Original Article

General Anxiety and Dental Fear: Is There A Relationship?

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Abstract

Introduction: Anxiety is an emotional state that helps healthy people defend themselves against threats**.** Dental anxiety is referred to a patient's specific response to stressful dental practices. The prevalence of dental anxiety is estimated to be between 3-43%. The relation between dental caries and dental anxiety is well understood, which happen as the result of patient's avoidance of dental visits. We aimed to measure dental fear in patients and evaluate its relationship with general anxiety. **Methods**: This cross-sectional study was performed on 90 patients referred to Oral medicine Department of Rasht Dental School in winter 2016. The severity of dental fear was measured by DFS Questionnaire and the level of general anxiety was measured by Cattell's anxiety scale. Pearson's correlation coefficient, t-test, and ANOVA were used for data analysis. **Results:** Total anxiety in 81 (90%) of the subjects was higher than the average. The mean total score of anxiety was 5.74 (SD=1.82). Sixty one (67.8%) of the patients had significantly higher anxiety than average and anxiety level in 70 (77.8%) of them was more than moderate. Pearson's correlation coefficient showed that there was a positive and significant relationship between general anxiety and dental anxiety (P<0.01, R=0.262). Independent t-test showed that the mean score of dental anxiety in males (M=33.82, SD=14.96) was significantly less than females (F=40.09) (P=0.048). **Conclusion**: According to the results of this research, there is a significant correlation between dental anxiety and general anxiety and also between dental anxiety and gender.

Keyword: dental fear, dental anxiety, general anxiety, Trait anxiety, state anxiety

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Introduction

Anxiety is an emotional state that helps healthy people defend themselves against threats (1). It is classified into two categories: hidden anxiety (anxiety trait) and apparent anxiety (state anxiety). Hidden anxiety is a condition that a person responds to perceived threats in the environment with anxiety. In general, hidden anxiety (trait anxiety) is considered to be a constant feature of personality (2). Apparent anxiety (state anxiety) is defined as an unpleasant emotional response in a certain dangerous or threatening situations (3). Dental anxiety is said to be the patient's specific response to stressed dental practices and is considered to be an anxiety state because of the dental treatment process (4).

Dental fear is defined by a real and certain trigger that suddenly emerge (needle, milling, etc.). In contrast, in dental anxiety, the source of the threat is ambiguous or unexplained (5). However, the terms dental fear and anxiety are often used interchangeably.

Dental anxiety in children and adolescents is a common condition and studies have shown a prevalence of around 6–20% (1, 6). However, its total prevalence is estimated to be between 3-43% (7). It is not yet clear that dental fear is just an acquired response to a negative stimulus, or a response to other syndromes associated

with anxiety. Currently, most researchers believe that dental fear has a multifactorial etiology, and can range from a simple conditional reaction to wider manifestations of anxious behaviors (8). The anxiety feeling is generally manifested as worriness, unpleasant extensive fear with somatic symptoms such as headache, sweating, muscle contraction, stomachache and chest tightness (1). This anxiety can have endogenous and exogenous components (9). Endogenous components are obtained through direct experience or negative experiences of others. Exogenous components can be considered as part of a more complex and serious psychiatric disorder, such as phobia or mood disorders (6). In general, several factors have been associated with the incidence of dental anxiety including the features of personality, fear of pain, bad experiences of dental appointments, especially since childhood, the impression of family members with dental fear (1).

Dental anxiety can cause a major problem in dental health (10) The relationship between dental caries and dental anxiety is well known due to avoidance of dental visits and cancellation of dental visits (1, 11, 12).

It has been shown that patients with dental anxiety have clinically poorer dental status and higher DMF index (decay, missing, filling) compared to normal people (13). The periodontal condition of these patients is also inappropriate (14). Dental anxiety also has an effect on the patient-dentist relationship and may lead to misdiagnosis and delay in treatments (4). Management of patients with dental anxiety is difficult in the office (15) and dentists believed that anxious patients are a major source of stress in the workplace and can make hard time (16). Dentists who understand and sympathize with the patients can help them to reduce their fear and anxiety (17). A better understanding of dental status in anxious and non-anxious people is important in dentistry because it can provide clear insights about the effects of dental anxiety on the patients' daily quality of life of people (10). Considering the significant effects of dental fear on oral health of patients and the lack of adequate epidemiologic studies in Iran, we aimed to study the relationship between dental anxiety and general anxiety in patients referred to the oral medicine department of dental school of Guilan university of medical sciences.

