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ORIGINAL RESEARCH

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Parental dental anxiety and children's dental anxiety: a multicenter cross-sectional study

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Abstract

Background: Dental fear and anxiety (DFA) significantly affect children's oral health behaviors, cooperation during dental treatment, and long-term dental attendance patterns. Parental DFA may be associated with children's dental fear through mechanisms such as observational learning, parental communication, and emotional transmission. **Methods**: A multicenter cross-sectional study was conducted with 296 children aged 7–14 years and their parents attending pediatric dentistry clinics in Eskişehir, Nevşehir, and Malatya, Turkey. Data were collected using questionnaires that included demographic information, parental dental anxiety assessed with Corah's Dental Anxiety Scale (CDAS), and children's dental anxiety measured using the Abeer Children's Dental Anxiety Scale (ACDAS). Statistical analyses included chi-square tests, correlation analyses, and logistic regression models, with significance set at $p < 0.05$. **Results**: The prevalence of dental fear and anxiety among children was 59.5%, which may reflect the clinical nature of the sample. In multivariate logistic regression analysis, parental dental anxiety level was significantly associated with children's dental anxiety (overall $p = 0.039$). Compared with the reference group, lower parental anxiety levels were associated with reduced odds of child dental anxiety (low anxiety: Odds Ratio (OR) = 0.41, 95% Confidence Interval (CI): 0.19–0.92, $p = 0.031$; moderate anxiety: OR = 0.41, 95% CI: 0.19–0.90, $p = 0.026$). Additionally, parental negative dental experience was significantly associated with children's dental anxiety (OR = 1.81, 95% CI: 1.11–2.95, $p = 0.018$). **Conclusions**: Parental dental fear and anxiety are associated with children's dental anxiety. Family-related factors, particularly parental anxiety and communication patterns, may influence children's dental fear. Parent-focused interventions and improved communication strategies may help children cope with dental anxiety.

Keywords

Dental anxiety; Parental dental anxiety; Children; Pediatric dentistry; Behavior management

1. Introduction

Dental fear is an emotional response triggered by specific stimuli encountered in dental clinics. Dental anxiety, on the other hand, is a heightened state of worry characterized by anticipatory fear related to dental treatment [1, 2]. In clinical dental practice, distinguishing between dental fear and dental anxiety can be challenging for clinicians. Both conditions have the potential to impact dental treatment. Consequently, the term "dental fear and anxiety" (DFA) is commonly used to collectively describe intense negative emotions associated with dental procedures [1]. DFA is a subjective experience and may vary considerably depending on an individual's physical and psychological state [3].

DFA is a prevalent condition in the general population and is often rooted in early childhood dental experiences. Research indicates that more than half of adults who report experiencing DFA first encounter it during childhood [4, 5]. Nearly half of children experiencing DFA tend to postpone or avoid dental treatment [5]. DFA contributes to the deterioration of oral health, exacerbates dental fear, and leads to avoidance or delays in dental visits, creating a vicious cycle [5].

The prevalence of DFA among children varies considerably across populations. Previous systematic reviews have reported prevalence rates that vary widely across regions and study populations [6, 7]. These variations may be explained by differences in assessment methods, sociocultural factors, family dynamics, individual characteristics, study design, and measurement instruments [8, 9]. Among these factors, family-related variables, such as parental dental anxiety, family income level, the presence of siblings, maternal education level, and parents' marital status, play an important role in children's

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dental anxiety [3, 5]. Additionally, individual factors such as a child's temperament, sex, age, previous dental experiences, and history of dental pain, as well as inadequate interaction with the dentist, have been recognized as significant determinants of DFA [5]. When children experience DFA, it often results in uncooperative behaviors and negative emotional reactions during dental treatment [6].

Parental DFA has been suggested to be associated with children's DFA, possibly through processes such as modeling and the sharing of information [1]. Many adults with DFA may express their fears in the presence of their children, creating negative impressions about dental treatment [1]. Most early school-aged children tend to imitate the behaviors of their parents, whom they perceive as role models [1]. They are highly likely to internalize their parents' values, attitudes, and worldviews, which gradually become an integral part of their belief system [1]. Previous studies have shown that parents may communicate their own dental experiences and anxieties to their children, which may be associated with dental fear in children [10]. Furthermore, several studies have reported an association between parental dental anxiety and children's dental anxiety, suggesting that parental anxiety may be associated with children's dental fear [11].

