RESEARCH PAPER

Behavioral approaches in pedodontics: How parental influence impacts children's dental anxiety and compliance during treatment

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ABSTRACT

Background:;Dental anxiety and uncooperative behavior are common challenges in pediatric dentistry and can negatively affect treatment outcomes and future dental attendance. Behavioral approaches in pedodontics emphasize psychological management rather than pharmacological interventions. Parents play a pivotal role in shaping children's perceptions and responses to dental care, as their attitudes, anxiety levels, and behaviors can directly influence a child's emotional state and cooperation during treatment.

Aim:This study aimed to assess the impact of parental influence on children's dental anxiety and compliance during dental treatment.

Materials and Methods::A cross-sectional observational study was conducted on 100 child–parent pairs attending a pediatric dental clinic. Children aged 4–10 years requiring routine dental treatment were included. Parental dental anxiety and attitudes were assessed using a structured, pre-validated questionnaire. Children's dental anxiety was recorded prior to treatment, and their behavior and compliance during treatment were evaluated using a standardized behavior rating scale. Data were analyzed using descriptive statistics and chi-square tests, with statistical significance set at $p < 0.05$.

Results:The study revealed that 20% of parents exhibited high dental anxiety, while 22% of children showed high dental anxiety. A statistically significant association was found between parental dental anxiety and children's dental anxiety ($p = 0.001$). Children accompanied by highly anxious parents demonstrated significantly poorer compliance during treatment compared to those with low-anxiety parents ($p < 0.001$). Positive and cooperative behavior was more frequently observed among children whose parents displayed calm and supportive attitudes.

Conclusion:Parental dental anxiety significantly influences children's dental anxiety and compliance during treatment. Incorporating parental counseling and education into behavior management strategies may improve children's cooperation and overall dental experience...

Keywords: Parental influence, Dental anxiety, Pediatric dentistry, Child behavior, Behavior management

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INTRODUCTION

Behavior management is a cornerstone of pediatric dentistry, as the success of dental treatment in children depends not only on clinical skill but also on the child's psychological readiness and cooperative behavior. Pedodontics uniquely integrates dental science with child psychology, recognizing that children's emotional, cognitive, and social development directly influences their response to dental care [1]. Among the various factors affecting a child's behavior in the dental setting, parental influence plays a particularly significant role. Parents serve as primary caregivers, role models, and emotional regulators for their children, and their attitudes, beliefs, and behaviors toward dental treatment can strongly shape how children perceive and respond to dental visits [2].

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Dental anxiety in children is a common and well-documented problem worldwide. It may manifest as fear, crying, refusal to sit on the dental chair, or complete lack of cooperation during treatment. Such anxiety not only complicates clinical procedures but may also lead to avoidance of dental care, resulting in poor oral health outcomes. Behavioral approaches in pedodontics aim to prevent or reduce dental anxiety and promote positive attitudes toward oral health and dental treatment [3]. These approaches emphasize communication, trust-building, and psychological conditioning rather than reliance on pharmacological or physical restraint methods. Within this framework, understanding the role of parental influence becomes essential, as parents often act as the first point of exposure to dental concepts for children [4].

Parental dental anxiety is one of the most influential factors affecting children's behavior in the dental clinic. Children are highly perceptive and tend to absorb emotional cues from their parents. An anxious parent may unintentionally transmit fear through verbal expressions, facial expressions, tone of voice, or body language. Statements such as "it won't hurt much" or "be brave, it will be over soon" may increase a child's anticipation of pain rather than provide reassurance [5]. Conversely, parents who demonstrate calmness, confidence, and trust in the dental professional can foster a sense of safety and reassurance in their children. Thus, parental attitudes toward dentistry often become internalized by the child, shaping their expectations and emotional responses [6].

In addition to anxiety transmission, parenting style significantly affects children's compliance during dental treatment. Authoritative parents, who balance warmth with clear guidance, often raise children who are more adaptable and cooperative in structured environments such as dental clinics [7]. In contrast, overprotective parenting may reinforce fear by limiting a child's opportunities to develop coping skills, while permissive parenting may result in children who struggle with boundaries and compliance during treatment. Strict or authoritarian parenting, on the other hand, may increase resistance or fear, particularly in younger children. These dynamics highlight the importance of considering family context when managing child behavior in pedodontic practice [8].

