

An evaluation of the relationship between dental anxiety and oral health in children based on maternal dental anxiety

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Abstract

Aim: This study aimed to understand the causes of dental anxiety that prevent optimal treatment in pediatric dental clinics and to examine the relationship between the child's dental anxiety level and the dental anxiety level of his or her parents. It also aimed to understand how the oral health of children whose parents have dental anxiety is affected by their parents' feelings.

Methodology: This study was conducted by evaluating the answers given to the Children's Fear Survey Schedule-Dental Subscale (CFSS-DS) questionnaire, which was applied to 248 children without mental or developmental retardation who consulted the Dicle University, Faculty of Dentistry between January and October 2020. The Modified Dental Anxiety Scale (MDAS) questionnaire was applied to their parents. In addition, dmft+DMFT scores were determined by performing oral examinations on the children.

Results: While a statistically significant relationship was found between the dental anxiety levels of the 248 children included in our study and the dental anxiety levels of their mothers, no significant relationship was found between the dental anxiety levels of their fathers and those of the children. Those children whose mothers had high dental anxiety scores had higher dmft+DMFT scores, compared to others involved in the survey. The dmft+DMFT scores of the children with high dental anxiety were found to be higher than those of other children.

Conclusion: Parents, especially mothers, play an important role in the development of children's dental anxiety. The fact that parents with dental anxiety often avoid taking their children to the dentist prevents necessary treatments from being performed on time and causes the children's oral health to deteriorate over time. Informing parents about reducing dental anxiety and dentists' efforts to teach coping strategies can be helpful for minimizing the impact of parents' dental concerns on their children. By increasing mothers' awareness of oral and dental health, it can be ensured that both they and their children will benefit more from dentistry services.

Keywords: dental anxiety, CFSS-DS, MDAS, maternal, questionnaire

How to cite this article: Kol Ş, Çelenk S. An evaluation of the relationship between dental anxiety and oral health in children based on maternal dental anxiety. Int Dent Res 2021;11(Suppl.1):86-90. <https://doi.org/10.5577/intdentres.2021.vol11.suppl1.14>

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Received: 20 January 2021

Accepted: 9 May 2021

Access Online



DOI:

10.5577/intdentres.2021.vol11.suppl1.14

Introduction

Anxiety is defined as an unusual state of uneasiness and fear that has no specific cause and

which can be observed with somatic symptoms (1). Feelings of anxiety and fear are part of the personality development process of childhood and are generally temporary; however, in some children, it can become a permanent problem (2). Dental anxiety is defined as

the fear that terrible events will occur during a dental treatment and the loss of control as a result (3). This situation may be caused by past negative dental treatment experiences, or it may be caused by the patient's own personality characteristics, regardless of the outside world. In either case, these anxieties and fears have negative effects on the patient's quality of life (4).

There are many individual and environmental factors that cause dental anxiety. The most important environmental factor is the family environment in which a child grows up. The results of this study show that dental anxiety can spread among family members via modeling (5). The mother's role in the care and development of the child is enormous, and a mother's fears create a pattern for her child, as the child can sense her anxiety. A study conducted in Brazil reported that 81.3% of children with dental anxiety have mothers who also experience dental anxiety (6).

Parents with dental anxiety often avoid bringing their children to the dentist. The presence of untreated caries in these children may be a result of their parents' negative attitudes and behaviors toward dental treatment. This reflects negatively on the child's oral hygiene and, consequently, on his or her general health status.

This study aimed to understand the causes of dental anxiety that prevent optimal treatment in pediatric dental clinics and to investigate the relationship between the dental anxiety level of the child and the dental anxiety level of his or her parents. It also aimed to understand how the oral health of children whose parents have dental anxiety is affected.

Materials and Methods

In this study, 248 children aged 7-12 with no mental or developmental retardation and who, accompanied by their parents, consulted our clinic with various dental complaints between January and October 2020 were included. Several questionnaires were used with selected pediatric patients and their parents, and the dmft+DMFT scores showing the oral-dental health status of the children were examined. Informed consent signatures were obtained from the families, and all children whose families gave their consent were included in the study. Our study received an ethics committee approval from Dicle University, Faculty of Dentistry Ethics Committee with a decision number 2019-3.

