prediction of dental anxiety in children aged 7 to 12 based on parents' status

Abstract

The dental office is often an environment for the child with anxiety, which sometimes makes it difficult to perform any treatment due to his defensive reactions. So this study aimed to predict dental anxiety in children aged 7 to 12 years through anxiety, depression, and socioeconomic status of parents. A sample of 95 individuals was selected by convenience sampling method and evaluated by the Socio-Economic Status Questionnaire (SES) (Ghodratnama, 2013), Modified Child Dental Anxiety Scale (MCDAS) (Wong, Humphris and Lee, 1988), Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983). The information obtained from the samples was analyzed by SPSS 22 software. Pearson correlation and regression analysis were also used.

The results showed anxiety in parents is significantly and positively correlated with depression ($p<0.01$, $r=.651$) and dental anxiety in children ($p<0.01$, $r=.330$), also significantly and negatively correlated with Socio-Economic Status ($p<0.01$, $r=-.300$). Depression in parents is significantly and positively correlated with dental anxiety ($p<0.01$, $r=.405$) negatively with Socio-Economic Status ($p<0.01$, $r=-.324$). Depression was a significant predictor of dental anxiety ($\beta=0.319$, $p<0.05$). Anxiety, depression, and socioeconomic status of parents are related to dental anxiety in children. Increased parental anxiety and depression can be reduced by reducing dental visits and increasing trauma during referrals, and this anxiety is transmitted to the child during dental procedures, thereby increasing their anxiety. Higher socioeconomic status may reduce children's dental anxiety due to more parental awareness of dental procedures and earlier visits.

Keywords: *Dental Anxiety, Anxiety, Depression, Socioeconomic Status.*

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Introduction

The dental office is often an environment for the child with fear and anxiety, which sometimes makes it difficult or even impossible for the dentist and the medical staff to perform any treatment due to his defensive reactions (1). The occurrence of anxiety in the child and the recurrence of this phenomenon in successive treatment sessions undoubtedly affect the efficiency of the dentist and reduce his chances of success in treatment (2). Lack of knowledge about the source of anxiety and abnormal behaviors of the child during treatment often is the main reason for the failure of treatment. Some of the factors that cause negative reactions from the child during treatment are unfamiliar environments and strangers, fear of separation from parents, and loss of control, which cause negative reactions from the child during treatment (3).

Factors such as the child's age, mood, emotions, oral hygiene, cultural level, family circumstances, and a history of previous unpleasant treatment experiences also affect how the child behaves during dental treatment (4). It should also be noted that the patient-dentist relationship in pediatric dentistry is the product of complex patient-parent-dentist interactions. Parents, especially mothers, can influence their child's behavior within the framework of patterns and in terms of educational orientations as well as their attitudes toward behavioral control strategies (5). Studies have also shown that people with low socioeconomic status do not have a good attitude towards health and as a result, have behaviors that lead them to poor health (6). In addition, people who are at a higher economic and educational level have more health seeking behaviour and utilization of healthcare services (7).

Regarding the recommended method in pediatrics in dentistry, the dentist needs to understand the specific psychological state of the child and their parents. Therefore, as a first step, apart from choosing the right method of dental treatment, the dentist should try to reassure the child and their parents and reduce their mental stress (5).

The level of dental anxiety in children and their mothers appears to be predictive of their behavior in the oral care setting (8). Although in some studies there is a strong positive association between maternal dental anxiety on the child's dental caries experience (9), in another study there was no statistically significant correlation between the anxiety level of the mother or the father and the child's dental anxiety. However, in this, the bivariate analysis showed a closer

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association between the anxiety levels of the mother and the child compared to that between the father and the child but this was again found not to be statistically significant (10). One other study demonstrated that the child's ability to cope with dental treatment (as reflected in reported disruptive behaviors) was based upon his/her degree of psychological development and the mother's fear of dental treatment. It seems that an interaction exists, in which the role of the mother plays a central part in the child's ability to cope with dental treatment (11).

It is believed that the etiology of dental anxiety has several factors based on age, gender, and socioeconomic status (12, 13). This relationship seems to be more at the age of 6 to 7 years so that older children can cope with dental procedures. This age reflects the stage of psychological development when children are expected to be able to cope with the potential experience of anxiety (14). The issue of gender as an etiological factor in dental anxiety is still controversial. The interaction of age and gender in the incidence of dental anxiety has been highlighted (15).

Klingberg (14) found that boys between the ages of 9 and 11 tended to score higher than girls with dental anxiety. Thus, even if the resulting gender may not predict dental anxiety, it may correlate with other variables that make children more susceptible to the condition. Several studies have directly examined the relationship between socioeconomic status and dental anxiety in children (16). They revealed a valid demonstrable path of association between parental socioeconomic status, dental anxiety, childhood dental anxiety, and oral health behaviors. Wue and Gau (2018) demonstrated that family structure (nuclear or single-parent family) and the presence of siblings are significant determinants of children's dental anxiety. Sulakshana and colleagues (2019) showed that age gender and mother's education are not associated with dental anxiety however there is a low positive correlation between mother's education, and income was significantly associated with dental anxiety. There was a moderately positive correlation with income (17). Higher levels of dental caries are more common in inhabitants of rural than in urban areas (18) and differences in dental anxiety regarding area deprivation were also observed (4). Higher numbers of anxious children were found to live in deprived areas [4].