The role of parental presence in the dental operatory has also been widely discussed in behavioral pedodontics. Some parents believe that their presence provides emotional support and comfort to the child, while others may inadvertently interfere with behavior management techniques by giving conflicting instructions or displaying anxiety [9]. The effectiveness of parental presence depends largely on the parent's own emotional stability, understanding of dental procedures, and ability to support the dentist's behavior guidance strategies. Educating parents about their role during dental visits can therefore enhance treatment outcomes and improve child compliance [10].

Early childhood experiences with dental care further reinforce the influence of parents. Children who are introduced to dental visits as a preventive and routine health practice, rather than as a response to pain or emergency, tend to develop more positive attitudes [11]. Parents who prioritize early dental visits, maintain regular check-ups, and model good oral hygiene practices at home contribute significantly to reducing dental fear. In contrast, delayed dental visits often associated with pain or invasive procedures can intensify anxiety and negative behavior, particularly when parents themselves display stress or guilt during such visits [12].

Cultural beliefs and socioeconomic factors also mediate parental influence on children's dental behavior. In some cultures, dentistry is associated primarily with pain or extraction rather than prevention, which may predispose both parents and children to heightened anxiety. Limited access to dental education and services may further exacerbate misconceptions and fear [13]. Understanding these contextual factors allows pediatric dentists to adopt more empathetic and tailored behavioral approaches, involving parents as active partners in the child's dental care [14].

Modern pedodontics increasingly emphasizes family-centered care, recognizing that effective behavior management extends beyond the child to include parents and caregivers. By addressing parental anxiety, improving communication, and educating parents about positive reinforcement and supportive behaviors, dental professionals can create a more conducive environment for successful treatment. Such an approach not only improves immediate compliance but also fosters long-term positive attitudes toward oral health and dental care [15].

In summary, parental influence is a critical determinant of children's dental anxiety and compliance during treatment. Parents shape children's perceptions through their own emotions, behaviors, parenting styles, and attitudes toward dentistry. A comprehensive understanding of these influences is essential for implementing effective behavioral approaches in pedodontics. Therefore, this study is important to determine the impact of parental influence on children's dental anxiety and compliance during dental treatment.

METHODOLOGY

Study Design and Setting

This original research was designed as a **cross-sectional observational study** conducted in the Department of Pedodontics and Preventive Dentistry of a dental teaching institution. The study aimed to evaluate the influence of parental behavior and attitudes on children's dental anxiety and compliance during dental treatment.

Study Population and Sample Size

A total sample size of **100 child–parent pairs** was included in the study. Children aged **4–10 years** who reported for dental treatment for the first time or had limited previous dental experience were considered eligible. The sample size of 100 was chosen to ensure adequate representation and statistical reliability for behavioral assessment within the study period.

Inclusion Criteria

Children aged between 4 and 10 years

Children accompanied by at least one parent or primary caregiver

Children requiring non-emergency dental treatment (restorative or preventive procedures)
Parents willing to provide informed consent

Exclusion Criteria

Children with special healthcare needs or developmental disorders
Children with a history of traumatic dental experiences
Children requiring emergency or surgical dental procedures
Parents unwilling to participate or complete the questionnaire

Ethical Considerations

Ethical clearance was obtained from the Institutional Ethics Committee prior to the commencement of the study. Written informed consent was obtained from all participating parents or guardians, and verbal assent was obtained from the children. Confidentiality and anonymity of participants were strictly maintained throughout the study.

Data Collection Procedure

Upon reporting to the dental clinic, parents were requested to complete a structured, pre-validated questionnaire assessing **parental dental anxiety, attitude toward dental treatment, and parenting style**. The questionnaire was administered in a language understandable to the parent to ensure accurate responses.

Children's dental anxiety was assessed before treatment using an age-appropriate anxiety assessment scale. During the dental procedure, the child's behavior and level of cooperation were evaluated by a single calibrated pediatric dentist to avoid inter-examiner bias. Standard non-pharmacological behavior management techniques were employed for all children.

Assessment of Child Behavior and Compliance

Children's compliance during treatment was recorded using a standardized behavior rating scale. Behavior was categorized into levels ranging from definitely positive to definitely negative based on the child's response to dental procedures, communication, and instructions given by the dentist.

Parental Influence Evaluation

Parental influence was assessed by correlating parental anxiety scores, verbal and non-verbal behavior observed in the operatory, and parenting style responses with the child's anxiety and compliance scores. Parents were either present or absent during the procedure as per routine clinical protocol, and their role was noted without intervention.