Methods and Materials

This was a cross-sectional analytical study. In correlation studies at least 30 samples are required (18). To increase the power of the study this could be added up. So, considering the similar studies, 100 patients were participated in the study. One hundred patients attended Oral medicine department of dental faculty, Guilan University of medical sciences in the winter 2016, were asked to complete questionnaires. Adult literate patients who were above 18 years old and filled out the consent form were included in the study. Ten questionnaires that were filled up incompletely were excluded from the survey.

We used three questionnaires:

The first questionnaire was a demographic form and some information including the following variables: age, gender, and degree of education, history of psychiatric disorders and medical history, time of the first dentistry appointment.

The second questionnaire was Cattell's Anxiety Scale. This questionnaire is applicable for individuals above the age of 14 and for both genders. The questionnaire contains 40 closed questions (including an interstitial option). In this questionnaire, three raw scores are calculated for each individual and raw scores are converted to normalized scores according to the standard tables. These scores include hidden anxiety (anxiety trait), apparent anxiety (anxiety state), and total anxiety scores.

The third questionnaire was the Persian version of Kleinknecht's dental fear survey (DFS).

To reconfirm the content validity of the Persian version of DFS, two oral medicine specialists (faculty members), and a psychologist, verified the validity of the questions. To determine the reliability, the questionnaire was given to 20 normal people. The Pearson's correlation coefficient for the questionnaires was 0.895 ($P<0.001$) by means of "test-retest" method (Cronbach's alpha =0.74).

The current DFS composed of 20 items, which can be scored from one assigned to "never" or "not at all" (without anxiety) to 5 assigned to "nearly every time" or "very much" (extreme anxiety) with a Likert rating scale. It comprises of three dimensions: avoidance (8 items), physiological arousal (5 items), and fears of specific stimuli/situations (7 items). The final score is the total score of the questions. The score of 3 or more for each question reflects the fear of the patient, and points 1 and 2 indicate a lack of fear. The total score ranges between 20 and 100 and in patients with score of 60 and more, Dental fear is diagnosed.

Questionnaires were given directly to the individuals. There was no time limit for answering the questions, but the patients were requested to return papers at the same day. Patients were informed that there was no correct or incorrect answer. All participants received and answered the questionnaires together with an informed consent form. The questionnaires were anonymous and numerical codes were used to identify the paired questionnaires. They were also assured that the information obtained would remain confidential and only the results of the collective analysis would be reported.

Data analysis:

Data were analyzed by SPSS19 software. Frequency and its percentage were calculated for qualitative variables. Kolmogorov-Smirnov test revealed that quantitative variables had a normal distribution. For data analysis, parametric tests (Pearson's correlation coefficient, analysis of variance (ANOVA) and independent t-test were used. DFS scores above 60 were considered fearful. The type 1 error (a) was considered to be 0.05 and $P<0.05$ was considered significant.

Results

The total number of participants in this study was 90, of which 34 were male (37.8%) and 56 were female (62.2%). The youngest participant was 17, and the oldest was 53 years old. The average age of the participants was 30.66 years.

The majority of the samples (47.8%) mentioned their first dental appointment to be after entering the elementary school (Table I).

According to the results of the DFS, people who scored 60 and more were considered to have dental anxiety. Dental fear was seen in approximately 9% of participants, with a mean score of 37.72 for dental anxiety (Table II).

The anxiety scores showed that 61 (67.8%) had apparent anxiety significantly higher than the average (37.72) and 70 (77.8%) patients had hidden anxiety above average.

Also, considering the score of 4 and above as an indicator of anxiety, 81 (90%) of the subjects had total anxiety higher than the average. The mean score of the total anxiety was 5.74 (Table III).

The relationship between apparent anxiety and hidden anxiety:

Pearson's correlation coefficient was used to reveal the relationship between apparent anxiety and hidden anxiety and the results showed that there was a positive and significant relationship between apparent and hidden anxiety ($P<0.001$).

Relationship between dental anxiety and total anxiety (general anxiety):

To determine the relationship between total anxiety and dental anxiety, Pearson's correlation coefficient was used and the results indicated that there was a positive and significant relationship between total anxiety and dental anxiety ($P<0.01$). In other words, people with higher total anxiety had more dental anxiety (Figure 1).

