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Investigating the relationship between medical and dental experience, attachment styles, and dental anxiety in children

Abstract

The occurrence of anxiety in the child and the recurrence of this phenomenon in successive treatment sessions can affect the efficiency of dental processes and reduce the chances of treatment success. So this study aimed to investigate the relationship between attachment styles and dental anxiety in children aged 7 to 12 years. A sample of 95 individuals was selected by random sampling method and evaluated by Modified Child Dental Anxiety Scale (MCDAS) (Wong, Humphris and Lee, 1988) and Kinship Center Attachment Questionnaire (KCAQ) (Kappenberg & Halpern 2006). To gauge experience, two questions were included to determine any negative experiences during dental and medical visits.

The information obtained from the samples was analyzed by SPSS 22 software. Pearson correlation for analysis was also used. The results showed dental anxiety in children is significantly and negatively correlated with positive adjustment development ($p<0.05$, $r=-.213$) and positively and significantly with distancing from caregiver support ($p<0.05$, $r=.214$). There is no significant correlation between dental anxiety with emotional reactivity and negative behaviors. The results also showed that children who have only bad experiences in dental offices have the highest mean of dental anxiety ($M=28.8$). Children's fear of dentistry is related to their attachment style to their caregivers, and they experience less fear if they have a positive attachment and more fear if they have an avoidant attachment. Bad experience in dental offices is related to dental anxiety in children during their next visits.

Keywords: *Dental Anxiety, Attachment Style, Children, Medical Experience*

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Introduction

Dental anxiety means apprehension or fear of the prospect of dental treatment (1). Higher levels of this anxiety, in addition to a poorer oral health, can be associated with the development of psychosocial problems in children and adults (2).

Various studies have suggested three main aspects of dental anxiety: 1. Direct conditioning, which is caused by negative interactions in the dental office (3). 2. Learning through patterns such as family, peers, and community (4) and 3. aspects of psychodynamics and personality, that is, specific traits that, if present, increase the likelihood of anxiety in dental settings (5, 6). It is still unclear why some children get anxious in the dental situation while others, with a comparable dental history, do not. Besides, it is suggested that this can be explained by differences in child-rearing and personality traits (7, 8).

The theory of attachment, first proposed by Bowlby (1969), is about the internal connection between children and their caregivers. Parental responsiveness and the baby's availability in times of distress provide a haven for the child to organize experiences and control anxiety (9). Ainsworth and colleagues (1982) identified three styles of attachment: secure, insecure-avoidant, and insecure-ambivalent-resistant. Secure attachment children are more confident in the availability of their mother (or caregiver) and are likely to use them as a safe basis (10).

Attachment models in adulthood have been examined and found to affect strategies that people use to cope with anxiety and regulate emotions in distressing or challenging situations as a personality factor (11). In addition, attachment insecurity leads to increased sensitivity to stress (12). Thus, this may affect the subject's ability to regulate emotion in an emotionally stressful situation, such as dental treatment. But also the study of Shahrabi and colleagues (2020) showed that children's behavior in the dental office cannot be predicted based on their attachment style. Their findings revealed no significant difference in the attachment styles of cooperative and uncooperative children. In their study, significant associations only existed between the insecure ambivalent attachment style and child–dentist communication, and also between mother-child separation and secure attachment style (13).

On the other hand, as a learning factor, dental anxiety is significantly associated with the past experiences that subjects have regarding their past (14). It is closely associated with asymptomatic, irregular attendance patterns, a history of

extraction, and having a dentally anxious parent (15). Nevertheless, it should be remembered that the patient's present anxiety can affect the description of previous experiences (16).

It seems that in trying to understand the onset and development of dental anxiety, three factors play a very important role: attendance behavior and history of past treatments, both in medical offices (17) and dental offices (15, 18), and the relationship between the child and their parents in terms of secure attachment style is of particular importance. for instance one of the studies had indicated that Children with mothers who had dental anxiety, in comparison with other children had more untreated dental caries (19).