Although several studies have examined the relationship between parental and child dental anxiety, limited multicenter clinical studies have simultaneously evaluated the influence of family-related and socioeconomic factors on children's dental anxiety. Therefore, the present study aimed to examine the association between parental dental anxiety and children's dental anxiety (ACDAS $\geq$26) and to evaluate the influence of family-related and socioeconomic factors in a multicenter clinical sample. We hypothesized that higher parental dental anxiety would be associated with higher levels of dental anxiety in children.

2. Materials and methods

Data were collected between November 2024 and August 2025 at pediatric dentistry clinics in Eskişehir, Nevşehir, and Malatya, Turkey. Children who attended the clinics for scheduled dental treatment appointments were invited to participate in the study. These visits primarily involved routine dental procedures such as restorative treatments and preventive care (*e.g.*, fillings and fissure sealants). Emergency visits were not included, and children presenting with acute dental pain were not included in the study.

Ethical approval for this study was obtained from the Inonu University Health Sciences Scientific Research Ethics Committee (Approval No: 2024/6474). Written informed consent was obtained from all parents or legal guardians, and verbal assent was obtained from the children prior to participation.

2.1 Sample size

The sample size for the study was initially estimated using G*Power 3.1.9.7 software (Heinrich Heine University Düsseldorf, Düsseldorf, NRW, Germany) based on an independent-samples *t*-test. The minimum required sample size was calculated as 226 participants using an effect size of 0.46, $\alpha = 0.05$, and power of 95% ($1 - \beta = 0.95$) [12, 13]. However, since the primary outcome of the study was dichotomous (presence of dental anxiety defined as ACDAS $\geq$26), an additional sensitivity check was performed using a two-proportion approach. This analysis indicated that the minimum required sample size was approximately 290–300 participants, depending on the expected effect size and the distribution of exposure groups. The final study sample consisted of 296 child–parent pairs, which was considered adequate for the planned statistical analyses.

2.2 Participants

This multicenter study was conducted at three pediatric dentistry departments located in Eskisehir, Nevsehir, and Malatya, Turkey. Children aged 7–14 years and their accompanying parents were recruited consecutively from these centers. All clinics followed the same standardized data collection protocol and used the same validated scale (ACDAS) to ensure methodological consistency.

2.2.1 Inclusion criteria

- Both the parent and child agreed to participate, and the parent signed the informed consent form.
- The accompanying parent was able to read and complete the questionnaire.
- The child was $\geq$7 years old.
- Both the parent and child completed all the survey items.

2.2.2 Exclusion criteria

- Children or parents with any learning or comprehension difficulties.
- Children or parents with diagnosed mental disorders.
- Children or parents with a history of psychiatric medication use.

2.3 Survey content

The survey consisted of four sections:

1. First section: Questions aimed at understanding the participants, including the following:
   - ○ Age of the child and parent,
   - ○ Parental education level,
   - ○ Family socioeconomic status,
   - ○ Number of children and the birth order of the child visiting the clinic,
   - ○ Parents' recollection of past dental experiences and the emotions associated with them.
2. Second section:
   - ○ Parents completed the questionnaire developed by Corah for adults, which has been validated and deemed reliable in Turkish [14].
3. Third section:
   - ○ Child's dental examination: Dental caries experience was assessed using the dmft index (decayed, missing, and filled primary teeth). The dmft scores were recorded during the clinical dental examination performed by pediatric dentists during the children's scheduled treatment visits.
4. Fourth section:

○ The Turkish-validated version of Abeer's Dental Anxiety Scale for Children (ACDAS), specifically its dental and cognitive sections,

○ Questions assessing whether the parent has shared past dental experiences with the child [15, 16].

