly anxious	26 (33.8%)	48 (28.1%)	17 (31.5%)	
Fairly anxious	6 (7.8%)	17 (9.9%)	6 (11.1%)	
Very anxious	2 (2.6%)	5 (2.9%)	0 (0%)	
Extremely anxious	1 (1.3%)	4 (2.3%)	0 (0%)	
If you were about to have a tooth drilled, how would you feel?				
Not anxious	40 (51.9%)	89 (52.0%)	27 (50.0%)	0.853
Slightly anxious	28 (36.4%)	55 (32.2%)	19 (35.2%)	
Fairly anxious	7 (9.1%)	18 (10.5%)	7 (13.0%)	
Very anxious	2 (2.6%)	5 (2.9%)	1 (1.9%)	
Extremely anxious	0 (0%)	4 (2.3%)	0 (0%)	
If you were about to have your teeth scaled and polished, how would you feel?				
Not anxious	41 (53.2%)	91 (53.2%)	28 (51.9%)	0.676
Slightly anxious	28 (36.4%)	50 (29.2%)	18 (33.3%)	
Fairly anxious	5 (6.5%)	22 (12.9%)	7 (13.0%)	
Very anxious	3 (3.9%)	5 (2.9%)	1 (1.9%)	
Extremely anxious	0 (0%)	3 (1.8%)	0 (0%)	
If you were about to have a local anesthetic injection in your gum, above an upper back tooth, how would you feel?				
Not anxious	39 (50.6%)	79 (46.2%)	19 (33.3%)	0.222
Slightly anxious	23 (29.9%)	50 (29.2%)	17 (3.5%)	
Fairly anxious	10 (13.0%)	24 (14.0%)	14 (25.9%)	
Very anxious	5 (6.5%)	13 (7.6%)	5 (9.3%)	
Extremely anxious	0 (0%)	5 (2.9%)	0 (0%)	

The majority of the parents, 297 (98.3%) agreed to consent for behavioral management techniques to be used on their children before starting treatment. For the use of sedation and anesthesia procedures on the child, 254 (84.1%) parents agreed to consent. Similarly, 293 (97.0%) parents agreed that the dentist should show videos of behavior management techniques for their understanding. Regarding the tell-show-do technique, 287 (95.0%) perceived it as acceptable, while 10 (3.3%) and 5 (1.7%) were unacceptable and disliked respectively. Similarly, the modeling technique was acceptable to 287 (95.0%) parents, totally unacceptable to 9 (3.0%), and disliked by 6 (2.0%) of the parents. Positive reinforcement was acceptable to 273 (90.4%) parents, disliked by 23 (7.6%), and unacceptable to 6 (2.0%) parents. Voice recording was acceptable to only 73 (24.2%) parents, disliked by 135 (44.7%), and unacceptable to 31.1% parents. Restraint management technique was acceptable to 46 (15.2%) parents, disliked by 130 (43.0%), and unacceptable to 126 (41.7%) parents. Hypnosis as a management technique was acceptable to 28 (9.3%) parents, disliked by 155 (51.3%),

and unacceptable by 119 (39.4%) parents. The sedation technique was acceptable to 47 (15.6%) parents, disliked by 186 (61.6%) and unacceptable to 69 (22.8%) parents.

TABLE III: PERCEPTIONS AND ACCEPTANCE OF PARENTS TOWARDS VARIOUS BEHAVIOR MANAGEMENT TECHNIQUES FOR CHILDREN (N=302)

	Parent Groups			P
	Group 1 n=77	Group 2 n=171	Group 3 n=54	
Before treatment would you consent to the use of behavioral management techniques on your child?				
Yes	76 (98.7%)	167 (97.7%)	54 (100%)	0.482
No	1 (2.3%)	4 (2.3%)	0 (0%)	
Before treatment would you consent to the use of sedation and anesthesia procedures on your child?				
Yes	62 (80.5%)	142 (83.0%)	50 (92.6%)	0.150
No	15 (19.5%)	29 (17.0%)	4 (7.4%)	
Do you prefer the dentist show videos of the management techniques for your understanding?				
Yes	76 (98.7%)	164 (95.0%)	53 (98.1%)	0.422
No	1 (1.3%)	7 (4.1%)	1 (1.9%)	
What is your perception regarding tell show do technique?				
Totally unacceptable	4 (5.2%)	3 (1.8%)	3 (5.6%)	0.364
Dislike, apply only if needed	2 (2.6%)	3 (1.8%)	0 (0%)	
Acceptable	71 (92.2%)	165 (96.5%)	51 (94.4%)	
What is your perception regarding modelling technique?				
Totally unacceptable	4 (5.2%)	2 (1.2%)	3 (5.6%)	0.216
Dislike, apply only if needed	2 (2.6%)	4 (2.3%)	0 (0%)	
Acceptable	71 (92.2%)	165 (96.5%)	51 (94.4%)	
What is your perception regarding positive reinforcement?				
Totally unacceptable	3 (3.9%)	8 (10.4%)	2 (3.7%)	0.116
Dislike, apply only if needed	1 (0.6%)	15 (8.2%)	1 (1.9%)	
Acceptable	2 (3.7%)	1 (1.9%)	51 (94.4%)	
What is your perception regarding voice control?				
Totally unacceptable	30 (39.0%)	52 (30.4%)	12 (22.2%)	0.200
Dislike, apply only if needed	34 (44.2%)	73 (42.7%)	28 (51.9%)	
Acceptable	13 (16.9%)	46 (26.9%)	14 (25.9)	
What is your perception regarding restraint as management technique?				
Totally unacceptable	44 (57.1%)	71 (41.5%)	11 (20.4%)	<0.001
Dislike, apply only if needed	29 (37.7%)	73 (42.7%)	28 (51.9%)	
Acceptable	4 (5.2%)	27 (15.8%)	15 (27.8%)	
What is your perception regarding hypnosis as management technique?				
Totally unacceptable	32 (41.6%)	80 (44.6%)	7 (13.0%)	<0.001
Dislike, apply only if needed	41 (53.2%)	78 (45.6%)	36 (66.7%)	
Acceptable	4 (5.2%)	36 (66.7%)	11 (20.4%)	
What is your perception regarding sedation technique?				
Totally unacceptable	21 (27.3%)	52 (30.4%)	0 (0%)	<0.001
Dislike, apply only if needed	48 (62.3%)	99 (57.9%)	39 (72.2%)	
Acceptable	8 (10.4%)	20 (11.7%)	15 (27.8%)	