Considering that the fear of dentistry is very important for children in their oral health care, it seems necessary to identify the factors related to it. On the other hand, little research has been done on Iranian children in this field and foreign research is controversial. Therefore, the present study was conducted to investigate the relationship between an experience (learning through patterns), attachment styles (aspects of psychodynamics and personality), and dental anxiety in children aged 7 to 12 years.

Materials & Methods:

Research Design

The present study was a cross-sectional correlational study and was conducted in 2021. Sampling lasted for 3 months (from the beginning of June to the end of August). The study population consisted of children aged 7 to 12 years old who were referred to dental clinics in Tehran for dental procedures. First, through cluster sampling that divided the dental clinics of Tehran into 5 clusters based on geographic location (north-south-east-west and central), the clinics of Tehran 16th district were selected by simple random sampling and one of these clinics was selected by simple random sampling. By referring to this clinic, questionnaires were provided to parents and children, and after answering the questions, questionnaires were collected. Inclusion criteria were all children referred for dental treatment aged 7 to 12 years. The sample size was based on a type 1 error of 5% and frequency of 77% and accuracy of 0.1 frequency of 95 samples.

To place children in this statistical sample, the following cases were considered: referral to the dental clinic and the age of 7 to 12 years, the absence of a specific systemic disease, or hospitalization. Children with unpleasant medical or dental experiences, a history of post-traumatic stress disorder, or a history of oral injections were excluded from the research. First, the parent's consent was obtained and then, before the children arrived for dental treatment, the children's fear of dentistry questionnaire was completed by the parents with the cooperation of the child or by the child himself.

Participants

To place children in this statistical sample, the following cases were considered: referral to the dental clinic and the age of 7 to 12 years, the absence of a specific systemic disease, or hospitalization.

Procedure

First, the parent's consent was obtained and then, before the children arrived for dental treatment, the children's fear of dentistry questionnaire was completed by the parents with the cooperation of the child or by the child himself. Then to gauge experience, two questions were included to determine any negative experiences during a dental or medical visit.

Instrument and Questionnaire

Modified Child Dental Anxiety Scale (MCDAS)

This questionnaire was developed by Wong, Humphris, and Lee in 1988. It has 8 questions and its purpose is to measure children's anxiety during dental procedures. The response spectrum is of the Likert type of five options, the points for each option are given as follows: complete calm = 1, low fear = 2, medium fear = 3, high fear = 4, very high fear = 5. To get the overall score of the questionnaire, the scores of each question are added together. This questionnaire will have a range of 8 to 40. Higher scores will indicate higher anxiety in the child. In the research of Javadinejad et al. (2014), the content of this scale was confirmed using the opinion of narration professors. Its reliability was obtained using Cronbach's alpha method of 0.80.

Kinship Center Attachment Questionnaire (KCAQ)

This questionnaire was designed by Halpern and Kappenberg (2006). The number of questions is 20 and its purpose is to measure the attachment of children in middle school (before primary and primary school) from four different dimensions: (1) positive adjustment development, (2) distancing from caregiver support, (3) emotional reactivity and (4) negative behaviors. The response spectrum is of the Likert type of five options, the points for each option are given as follows: never = 1, rarely = 2, occasionally = 3, often = 4, always = 5. Positive adjustment development (questions 1-6), distancing from caregiver support (questions 4-10), emotional reactivity (questions 11-16), and negative behaviors (questions 17-20) are included. This questionnaire will have a range of 20 to 100. In Soleimani et al. (2014), the validity and reliability of this questionnaire have been investigated. The results of the factor analysis test showed that KCAQ was equal to 0.73 and at the desired level and the Bartlett test was statistically significant. The results of the factor analysis with Varimax rotation confirmed the existence of four factors in the items, which explained 48.72% of the total variance of the scale. The internal consistency coefficients of this questionnaire were obtained at a high level. The calculation of the test-retest coefficient at one-month intervals was desirable and high.

A significant correlation of the scores of this questionnaire with the scores of maternal emotion questionnaires and SDQ questionnaire confirmed the convergent, divergent, and simultaneous validity of the scale. Also, the reliability of the test-retest of this questionnaire has been reported to be 0.79 (quoted by Soleimani et al., 2014).