2.4 The Abeer children's dental anxiety scale (ACDAS)

The ACDAS is a 19-item scale comprising three sections: dental, cognitive, and child evaluation sections.

In the present study, children's dental anxiety was defined using the ACDAS dental section (items 1–13), with scores ranging from 13 to 39 and a cut-off value of ≥26 indicating dental anxiety. The cognitive items (items 14–16) and the child evaluation items (items 17–19) were not included in the calculation of the outcome score. Therefore, when analyzed, these items were treated as separate explanatory variables rather than components of the outcome measure.

● Dental section (13 questions): Children were asked to select the facial expression that best represented how they felt in each situation.

● Scoring: Responses were rated on a 1–3 scale, with total scores ranging from 13 to 39.

● A score of 26 or higher indicated the presence of dental anxiety.

● Child evaluation section (items 17–19): These items were completed by the child's parent/guardian and the dentist and were used to assess behavioral expectations and observed behavior during the dental visit [15, 16].

2.5 Corah's dental anxiety scale (CDAS)

Parental dental anxiety was assessed using Corah's Dental Anxiety Scale (CDAS). The CDAS is a four-item, five-point Likert-type scale designed to measure an individual's anxiety level regarding dental procedures. CDAS scores were entered into the logistic regression model as a categorical variable with four levels.

● Scoring:

○ Minimum score: 4, Maximum score: 20,

○ Higher scores indicate higher levels of anxiety.

● Anxiety classification:

○ Low anxiety (4–11 points),

▪ 4–7 points: No anxiety,

▪ 8–11 points: Very low anxiety;

○ High anxiety (12–20 points),

▪ 12–14 points: Anxiety,

▪ 15–16 points: Very anxious,

▪ ≥17 points: Extremely anxious [15].

In general, studies classify individuals with a total score of ≥12 as anxious and those with a score of ≥15 as highly anxious [15].

In this study, parental anxiety was classified as follows:

● 4–7 points: No anxiety,

● 8–11 points: Low anxiety,

● 12–14 points: Moderate anxiety,

● ≥15 points: High anxiety.

2.6 Statistical analysis

Data were analyzed using SPSS (version 28.0; IBM Corp., Armonk, NY, USA). Categorical variables were summarized as numbers (n) and percentages (%), and differences between groups were assessed using the chi-square (χ^2) test. The normality of continuous variables was tested via the Kolmogorov-Smirnov test. Numerical data were presented as the mean ± standard deviation and median (minimum–maximum). The relationship between dental anxiety and age was analyzed using the Mann-Whitney U test. Differences in parental anxiety scores between children with and without DFA were tested via the Kruskal-Wallis test. The point-biserial correlation was used to measure the strength of the linear relationship between these two variables. The relationships between dental anxiety and sex were analyzed using the chi-square test and Fisher's exact test. To identify factors influencing dental anxiety, logistic regression analysis was performed, and odds ratios (ORs) with 95% confidence intervals (CIs) were reported. A p-value < 0.05 was considered to indicate statistical significance.

Binary logistic regression analysis was performed to identify independent predictors of children's dental anxiety (ACDAS ≥26). Variables considered clinically relevant or associated with dental anxiety in previous studies were included in the model. The Enter method was used for variable entry. Multicollinearity among the independent variables was assessed using the variance inflation factor (VIF) values. Model fit was evaluated using the Hosmer-Lemeshow goodness-of-fit test, and the explanatory power of the model was assessed using Nagelkerke's pseudo-R^2. Odds ratios (OR) with 95% confidence intervals (CI) were calculated.

3. Results

Among the 296 children who agreed to participate in the study, 154 were female, and 142 were male. The median age of the children was 9 years (range: 7–14 years). The largest proportion of children was in the 7–8 years age group (41.2%), followed by the 9–10 years (29.4%) and the 11–14 years (29.4%). Among the parent participants, 200 were mothers. The distributions of categorical variables are presented in Table 1 as frequencies and percentages.

The distribution of children's dental anxiety according to parental dental anxiety status is presented in Table 2. In descriptive analyses, children of parents with higher anxiety levels appeared more likely to have dental anxiety (ACDAS ≥26).