On the other hand, depression is one of the most comorbid disorders with anxiety (18). Symptoms of depression and anxiety frequently co-occur; women who report depressive symptoms are likely to also experience clinically significant symptoms of anxiety. Results of one study showed that children whose mothers presented symptoms of depression and anxiety had a higher chance of developing dental fear (19). Pinto and colleagues (2017) also showed that children from mothers with major depressive disorder and dental caries experience higher dental anxiety (20).

Since dental anxiety is complex and has a multifactorial etiology in children, studies that examine the reasons for the development of dental anxiety face numerous problems. Subjects from varied socio-economic and cultural backgrounds are exposed to different dental experiences during childhood and early adolescence. Thus it is almost impossible to define the main cause of the development of the problem (21). Although some data link the prevalence of dental anxiety, and depression to certain socio-demographic variables, nonetheless there is little clear information about dental anxiety among Iranian children and even less about the socio-demographic factors that predict dental anxiety in this country. So this study aimed to fill this gap and start preparing a database on the relationship between anxiety, depression, and the Socio-Economic level of parents with children's anxiety of dentistry among this population.

Instrument and Methods:

In this descriptive cross-sectional study, 100 healthy children aged 7-12 years who were referred to a clinic in Tehran city for general dental work were selected by convenience sampling method. 95 questionnaires were finally analyzable. To place children in this statistical sample, the following cases were considered: referral to a 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 not studied. 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 the anxiety, depression, and socioeconomic questionnaire were completed by the parents.

Socio-Economic Status Questionnaire (SES)

This questionnaire was developed by Ghodratnama (2013). This questionnaire has 11 questions and 4 components of income, economic class, education, and housing status, and a total of 6 demographic questions and 5 main questions. The comparison of measuring the questions in this five-choice questionnaire and the scoring method is very low = 1 to very high = 5, respectively. Higher scores on this scale indicate better economic and social status. In the research of Islami et al. (2013) the content validity of the questionnaire was confirmed by 12 sports experts. Also, using Cronbach's alpha test, the reliability of the questionnaire was 0.80 (22).

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 (23).

Hospital Anxiety and Depression Scale (HADS)

The Hospital Anxiety and Depression Scale was designed by Zigmond & Snaith in 1983. It takes approximately less than 10 minutes to complete this questionnaire and can be completed at the same time as the interview. Often, during a screening interview, the therapist may look at the completed questionnaire and match the process of his or her questions, or confirm a specific answer. This fourteen-item screening inventory is designed to measure mood swings, especially anxiety and depression. On this scale, seven questions related to anxiety symptoms (questions 12, 9, 8, 5, 4, 1, and 13) and seven questions about depressive symptoms (questions 11, 10, 7, 6, 3, 2, and 14). This questionnaire is scored based on a four-point scale of scores (0, 1, 2, and 3). The authors suggest a score of 11 as the cut-off point above which scores are of clinical significance. High scores on the depression scale indicate that in addition to coping with anxiety, other treatments should be considered. This questionnaire has been used by other authors for research purposes and thus has been standardized. The results of kaviani et al.'s research (2017) showed that HADS has the necessary validity for use in the Iranian clinical population (24).

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.

Findings

The parents' participants in this study were 10 (10.5%) males and 85 (89.5%) females. Of the children participants, there were 49 (51.6) boys and 46 (48.4) girls. The average age of all the parents was 32.95 (SD=5.33) and it was 8.92 (SD=1.55) for the children. In Socio-Economic Status were 15 individuals (14%) very low, 5 individuals (4.7%) low, 55 individuals (51.4%) middle, 15 individuals (14%) high, and 5 (4.7%) very high.

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 Anxiety, Depression, Dental Anxiety

Variables	Min	Max	Mean	Deviation
Anxiety	.00	20.00	8.3263	4.86070
Depression	.00	15.00	7.2316	4.31093
Dental Anxiety	8.00	40.00	19.8000	8.23408

Table 2. The Bivariate Correlations of Anxiety, Depression, Dental Anxiety, Socio-Economic Status

Variables		Anxiety	Depression	Dental Anxiety	Socio-Economic Status
Anxiety	Pearson Correlation	1	.651**	.330**	-.300**
	Sig. (2-tailed)		.000	.001	.003
Depression	Pearson Correlation	.651**	1	.405**	-.324**
	Sig. (2-tailed)	.000		.000	.001
Dental Anxiety	Pearson Correlation	.330**	.405**	1	-.188
	Sig. (2-tailed)	.001	.000		.069
Socio-Economic Status	Pearson Correlation	-.300**	-.324**	-.188	1
	Sig. (2-tailed)	.003	.001	.069	

**P<0.01 *P<0.05

As observed in Table 2, anxiety in parents is significantly and positively correlated with depression (p<0.01, r=.651) and dental anxiety in children (p<0.01, r=.330), also significantly and negatively correlated with Socio-Economic Status (p<0.01, r=-.300). Depression in parents is significantly and

positively correlated with dental anxiety (p<0.01, r=.405) and negatively with Socio-Economic Status (p<0.01, r=-.324).