Regression and Pearson correlation tests were used to analyze the data. The software used was SPSS with version 16. The significance level was considered 0.05 in all tests.

Statistical Analyses

Pearson correlation test was used to analyze the data. The software used was SPSS with version 22. The significance level was considered 0.05 in all tests.

Results

The participants of this study were 49 (50.30) boys and 46 (49.69) girls. The average age of children was 8.92 (SD=1.55). The maximum and minimum scores, the mean, and the standard deviation of the research variables are presented in Table 1.

Table 1. The Descriptive Data for Bad experience in the medical and dental office, Dental Anxiety

Medical	Dental	frequency	Mean Dental Anxiety	Std. Deviation Dental Anxiety
Bad experience	Bad experience	110	19.55	9.09
	No bad experience	118	15.83	4.93
No bad experience	Bad experience	107	28.80	6.41
	No bad experience	160	19.91	8.17

The graph 1 shows that the children who have bad medical and dental experiences have a higher mean (M=19.55) than those who have only bad experiences in a medical office (M=15.83). It also shows that children who have only bad experiences in the dental office have the highest mean of the group (M=28.8).

Graph 1. The Descriptive Data for Bad experience in the medical and dental office, Dental Anxiety

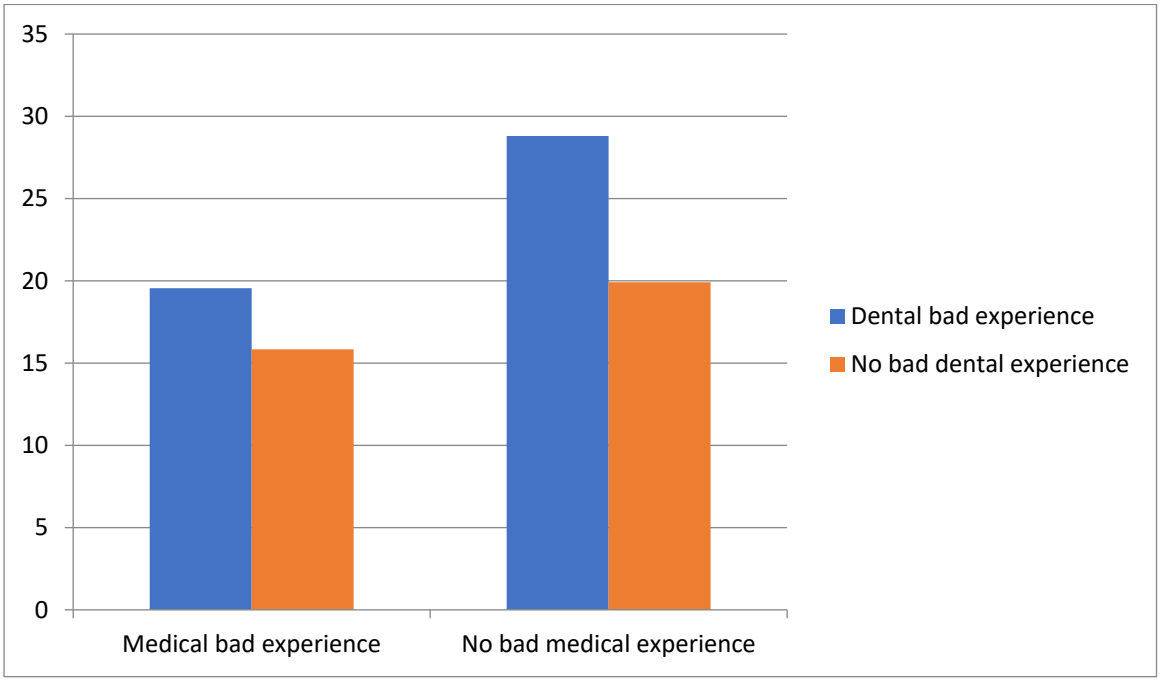

Table 2. The Descriptive Data for Attachment styles

Variable	Minimum	Maximum	Mean	Std. Deviation

Positive adjustment development	17.00	30.00	25.20	3.02
Distancing from caregiver support	12.00	33.00	23.00	3.06
Emotional reactivity	6.00	18.00	9.78	2.92
Negative behaviors	4.00	17.00	7.21	2.89

The table 2 shows that the highest mean among attachment styles is related to Positive adjustment development (M=25.20) and the lowest is related to Negative behaviors (M=7.21).