The relationships between children's dental anxiety and various factors are further analyzed in Table 3. Child dental anxiety was significantly associated with parental dental anxiety ($p = 0.01$), ACDAS question 14 ($p = 0.04$), ACDAS question 16 ($p = 0.0002$), ACDAS question 18 ($p = 0.0003$), ACDAS question 19 ($p = 0.0004$), and child dependency on the parent ($p = 0.03$). In the univariate analysis, a higher maternal education level was associated with lower levels of children's dental anxiety ($p = 0.041$).

According to the results of the Mann-Whitney U test and Fisher's exact test, no statistically significant difference was found between child age and dental anxiety ($p = 0.57$ and p

TABLE 1. Distribution of variables.

Variable	Description	Frequency	Percentage (%)
Child's age (yr)			
	7–8	122	41.21
	9–10	87	29.39
	11–14	87	29.39
Child's gender			
	Female	154	52.02
	Male	142	47.98
Parent's age (yr)			
	≤34	72	24.32
	35–44	174	58.83
	≥45	50	16.92
Parent's gender			
	Mother	200	67.57
	Father	96	32.43
Parental marital status			
	Together	244	82.44
	Separated	52	17.56
Mother's educational status			
	Literate	94	31.76
	Primary school	65	21.96
	Middle school	64	21.62
	High school	56	18.92
	University	9	3.04
	Postgraduate	8	2.70
Father's educational status			
	Literate	112	37.84
	Primary school	87	29.39
	Middle school	48	16.21
	High school	31	10.47
	University	13	4.39
	Postgraduate	5	1.68
Socioeconomic level			
	Low	162	54.72
	Medium	109	36.82
	High	25	8.44
Number of siblings			
	1	36	12.16
	2	124	41.89
	3 or more	136	45.94
Birth order			
	1st child	114	38.51
	2nd child	117	39.53
	3rd or more child	65	21.96
Parental history of dental treatment			
	Yes	172	58.10
	No	124	41.89
If yes, what emotions does it evoke?			
	Positive	123	71.51
	Negative	49	28.49
Parental dental anxiety level			
	No anxiety	88	29.72
	Low anxiety	115	38.85
	Moderate anxiety	46	15.54
	High anxiety	47	15.87
Child's dental anxiety level			
	Anxiety absent	120	40.54
	Anxiety present	176	59.45
Do you feel shy when visiting the dentist? (ACDAS 14)			
	Yes	90	30.40
	No	206	69.59
Are you embarrassed about the appearance of your teeth? (ACDAS 15)			
	Yes	65	21.95
	No	231	78.04
Are you worried about losing control at the dentist? (ACDAS 16)			
	Yes	84	28.37
	No	212	71.62
Has your child undergone dental treatment before? (ACDAS 17)			
	Yes	250	84.45
	No	46	15.54
How do you expect your child's behavior to be today? (ACDAS 18)			
	Happy	93	31.41
	Good	175	59.12
	Afraid	28	9.45
How do you evaluate your child's behavior after today's visit? (ACDAS 19)			
	Happy	107	36.14
	Good	160	54.05
	Afraid	29	9.79
Child's behavior type			
	Independent behavior	237	80.06
	Dependent behavior	59	19.93

n: number; %: percent; ACDAS: Abeer Children's Dental Anxiety Scale.

TABLE 2. Distribution and evaluation of children's dental anxiety based on parental dental anxiety.

Parental anxiety level	ACDAS <26 (n)	ACDAS ≥26 (n)	Total
No anxiety (5–7)	41	47	88
Low anxiety (8–11)	54	61	115
Moderate anxiety (12–14)	13	33	46
High anxiety (15 and above)	12	35	47
Total	120	176	296
Chi-square test	Test value: 8.61	*p*-value: 0.035	

n: number; Test: Chi-square test, $p < 0.05$; values are statistically significant.
ACDAS: Abeer Children's Dental Anxiety Scale.

TABLE 3. Evaluation of the relationships between children's dental anxiety (ACDAS) and various variables.