Refusal to sedation technique was significantly more commonly reported by parents of children of younger age group as compared to older ones ($p<0.001$). Similarly, refusal of hypnosis was also significantly more commonly reported by parents of children belonging to the younger age group as compared to older children ($p<0.001$). Restraint management technique was more acceptable to parents of children belonging to the 7-9 years age group and 10-12 years age group as compared to parents of younger children ($p<0.001$) as shown in Fig. 1.

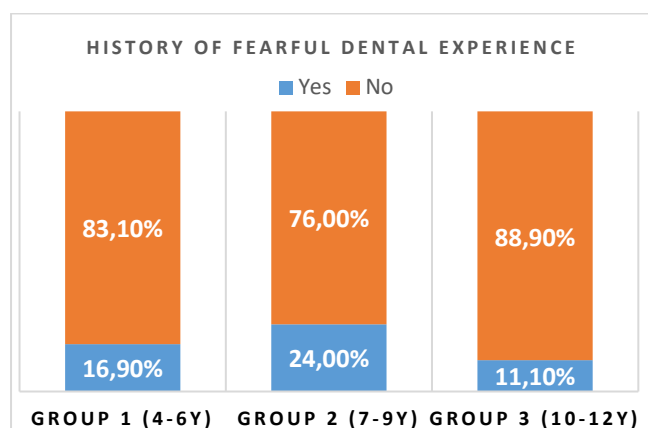


Fig. 1. Percentage of parents who had experienced fearful dental treatment in the past in three groups (n=302).

IV. DISCUSSION

Parental anxiety levels in pediatric dental patients have a direct correlation with the acceptance of Non-Pharmacological Behavior Management Strategies. Previously the number of studies conducted on the subject emphasized behavioral management strategies preferences and acceptance [15], [16].

Reference [17] conducted a randomized controlled study that enrolled 42 children in the age group five to 12 years old who presented to the pediatric dental clinic for procedures under local anesthesia. The sample size was subjected to three techniques of visual distraction, parental presence, and Tell-Show-Do. Facial Image Scale [18] and pulse oximetry were employed for the evaluation of anxiety. Reasons were anxiety were dental injection (38.1%) and pain (33.3%). Tell-Show-Do was determined to be the most useful tool.

Reference [19] evaluated parental acceptance regarding management techniques in pediatric dental clinics. Their trial concluded acceptable techniques were positive reinforcement (81.1%) and Tell-Show-Do (76.7%). Parents disregarded sedation (15.6%), restraint (1.1%) and voice control (7.8%) techniques. Therefore, the conclusion was in favor of non-pharmacological modalities for the management of pediatric dental patients' anxiety [19].

Effective implementation of non-pharmacological behavior management strategies is important to gain the confidence of parents and pediatric patients [20]. In developed countries, no association between parental anxiety and acceptance of behavioral management modalities was revealed hence supporting effective execution [21].

A cross-sectional study was conducted in Thailand to compare acceptance of eight different behavioral management therapies (tell-show-do, voice-control, passive and active restraint, parental presence or absence, sedation either oral or inhalational, and general anesthesia). All modalities were acceptable with the highest acceptance for Tell-Show-Do technique [22].

Previous studies enumerated the significance of prior explanation and video endorsement in enhancing parental acceptance of non-pharmacological modalities [23]. Hence in this study, we tried to incorporate a brief pertinent description to carry our procedure in a befitting manner. To achieve the best results in pediatric dental patients it is mandatory to gain

the confidence of both parents and children with the essential explanation of the risks, benefits, and procedures themselves [24].

V. LIMITATIONS OF THE STUDY

Influence of cultural background, ethnicity, and since only elective cases were taken into consideration therefore implications of emergency treatment could not be evaluated on the integration of behavior management modalities in pediatric dentistry.

VI. RECOMMENDATION

A pamphlet containing basic information and advantages of behavioral management techniques in addition to throwing some light on sedation and anesthesia techniques with special emphasis on safety profile can be provided to parents accompanying pediatric patients before actual treatment appointments to ensure compliance and effectual management.

VII. CONCLUSION

Modest anxiety levels were recorded in parents accompanying pediatric dental patients irrespective of age group thus expressing eagerness for non – pharmacological behavior management strategies with prior explanation and demonstration. However, reluctance to sedation and anesthesia modalities were deciphered by parents particularly evident in parents of younger age group patients.

CONFLICT OF INTEREST

Authors declare that they do not have any conflict of interest.

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