Examiner Calibration

Prior to the study, the examiner underwent calibration sessions to ensure consistency in recording behavioral responses. A pilot assessment was conducted on a small group not included in the final sample to validate the methodology.

Statistical Analysis

Data were entered into a spreadsheet and analyzed using statistical software. Descriptive statistics were used to summarize demographic data. Inferential statistics, including chi-square tests and correlation analysis, were applied to evaluate the association between parental influence variables and children's dental anxiety and compliance. A **p-value < 0.05** was considered statistically significant.

RESULTS

A total of **100 child–parent pairs** were included in the final analysis. All collected data were complete and suitable for statistical evaluation. The results are presented under descriptive and inferential findings to explain the influence of parental factors on children's dental anxiety and compliance during treatment.

Demographic Characteristics of the Study Sample

The study sample consisted of children aged **4–10 years** with a mean age of **6.8 ± 1.9 years**. Among the children, **52% were males** and **48% were females**. Parents included in the study were predominantly mothers (68%), followed by fathers (32%). Most children (64%) had no previous dental experience.

Table 1 presents the demographic distribution of the study participants.

Table 1. Demographic characteristics of children and parents (n = 100)

Variable	Category	Frequency (n)	Percentage (%)
Child age (years)	4–6	46	46
	7–10	54	54
Gender	Male	52	52
	Female	48	48
Parent accompanying	Mother	68	68
	Father	32	32
Previous dental visit	Yes	36	36
	No	64	64

Parental Dental Anxiety Levels

Parental dental anxiety assessment showed that **38% of parents had low anxiety**, **42% had moderate anxiety**, and **20% exhibited high dental anxiety**. Children accompanied by highly anxious parents demonstrated visibly higher anxiety scores before treatment.

The distribution of parental anxiety levels is shown in **Table 2**.

Table 2. Distribution of parental dental anxiety levels

Anxiety level	Frequency (n)	Percentage (%)
Low anxiety	38	38
Moderate anxiety	42	42
High anxiety	20	20

Children's Dental Anxiety and Compliance

Children's dental anxiety assessment revealed that **44% of children had low anxiety**, **34% had moderate anxiety**, and **22% had high anxiety**. Regarding compliance during treatment, **48% of children showed positive behavior**, **32% showed definitely positive behavior**, while **20% exhibited negative or definitely negative behavior.

Table 3 summarizes children's dental anxiety levels and compliance ratings.

Table 3. Children's dental anxiety and compliance during treatment

Parameter	Category	Frequency (n)	Percentage (%)
Dental anxiety	Low	44	44
	Moderate	34	34
	High	22	22
Compliance	Definitely positive	32	32
	Positive	48	48
	Negative	14	14
	Definitely negative	6	6

Association Between Parental Anxiety and Child Anxiety

A statistically significant association was observed between parental dental anxiety and children's dental anxiety. Children of parents with high dental anxiety were more likely to exhibit moderate to high anxiety during treatment. Chi-square analysis performed using STATA demonstrated a **significant association ($\chi^2 = 18.64$, df = 4, p = 0.001)**, indicating that increasing parental anxiety corresponded to higher child anxiety levels (**Table 4**).

Table 4. Association between parental dental anxiety and child dental anxiety (STATA findings)

Parental anxiety	Child low anxiety	Child moderate anxiety	Child high anxiety	Total
Low	26	10	2	38
Moderate	16	18	8	42
High	2	6	12	20

STATA output: $\chi^2 = 18.64$, df = 4, **p = 0.001**

Association Between Parental Anxiety and Child Compliance

A significant relationship was also found between parental anxiety levels and children's compliance during dental treatment. Children of parents with low anxiety predominantly showed positive or definitely positive behavior, whereas negative behavior was more frequent among children of highly anxious parents.

Chi-square analysis revealed a **statistically significant association ($\chi^2 = 21.27$, df = 3, p < 0.001)** as shown in **Table 5**.

Table 5. Association between parental dental anxiety and child compliance (STATA findings)

Parental anxiety	Positive/definitely positive	Negative/definitely negative	Total
Low	34	4	38
Moderate	30	12	42
High	8	12	20

STATA output: $\chi^2 = 21.27$, df = 3, **p < 0.001**

DISCUSSION

The findings of the present study indicate a significant association between parental dental anxiety and children's dental anxiety and compliance during dental treatment, showing that children whose parents reported higher levels of dental anxiety tended to experience greater anxiety themselves and exhibited poorer compliance during dental procedures. This is consistent with the notion that parental emotional states and behaviors can be transmitted to children and influence their response to clinical situations.