Variable	Test value	*p*-value
Child's gender	0.93	0.34
Parent's gender (Mother/Father)	3.64	0.04
Parental marital status	5.12	0.04
Mother's educational level	7.41	0.04
Father's educational level	7.27	0.08
Socioeconomic status	3.39	0.18
Number of children	0.32	0.86
Birth order (1st, 2nd, 3rd or more)	1.11	0.57
Parental history of dental treatment (Yes/No)	6.94	0.01
If yes, what emotions these experiences evoke? (Positive/Negative)	11.46	<0.001
Parental anxiety level	10.57	0.01
Feeling shy at the dentist (ACDAS 14)	4.22	0.04
Embarrassment about teeth appearance (ACDAS 15)	3.84	0.05
Fear of losing control at the dentist (ACDAS 16)	23.74	<0.001
Has the child undergone dental treatment before? (ACDAS 17)	0.33	0.59
Expected child behavior today (ACDAS 18)	16.73	<0.001
Evaluation of the child's behavior after visit (ACDAS 19)	18.21	<0.001
Child's behavior type (Independent/Dependent)	4.83	0.03

Test: χ^2 (chi-square test value), $p < 0.05$; values are statistically significant.
ACDAS: Abeer Children's Dental Anxiety Scale.

= 0.28, respectively). In the univariate analysis, a significant association was observed between parental marital status and children's dental anxiety ($p = 0.04$).

Table 4 presents the results of the multivariate logistic regression analysis examining factors associated with children's dental anxiety. The overall model was statistically significant (Omnibus test: $\chi^2 = 21.70$, $p = 0.017$). Parental dental anxiety level was significantly associated with children's dental anxiety (overall $p = 0.039$). In addition, parental negative dental treatment experience was significantly associated with children's dental anxiety (OR = 1.81, 95% CI: 1.11–2.95, $p = 0.018$). Other variables, including parental gender, marital status, socioeconomic status, child age, and dmft index, were not significantly associated with children's dental anxiety. The logistic regression model showed acceptable fit according to the Hosmer-Lemeshow goodness-of-fit test ($\chi^2 = 5.07$, $p = 0.750$). The model explained a modest proportion of the variance in children's dental anxiety (Nagelkerke $R^2 = 0.095$).

4. Discussion

This study examined the relationship between children's DFA and parental DFA within the context of selected family-related factors. The findings indicate that DFA is a prevalent issue among children in this clinical sample, affecting 59.5% of the participants, a rate that appears higher than that reported in some population-based studies. This difference may be attributed to several methodological and contextual factors. The relatively high prevalence observed in this study may reflect the clinical nature of the sample, as participants were recruited from pediatric dental clinics during scheduled treatment visits rather than from a community-based population.

TABLE 4. Multivariate logistic regression analysis of factors associated with children's dental anxiety.

Variable	OR	95% CI	*p*-value
Parental dental anxiety level (reference category: no anxiety)			**0.039**
Low anxiety	0.41	0.19–0.92	0.031
Moderate anxiety	0.41	0.19–0.90	0.026
High anxiety	0.89	0.35–2.30	0.812
Parental negative dental treatment experience	**1.81**	**1.11–2.95**	**0.018**
Parent gender	1.08	0.63–1.84	0.793
Marital status	0.70	0.36–1.38	0.302
Socioeconomic status	–	–	0.355
dmft	1.01	0.95–1.08	0.761
Child age	1.03	0.92–1.16	0.593

Binary logistic regression analysis was performed. Odds ratios (OR) with 95% confidence intervals (CI) are presented. The overall model was significant (Omnibus test $\chi^2 = 21.70$, $p = 0.017$). Model fit was acceptable according to the Hosmer-Lemeshow goodness-of-fit test ($\chi^2 = 5.07$, $p = 0.750$). The model explained 9.5% of the variance in children's dental anxiety (Nagelkerke $R^2 = 0.095$). Statistically significant values are indicated in bold ($p < 0.05$). dmft: decayed, missing, and filled primary teeth.