Table 3. Predicting Dental Anxiety through Anxiety, Depression, and Socio-Economic Status

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	15.108	3.334		4.531	.000
	Anxiety	.180	.214	.106	.840	.403
	Depression	.610	.244	.319	2.504	.014
	Socio-Economic Status	-.420	.814	-.052	-.516	.607

As can be observed in Table 3, depression (β=0.319, p<0.05), was a significant predictor of dental anxiety.

Discussion

The main goal of pediatric dentistry is to provide effective and efficient medical services while maintaining and creating a positive attitude towards dentistry in children. In this regard, one of the most important steps is to control children's anxiety. Therefore, this study aimed to predict dental anxiety in children aged 7 to 12 years through anxiety, depression, and the socioeconomic status of parents.

The findings showed that anxiety in parents is significantly and positively correlated with depression (p<0.01, r=.651) and dental anxiety in children (p<0.01, r=.330), also significantly and negatively correlated with Socio-Economic Status (p<0.01, r=-.300). Depression in parents is significantly and positively correlated with dental anxiety (p<0.01, r=.405) and Socio-Economic Status (p<0.01, r=.324). Also depression in parents (β=0.319, p<0.05), was a significant predictor of dental anxiety in children but anxiety and Socio-Economic Status were not.

This study is in line with Sulakshana and colleagues' findings in 2019, which showed that the socio-economic level of the family is related to the level of dental anxiety in children. In this research as well, when the socio-economic level of the family increased, children's dental anxiety decreased. Explaining these findings, it can be said that since parents with a higher socioeconomic level are more aware of the dental processes and explain them to children to reduce their fear of dentistry. Due to the lack of financial problems, they go to the dentist on time, and this causes the child to experience less pain and trauma, and as a result, experience less anxiety in the next visits.

The results of this study are also consistent with the findings of Costa and colleagues (2017) and Pinato and colleagues (2017) that showed the level of anxiety and depression in mothers is related to the level of dental anxiety in children. Research has shown that oral health in children with clinically depressed mothers is poorer than oral health in children with depressed mothers. Also, the frequency of children with good oral health in the group of non-depressed mothers is higher than children in the group of depressed mothers, which indicates the effect of maternal depression on the oral health of the child. A depressed mother makes fewer connections with the child or neglects the child's attempts to establish a connection.

Studies in the field of acute caries in children have also shown that the child's sense of inferiority, depression and anxiety play a significant role in the development of acute caries (25). On the other hand, when the mother is depressed, the baby soon becomes depressed. This, in turn, increases the effect of maternal depression on the child's health. In addition, the issues of attitude and positive functioning of the mother toward the value of the child's teeth and the importance of regular visits to the dentist are determining factors in dental visits (26). Considering the above, the effect of parental depression on oral health and children's anxiety can be somehow justified.

Other studies on the effect of parental mood on a child's oral health have yielded similar results. In a study evaluating the effect of maternal stress on children's oral health, it was found that children of mothers with high-stress scores had poorer oral health (27). Health habits and health behaviors seem to be common among family members. Poor brushing habits are associated with adult dental anxiety, and children seem to choose their parents' health habits and behavioral patterns (16). On the other hand, anxious parents come to the dentist for dental visits later and less due to their concerns, so this can cause more dental problems in children and more traumas when performing dental procedures.

Conclusion

According to the results of this study, in the relationship between parents' anxiety and children's fear of dentistry, some things can be suggested to reduce the child's fear: Using anxiety indicators in both children and parents can identify anxious patients and the dentists can have the necessary arrangements to deal with such patients. Also, parents should never intimidate their children about dentistry and should not consider going to the office as a punishment for them. Parents should not make any previous promises to the child about how to treat the child, as this will put the dentist in a very difficult position. Informing parents to see a dentist as soon as possible (6 to 12 months) and regular visits every 6 months. Serious problems are prevented by early referral, and the child will become familiar with the environment from an early age without unpleasant dental experiences and will work with the dentist in the future.

Finally, it is suggested that the relationship between the child and parental fears in different age groups be examined and compared. It is also suggested that a study be conducted to compare the fears of parents and children in the first session with subsequent visits and also to compare the effect of different factors causing dental fear and anxiety at different ages.

One of the limitations of the present study was that parents who went to the clinic for treatment were in a hurry to receive treatment and did not have the necessary cooperation to fill out the questionnaire. One of the limitations of the present study was that parents who went to the clinic for treatment were in a hurry to receive treatment and did not have the necessary cooperation to fill out the questionnaire. This limitation can be overcome by providing questionnaires to patients in advance or requesting follow-up before subsequent visits.

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Ethical Permissions:

This study has been approved by the ethics committee of Shahid Beheshti University of Medical Sciences with approval code IR.SBMU.MSP.REC.1400.433.

Conflict Of Interest Statement

None declared.

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