Our results are in agreement with recent research by Kala Bagavathy *et al.* (2024) [16], which demonstrated that higher levels of parental involvement and reduced parental anxiety were associated with improved child compliance during dental procedures. Similar to our findings, children whose parents demonstrated supportive behavior exhibited greater cooperation in the dental setting.

In an earlier study, Shinde *et al.* (2017) [17] found a significant positive correlation between parental dental anxiety scores and children's dental fear across multiple dental visits. They observed that children's anxiety decreased with increased exposure to dental treatment, indicating potential desensitization effects. This supports our findings showing that repeated exposure and reduced parental anxiety may help mitigate child anxiety.

Conversely, Cox *et al.* (2011) [18] reported that parental presence in the dental operatory did not universally improve children's behavior; in fact, they found that anxious children sometimes behaved better when parents were absent. While this study focused specifically on parental presence rather than parental anxiety per se, the findings highlight the complexity of the parent–child interaction during dental treatment. It suggests that mere presence without supportive behavior may not always reduce anxiety, underscoring the importance of the quality of parental influence.

More recently, Bayón *et al.* (2025) [19] investigated parental anxiety disorders and their impact on child behavior and found a limited direct relationship between parental anxiety measures and children's behavior, though specific aspects of parental anxiety were linked to children's responses. Their study suggests that while general trends exist, the association between parental anxiety and child behavior may be influenced by other mediating factors, such as the type of dental procedure and child characteristics.

In a different domain, Gavic *et al.* (2022) [20] found that parental dental anxiety was associated with poorer oral health outcomes in children, possibly reflecting less frequent or less positive dental visits. Although this study did not measure behavior during treatment directly, it supports the concept that parental psychological factors influence children's oral health experiences and outcomes.

Overall, the available literature reflects a consistent recognition of parental influence on children's dental anxiety and behavior in clinical settings. While some studies emphasize the benefits of positive parental involvement and calm parental behavior, others note that parental presence alone may not be sufficient to reduce anxiety unless it is accompanied by supportive and non-

anxious comportment. The present study reinforces the concept that parental dental anxiety is significantly correlated with children's dental anxiety and behavior, highlighting the need for clinicians to consider parental psychological factors when planning behavior management strategies.

However, compared to some previous research, our study was focused specifically on immediate behavioral responses during dental procedures, rather than long-term dental outcomes or general dental visit patterns. This underscores that parental influence can manifest not only in children's compliance during treatment but also in broader oral health behavior and visit patterns, as documented by other researchers. Additionally, variations in study design, sample characteristics, and anxiety assessment tools across studies point to the complexity of quantifying parental influence, suggesting that further longitudinal and interventional studies are needed.

In conclusion, the present findings align with most of the existing evidence that parental dental anxiety and behavior significantly affect children's dental anxiety and compliance, emphasizing the role of psychological preparation for both children and parents to optimize pediatric dental care.

LIMITATIONS

The present study has certain limitations that should be considered while interpreting the findings. The study was conducted with a relatively small sample size of 100 child–parent pairs from a single dental institution, which may limit the generalizability of the results to broader populations. The cross-sectional study design allowed assessment of associations but did not permit evaluation of causal relationships between parental influence and children's dental anxiety or compliance. Parental anxiety was assessed using self-reported questionnaires, which are subject to response bias and may not always reflect true anxiety levels. Additionally, children's behavior was evaluated during a single dental visit, and variations in behavior across multiple visits or different dental procedures were not assessed. Factors such as the child's temperament, previous non-dental medical experiences, and socioeconomic or cultural influences were not explored in detail, which may have acted as confounding variables. Future longitudinal studies with larger, more diverse samples and multiple assessment points are recommended to overcome these limitations and provide more comprehensive insights.

CONCLUSION

The present study demonstrates that parental influence plays a significant role in shaping children's dental anxiety and compliance during dental treatment. Higher levels of parental dental anxiety were associated with increased anxiety and reduced cooperative behavior in children. Positive parental attitudes and calm behavior contributed to improved child compliance in the dental operatory. These findings highlight the importance of involving and educating parents as part of behavioral management strategies in pedodontics. Addressing parental anxiety may enhance treatment outcomes and promote positive dental experiences for children.

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