Children seeking dental care are more likely to have prior negative experiences, ongoing dental problems, or anticipatory fear, which may contribute to higher reported levels of dental anxiety. Consistent with previous research [1, 5, 15], DFA remains a common and clinically relevant concern among children. This highlights the need for pediatric dentists to develop preventive and behavioral strategies to reduce DFA at early stages. Moreover, variations in reported prevalence rates across studies may also be influenced by the assessment tools used. Vlad *et al.* [17] reported a significant relationship between dental anxiety and salivary cortisol levels measured with the ACDAS scale, which was also used in this study to assess DFA. These findings further support the reliability and sensitivity of the ACDAS instrument in detecting dental anxiety [17].

A previous study in adults reported a 15.7% prevalence of high DFA, with a higher rate among women [18]. Similarly, in the current study, 15.9% of parents reported high DFA, whereas only 29.7% reported no DFA. Mothers exhibited slightly higher DFA than fathers (16.5% *vs.* 14.6%). This finding may reflect sociocultural dynamics, as sociocultural norms in Turkish society may discourage men from expressing emotional distress openly.

4.1 Role of parents in children's DFA

Understanding factors associated with children's dental anxiety is important for improving clinical management. Previous psychological research indicates that children may be exposed to fear-related responses through observational learning and parental communication [19]. Within this framework, parents may represent contextual factors associated with children's dental anxiety. Parental attitudes and behaviors toward oral health may therefore be associated with children's dental anxiety [19]. These findings may be interpreted within the context of observational learning and emotional contagion frameworks, suggesting that children may be exposed to parental fear-related behaviors in the dental context through verbal cues, behavioral modeling, and anticipatory communication before dental visits.

Our findings demonstrated that both parental DFA ($p = 0.014$) and parental discussion of past negative dental experiences ($p = 0.003$) were significantly associated with children's DFA. The present findings are consistent with several previous studies reporting associations between parental and child dental anxiety [3, 8, 10, 20, 21]. However, Wu *et al.* [1] reported no direct relationship between parental and child DFA, suggesting that intermediary factors—such as family dynamics, parental coping style, and communication patterns—may play a role in shaping this relationship. Overall, parental dental anxiety may represent one of several contextual factors associated with children's dental anxiety, although its influence may vary depending on family dynamics and communication patterns. Although the association between parental and child dental anxiety was statistically significant, the correlation was relatively small ($r = 0.168$), indicating a weak association and a modest effect size.

Despite evidence of parental influence, there is no consensus regarding whether mothers or fathers exert a stronger impact on children's DFA. Some studies have suggested that fathers act as mediators in transmitting DFA-related information [1, 20], whereas others have reported maternal DFA behaviors to be more influential [20]. Still, several studies have identified both maternal and paternal DFA as significant contributors to child DFA [11], while others have found no notable difference between them [1, 22]. In our study, only the parent accompanying the child to the clinic was evaluated, and children accompanied by their mothers exhibited significantly greater DFA than those accompanied by their fathers ($p = 0.048$). This finding might be explained by the larger proportion of mothers in the sample or by differences in parental roles within Turkish family structures.

4.2 Age, socioeconomic status, and DFA

The literature presents inconsistent findings regarding the effect of age on dental anxiety. Some studies report that DFA decreases with age [10, 23], whereas Boka *et al.* [24] found no such relationship. Similarly, Lima *et al.* [25] indicated that children aged 7–9 years experience higher DFA. The

present study included children aged 7–14 years, however, no significant association was found between age and DFA. These differences may be due to variations in age grouping, measurement instruments, or cultural context.

The influence of socioeconomic status (SES) on DFA also varies among studies. Yıldırım [9] reported that low SES was associated with increased dental anxiety, whereas Uzel *et al.* [8] found no such relationship. Muneer *et al.* [26] reported higher DFA among individuals with low SES. In this study, no significant association was observed between SES and either parental or child DFA. Similarly, maternal education and marital status did not remain significant predictors in the multivariate logistic regression model. This may reflect the availability of free and accessible dental healthcare services in Türkiye, which may minimize financial barriers to treatment and thus may neutralize SES effects.