The Children's Fear Survey Schedule-Dental Subscale (CFSS-DS) questionnaire was applied to the children of consenting parents before they entered the clinic, while they were still in the waiting room. This is one of the most commonly used questionnaires to measure dental anxiety levels in children. It consists of 15 questions covering different aspects of dental procedures. The Modified Dental Anxiety Scale (MDAS) was applied to measure the parents' dental anxiety levels. The lowest score that can be obtained from this survey, which consists of five questions in total, is 5, and the highest score is 25. To obtain information about the children's oral health status, the total number of caries and filled and missing teeth present in the patient's mouth was calculated using the DMF index, which yielded a dmft+DMFT score for each child. While the missing teeth of children in the mixed dentition period were determined in our study, the number of primary teeth lost by physiological root resorption was not included in the score.

The data obtained in this study were analyzed using SPSS software version 20 (IBM Corp., Armonk, NY, USA). Shapiro Wilk's test was also used, because of the unit numbers while investigating the status of the variables coming from the normal distribution. While examining the differences between groups, Mann Whitney U and Kruskal Wallis-H tests were used in case the variables did not come from the normal distribution. If significant differences were observed in the Kruskal Wallis-H Test, the groups with differences were determined by Post-Hoc Multiple Comparison Test.

Statistical analysis

Spearman's Correlation Coefficient was used when examining the relationships between variables that do not come from the normal distribution. While interpreting the results, 0.05 was used as the significance level; If $p > 0.05$, it is stated that there is no significant relationship.

Results

There is a statistically significant relationship between the child's CFSS-DS Score and the parents' MDAS Score ($p < 0.05$). As the child's CFSS-DS Score increases, the parent's MDAS Score increases, too (Table 1).

Table 1. The relationship between the child's CFSS-DS score and the parents' MDAS score

Parent's MDAS Score	
Child's CFSS-DS Score	r
	p
	n
	,236**
	0,001
	248

There is no statistically significant difference between the child's CFSS-DS score in terms of father's MDAS score ($p > 0.05$). In terms of the mother's MDAS score, there is a statistically significant difference

between the child's CFSS-DS score ($p < 0.05$). The MDAS score of the mothers of children with low CFSS-DS levels is significantly lower than the children with high CFSS-DS scores (Table 2).

Table 2. The result of the analysis regarding the difference between the CFSS-DS scores of the children in terms of the MDAS score of the parents.

		Child's CFSS-DS Level						Analysis Result		
		n	Mean	Median	Min	Max	ss	Mean Rank	H	p
Father's MDAS Score	Low Dental Anxiety Level	76	6,11	5	5	17	2,43	57,47	55,348	0,069
	Middle Dental Anxiety Level	21	7,48	5	5	17	3,43	72,4		
	High dental anxiety level	27	6,89	5	5	18	3,04	68,96		
	Total	124	6,51	5	5	18	2,79			
Mother's MDAS Score	Low Dental Anxiety Level	79	8,84	7	5	20	4,08	58,01	88,675	0,013
	Middle Dental Anxiety Level	20	8,35	8	5	16	3,23	56,83		
	High dental anxiety level	25	12,16	11	5	23	5,57	81,24		
	Total	124	9,43	8	5	23	4,49			
		Low-High								

There is a statistically significant relationship between the child's dmft + DMFT Score and the mother's MDAS Score ($p < 0.05$). As the dmft + DMFT Score of the child increases, the mother's MDAS Score also increases

(Table 3). There is no statistically significant difference between the child's CFSS-DS score in terms of father's MDAS score ($p > 0.05$)

Table 3. The relationship between the child's dmft+DMFT score and the parents' MDAS score

	Father's MDAS Score	Mother's MDAS Score
Child's dmft+DMFT Score	r	0,057
	p	0,528
	n	124

There is a statistically significant difference between the gender of the child in terms of CFSS-DS score of the child ($p < 0.05$). CFSS-DS scores of boys are significantly lower than girls. There is a statistically significant relationship between the age of the child and the CFSS-DS score. This relationship is medium level and reverse direction ($r = -0.411$). As the child's age increases, the child's CFSS-DS score decreases. There is a statistically significant relationship between the child's dmft + DMFT score and CFSS-DS score ($p < 0.05$). As the dmft + DMFT score of the child increases, the CFSS-DS score also increases.