Table 3. The Bivariate Correlations of dental anxiety and attachment styles

Variables		**Dental Anxiety**	**positive adjustment development**	**distancing from caregiver support**	**emotional reactivity**	**negative behaviors**
Dental Anxiety	Pearson Correlation	1	-.213*	.214*	.131	.045
	Sig. (2-tailed)		.038	.038	.204	.668
positive adjustment development	Pearson Correlation	-.213*	1	-.239*	-.077	-.288**
	Sig. (2-tailed)	.038		.020	.460	.005
distancing from caregiver support	Pearson Correlation	.214*	-.239*	1	.019	.459**
	Sig. (2-tailed)	.038	.020		.854	.000
emotional reactivity	Pearson Correlation	.131	-.077	.019	1	.028
	Sig. (2-tailed)	.204	.460	.854		.784

**P<0.01 *P<0.05

As observed in Table 3, dental anxiety is significantly and positively correlated with distancing from caregiver support ($p<0.05$, $r=.214$), also significantly and negatively correlated with positive adjustment development ($p<0.05$, $r=-.213$).

Discussion

The studies showed that dental anxiety is a widespread problem in adults and children reporting delays in visiting the dentist due to dental fear. Such individuals often avoid dental treatment and suffer detrimental effects on their oral health (17). Therefore, this study aimed to investigate the relationship between experience, attachment styles, and dental anxiety in children aged 7 to 12 years.

The findings of this research showed that the mean of dental anxiety in children who had experience in a dental office was higher (M=28.8) than in those who didn't have such experience. In some studies, it has been reported that children with higher dental anxiety had more bad dental treatment experiences and experienced treatment as more painful than children without dental anxiety (18). To explain such a phenomenon it can be said that due to the conditioning pathway for the child's bad experience in dental offices, this is a fearful environment for him. This is also consistent with the results of the study that showed anxious children had a more traumatic experience in dental visits than non-anxious children (20). This may demonstrate the importance of treatment experience perception as traumatic. It means that maybe anxious children overestimate the pain and traumas from the first visit so get more anxious and traumatized by other children.

Findings also showed that dental anxiety is significantly and positively correlated with distancing from caregiver support ($p<0.05$, $r=.214$), and also significantly and negatively correlated with positive adjustment development ($p<0.05$, $r=-.213$). These findings are consistent with Shahrabi's (2020) (13) research that showed there is a significant relationship between attachment styles and fear of dentistry. Children who have higher scores in attachment styles on a subscale of positive adjustment development are less anxious and have a secure relationships with others. One of these people is the dentist. When the child has trusted the dentist and feels secure when he is doing his job, the level of anxiety gets low. In addition, attachment insecurity and distancing from caregiver support lead to increased sensitivity to stress (12). Thus, this may affect the child's ability to regulate anxiety in an emotionally stressful situation, such as dental treatment. Secure attachment children also have less anxiety when their parents leave them. This issue may affect dental anxiety because parents are not in the room during dental procedures. Children with insecure and avoidant attachments experience a great deal of fear and anxiety when their parents are away and when strangers are around, which in turn can increase their dental anxiety.

Conclusion

This study was performed on children 7-12 years old and one limitation of this study was that no tools were used to evaluate the children's general anxiety. The children's behavior can be due to fear induced by the absence of parents during dental procedures. Similar studies with larger sample sizes are recommended on children of different geographical locations and age classes. The socioeconomic status, parents' relationship with each other, the attachment style of parents, and their level of education should also be taken into account in future studies.

Acknowledgment

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Conflict Of Interest Statement

None declared.

Ethical Approval

This study was ethically approved by the Health Research Ethics Committee Shahid Beheshti University of Medical Sciences with approval code IR.SBMU.MSP.REC.1400.433. All information of the respondents was kept confidential, and a consent form is obtained from children and their parents.