4.3 Birth order and DFA

Recent research has investigated the association between birth order and DFA. Ghaderi *et al.* [27] found that only children were more anxious and less cooperative, whereas middle-born children demonstrated better cooperation. Uziel *et al.* [21] reported that firstborns had an increased risk of DFA. However, in this study, neither the number of siblings ($p = 0.86$) nor birth order ($p = 0.57$) showed a significant association with DFA, consistent with findings from Felemban *et al.* [28]. Some studies, however, have observed that children with siblings exhibiting DFA were more likely to display similar anxiety levels [1, 28]. Wu *et al.* [1] further suggested that family structure and sibling presence, rather than parental DFA alone, may influence the development of children's DFA. These findings underscore the importance of considering the broader family environment in understanding children's anxiety responses.

4.4 Relationship between divorced parents and DFA

In the present study, children of divorced parents exhibited significantly higher DFA levels than those from intact families ($p = 0.04$). This result is consistent with several prior studies [28, 29], although some studies have reported conflicting findings. These findings may reflect potential psychosocial factors associated with family structure, although the underlying mechanisms remain unclear. Conversely, in certain cases, children from single-parent families may develop greater independence and resilience, which could mitigate fear responses [1]. Hence, the influence of parental divorce on DFA should be interpreted with attention to individual coping mechanisms, family cohesion, and available social support systems.

Taken together, the findings across demographic, familial, and behavioral domains highlight the multifactorial nature of children's dental anxiety. These findings emphasize the importance of considering family context when assessing and managing dental anxiety in pediatric patients. From a clinical perspective, the findings suggest that parental dental anxiety appears to be one of several factors associated with children's dental anxiety, even when cognitive and behavioral factors are taken into account. The present study also has several strengths. First, the multicenter design enhances the generalizability of the findings by including participants from different geographic regions. Second, validated instruments (ACDAS and CDAS) were used to assess dental anxiety in both children and parents. Third, the study simultaneously evaluated multiple family-related factors that may influence children's dental anxiety.

This study has several limitations that should be considered when interpreting the findings. First, due to the cross-sectional design, causal relationships between parental dental anxiety and children's dental anxiety cannot be established. The observed associations reflect correlations at a single time point rather than directional effects. Another methodological consideration relates to the use of selected ACDAS items in the analysis; however, only the dental section of the scale was used to define the outcome variable in order to minimize conceptual overlap. Nevertheless, cross-sectional studies remain valuable for identifying clinically relevant risk indicators and generating hypotheses for future longitudinal research. Understanding the association between parental and child dental anxiety is particularly important for pediatric dental practice, as it may guide early preventive strategies and parent-focused interventions. Future research should explore longitudinal designs to better understand the temporal relationship between parental and child dental anxiety.

5. Conclusions

In summary, this study found that parental dental fear and anxiety were associated with children's dental anxiety in this multicenter clinical sample. Although the observed association was modest, the findings suggest that family-related factors, particularly parental anxiety and communication patterns, may play a role in understanding children's dental anxiety. Interventions focusing on parental education, emotional regulation, and awareness may be beneficial. Pediatric dentists may therefore consider encouraging parents to adopt calm and supportive attitudes before and during dental treatment. The findings should be interpreted in light of the study's cross-sectional design, which does not allow causal inferences. Future research should explore more narrowly defined developmental age ranges and examine both maternal and paternal influences more comprehensively. Longitudinal studies incorporating biological markers such as cortisol levels or heart rate variability may further clarify the processes underlying the association between parental and child dental anxiety.

AVAILABILITY OF DATA AND MATERIALS

The datasets used and/or analyzed during the current study and the questionnaire form are available from the corresponding author upon reasonable request.

AUTHOR CONTRIBUTIONS

MBS—designed the study and performed the analysis. MBS, BD and HA—collected the data. All authors drafted the manuscript. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval was obtained from the Clinical Research Ethics Committee of the Health Sciences Department of İnönü University (Decision No: 6474, Date: 2024). Written informed consent was obtained from all participants. Written informed consent was also obtained from parents/guardians of all minor participants.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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