Discussion

Dental anxiety is a distressed situation for both the patient and the dentist, and it is an important obstacle for ideal dental treatment. The patient's negative attitude towards treatment creates stress for the dentist and sometimes it is one of the most important causes of disagreements between the patient-dentist or dentist-parent.

In the literature on the etiology of dental anxiety, it is seen that parental dental anxiety is one of the risk factors. In a meta-analysis in which 43 studies were analyzed, it was shown that in 34 of the studies, there was a relationship between the parental dental anxiety level and the child's dental anxiety level, and this relationship was more pronounced in children under 8 years of age (7). It has been shown in this study that there is a similar but low-level relationship between the dental anxiety level of the parents and the dental anxiety level of the child ($p < 0.05$). This result is in line with the results of the studies mentioned in the literature (5, 7-9). Although the potential effect of parents on the dental anxiety levels of children is known, there is no consensus in the literature as to which mother or father plays a more effective role. In this study, when the effect of the dental anxiety levels of the parents on the dental anxiety levels of the children was examined, it was found that the dental anxiety level of the children of the mothers with high levels of dental anxiety was also high ($p < 0.05$).

Another factor that is thought to affect the child's oral health is the level of parental dental anxiety. It is possible for children to learn dental avoidance behaviors from their anxious parents (10). In our study, when the relationship between maternal dental anxiety level and the child's dmft + DMFT scores were examined, a statistically significant relationship was found ($p < 0.05$). This result is similar to the results of the studies reported in the literature (11-14).

In most studies on the relationship between dental anxiety level in children and the child's age, it has been reported that there is a negative correlation between age and dental anxiety level (15, 16). In this study, similar to the results of the studies mentioned in the literature, it was reported that there was a negative correlation between dental anxiety level and age ($p < 0.05$). When the findings regarding the effect of gender on dental anxiety are examined, the majority of studies reporting higher rates of dental anxiety in

girls compared to boys (17, 18). Consistent with the studies mentioned in this study, dental anxiety levels of girls were found to be significantly higher than boys.

Fear of dentists and dental anxiety can be both a cause and a consequence of poor oral health (19). Since anxious patients avoid dental procedures, oral health is negatively affected. In our study, it was shown that there was a significant relationship between the child's dental anxiety level and dmft + DMFT scores, and this relationship was low and in the same direction ($p < 0.05$). This result is similar to the results of the studies reported in the literature (8, 20).

Conclusions

The results we obtained in our study showed that children whose parents have dental anxiety experience higher levels of dental anxiety, and this problem should be solved starting with their parents. Educating parents about reducing dental anxiety and teaching coping strategies can help reduce the impact of dental anxiety on their children. Results have shown us the importance of increasing the knowledge level of all individuals on oral health through regular dental check-ups and preventive healthcare services and establishing the correct attitude towards dental procedures, starting from expectant mothers of the society.

Acknowledgments: This study was presented as a full-text oral presentation at the 1st International Dental Research and Health Sciences Congress held between 20-22 May 2021.

Ethical Approval: Ethics committee approval was received for this study from Human Ethics Research Committee at Dicle University, Faculty of Dentistry in accordance the World Medical Association Declaration of Helsinki, with the approval number: 2019-3.

Peer-review: Externally peer-reviewed.

Author Contributions: Conception - Ş.K.; Design - S.Ç., Ş.K.; Supervision - S.Ç.; Materials - Ş.K., S.Ç.; Data Collection and/or Processing - Ş.K., S.Ç.; Analysis and/or Interpretation - Ş.K.; Literature Review - S.Ç., Ş.K.; Writer - Ş.K.; S.Ç.; Critical Review - Y.K.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

References

1. Öhman A. Fear and anxiety: Evolutionary, cognitive and clinical perspectives. In: Handbook of emotions. 2000; 573-593
2. Gullone E. The development of normal fear: A century of research. Clinical Psychology Review, 2000; 20(4), 429-451. ([Crossref](#))
3. Bayrak Ş, Tunç EŞ, Eğilmez T TN. Ebeveyn dental kaygısı ve sosyodemografik faktörlerin çocukların dental kaygısı üzerine etkileri. Atatürk Üniversitesi Diş Hekim Fakültesi Derg. 2010; 9(1) 76-99