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References

1. Valdes-Stauber J, Hummel K. The relationship between dental anxiety and other kinds of anxiety: a naturalistic, cross-sectional and comparative study. BMC Psychol. 2021 Nov 24;9(1):184. doi: 10.1186/s40359-021-00684-6. PMID: 34819158; PMCID: PMC8611955.
2. Gavic L, Tadin A, Mihanovic I, Gorseta K, Cigic L. The role of parental anxiety, depression, and psychological stress level on the development of early-childhood caries in children. Int J Paediatr Dent. 2018;28(6):616-23.
3. Bernstein DA, Kleinknecht RA, Alexander LD. Antecedents of dental fear. Journal of Public Health Dentistry. 1979;39(2):113-24.
4. Kleinknecht RA, Klepac RK, Alexander LD. Origins and characteristics of fear of dentistry. The Journal of the American Dental Association. 1973;86(4):842-8.
5. Levin L, Proter NF, Levin S. Dental visits and personality traits among young adults. Quintessence International. 2007;38(7).
6. Schuurs AH, Duivenvoorden HJ, Makkes PC, van Velzen SKT, Verhage F. Personality traits of patients suffering extreme dental anxiety. Community dentistry and oral epidemiology. 1988;16(1):38-41.

7. Krikken J, Ten Cate J, Veerkamp J. Child dental fear and general emotional problems: a pilot study. European Archives of Paediatric Dentistry. 2010;11(6):283-6.

8. Erfanparast L, Vafaei A, Sohrabi A, Ranjkesh B, Bahadori Z, Pourkazemi M, et al. Impact of self-concept on preschoolers' dental anxiety and behavior. Journal of dental research, dental clinics, dental prospects. 2015;9(3):188.

9. Bowlby J. Attachment: Basic books; 2008.

10. Ainsworth MDS, Blehar MC, Waters E, Wall SN. Patterns of attachment: A psychological study of the strange situation: Psychology Press; 2015.

11. Hazan C, Shaver P. Romantic love conceptualized as an attachment process. Interpersonal Development: Routledge; 2017. p. 283-96.

12. Maunder RG, Hunter JJ. Attachment and psychosomatic medicine: developmental contributions to stress and disease. Psychosomatic medicine. 2001;63(4):556-67.

13. Shahrabi MS, Shahrabi M, Heidari A, Ghaderi H. Role of attachment style in prediction of behavior of 3 to 6-year-old children. European Archives of Paediatric Dentistry. 2020:1-10.

14. Sivaramakrishnan G, Makki H, AlDallal S, Alaswad Z, Sultan E, Ahmed S, AlBanna H, Alsobaiei M, AlSalihi L. The variables associated with dental anxiety and their management in primary care dental clinics in Bahrain: a cross-sectional study. BMC Oral Health. 2022 Apr 21;22(1):137. doi: 10.1186/s12903-022-02173-7. PMID: 35448999; PMCID: PMC9026669.

15. Milsom K, Tickle M, Humphris G, Blinkhorn A. The relationship between anxiety and dental treatment experience in 5-year-old children. British dental journal. 2003;194(9):503-6.

16. Kent G. Memory of dental experiences as related to naturally occurring changes in state anxiety. Cognition & Emotion. 1989;3(1):45-53.

17. Humphris G, King K. The prevalence of dental anxiety across previous distressing experiences. Journal of anxiety disorders. 2011;25(2):232-6.

18. Brukiene V, Aleksejuniene J, Balciuniene I. Is dental treatment experience related to dental anxiety? A cross-sectional study in Lithuanian adolescents. Stomatologija. 2006;8(4):108-15.

19. Buldur B, Armfield JM. Development of the Turkish version of the Index of Dental Anxiety and Fear (IDAF-4C+): Dental anxiety and concomitant factors in pediatric dental patients. J Clin Pediatr Dent. 2018;42(4):279-86.

20. Neverlien PO. Dental anxiety, optimism–pessimism, and dental experience from childhood to adolescence. Community dentistry and oral epidemiology. 1994;22(4):263-8.