4. Durhan MA. Diş Hekimi Korkusu / Kaygısı ve Etiyolojik Faktörler. *Türkiye Klinikleri J Pediatr Dent-Special Topics* 2018;4(2):105-9
5. Coric A, Banozic A, Klaric M, Vukojevic K, Puljak L. Dental fear and anxiety in older children: An association with parental dental anxiety and effective pain coping strategies. *Journal of Pain Research*. 2014; 7, 515-521 ([Crossref](#))
6. Busato P, Garbín RR, Santos CN, Paranhos LR, Rigo L. Influence of maternal anxiety on child anxiety during dental care: cross-sectional study. *Sao Paulo Medical Journal*. 2017; 135(2), 116-122. ([Crossref](#))
7. Themessl-Huber M, Freeman R, Humphris G, MacGillivray S, Terzi N. Empirical evidence of the relationship between parental and child dental fear: A structured review and meta-analysis. *International Journal of Paediatric Dentistry* 2010, March. ([Crossref](#))
8. Rantavuori K, Lahti S, Hausen H, Seppä L, Kärkkäinen S. Dental fear and oral health and family characteristics of Finnish children. *Acta Odontol Scand*. 2004 Aug; 62(4):207-13. ([Crossref](#))
9. Cagiran E, Sergin D, Deniz MN, Tanatti B, Emiroglu N, Alper I. Effects of sociodemographic factors and maternal anxiety on preoperative anxiety in children. *Journal of International Medical Research*, 2014; 42(2), 572-580. ([Crossref](#))
10. Mehrstedt M, Tönnies S, & Eisentraut I. Dental fears, health status, and quality of life. *Anesthesia Progress*, 2004; 51(3), 90-94.
11. Ain T, Sultan, S., Gowhar, O., & L., R. Maternal dental anxiety as a risk factor for dental caries in children: a cross-sectional study. *International Journal of Research in Medical Sciences*, 2016; 4867-4872. ([Crossref](#))
12. Goettems ML, Ardenghi TM, Romano AR, Demarco FF, Torriani DD. Influence of maternal dental anxiety on the child's dental caries experience. *Caries Research*, 2012; 46(1), 3-8. ([Crossref](#))
13. Eitner S, Wichmann M, Paulsen A, Holst S. Dental anxiety - An epidemiological study on its clinical correlation and effects on oral health. *Journal of Oral Rehabilitation*, 2006; 33(8), 588-593. ([Crossref](#))
14. Goyal J, Menon I, Singh R, Sharma A, Passi D, Bhagia P. Association between maternal dental anxiety and its effect on the oral health status of their child: An institutional cross-sectional study. *Journal of Family Medicine and Primary Care*, 2019; 8(2), 535. ([Crossref](#))
15. Dogan MC, Seydaoglu G, Uguz S, Inanc BY. The effect of age, gender and socio-economic factors on perceived dental anxiety determined by a modified scale in children. *Oral Health & Preventive Dentistry*, 2006; 4(4), 235-41.
16. Mishra G, Thakur S, Singhal P, Ghosh SN, Chauhan D, Jayam C. Assessment of child behavior in dental operatory in relation to sociodemographic factors, general anxiety, body mass index and role of multi media distraction. *Journal of Indian Society of Pedodontics and Preventive Dentistry*, 2016; 34(2), 159-164. ([Crossref](#))
17. Gustafsson A, Broberg A, Bodin L, Berggren U, Arnrup K. Dental behaviour management problems: The role of child personal characteristics. *Int J Paediatr Dent*. 2010; 20(4) 242-253 ([Crossref](#))
18. Carrillo-Diaz M, Crego A, Armfield JM, Romero-Maroto M. Assessing the relative efficacy of cognitive and non-cognitive factors as predictors of dental anxiety. *European Journal of Oral Sciences*, 2012; 120(1), 82-88. ([Crossref](#))
19. Ten Berge M, Veerkamp JSJ, Hoogstraten J, Prins PJM. Childhood dental fear in the Netherlands: Prevalence and normative data. *Community Dentistry and Oral Epidemiology*, 2002; 30(2), 101-107. ([Crossref](#))
20. Patır Münevveroğlu A, Ballı Akgöl B, Erol T. Assessment of the Feelings and Attitudes of Children towards Their Dentist and Their Association with Oral Health. *ISRN Dentistry*, 2014; 1-4. ([Crossref](#))