Table I. Distribution of samples according to their first dental appointment

First visit	Number	Percent
Pre school	15	16.7
During elementary school	32	35.5
After elementary school	43	47.8
Total	90	100

Table II. Distribution of samples according to the amount of dental anxiety

DFS score	Number	Percent
20-29	30	33.3
30-39	26	29
40-49	14	15.5
50-59	12	13.3
60-69	7	7.8
70-79	1	1.1
Total	90	100

Table III. Distribution of samples in terms of total anxiety

Total anxiety score	Number	Percent
1	1	1.1
2	4	4.4
3	4	4.4
4	13	14.5
5	16	18
6	22	24
7	14	15.6
8	10	11
9	6	7
Total	90	100

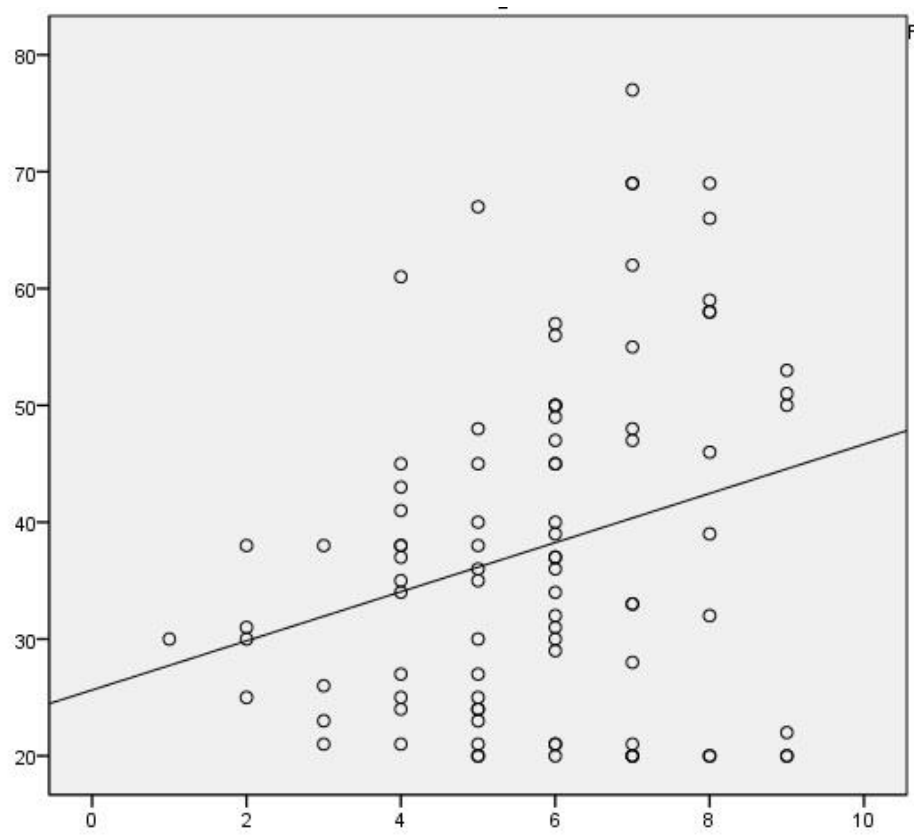

Figure 1. People with higher general anxiety (X axis) had more dental anxiety (Y axis)

The relationship between apparent and hidden anxiety and dental anxiety:

Pearson's correlation coefficient results showed that there was a positive and significant relationship between dental anxiety and apparent anxiety (P<0.006, R=0.262). In other words, people with more apparent anxiety had higher dental anxiety. However, no significant relationship was found between hidden anxiety and dental anxiety.

Relationship between age and dental anxiety:

The results showed that there was no significant relationship between age and dental anxiety (P≤0.394).

Comparison of dental anxiety in three groups with different age at the first dental appointment:

In general, ANOVA test showed that time of the first dental appointment had no significant effect on dental anxiety (P=0.190) (Table IV).

Comparison of dental anxiety in married and single individuals:

Independent t-test was used to assess the marital status effect on dental anxiety. There was no significant difference between the dental anxiety scores of married people and single/divorced individuals (P=0.544).

Comparison of dental anxiety in females and males:

Independent t-test was used to assess gender effect on dental anxiety. The mean score of dental anxiety was significantly lower in males than females (P=0.048).

Table IV. Average of dental anxiety based on the first dental appointment

Age at 1st dental visit	Number	Average	SD
Pre school	15	36.47	10.035
during elementary school	32	41.47	15.531
After elementary school	43	35.37	14.944

Discussion

The results showed that there is a significant relationship between general anxiety and dental fear, apparent anxiety and dental fear, and gender with dental fear Also, there was no significant relationship between hidden anxiety and dental fear, age with dental fear. In this study, we used Dental fear survey to assess dental fear. Kleinknecht's dental fear survey (DFS) is one of the most important criteria used in dental fear assessment and has been used for more than 30 years in international epidemiological studies. DFS is a measure used in behavioral research and has shown good stability, high reliability and acceptable validity in different languages and cultures (19).

In different societies, the frequency of dental fear and dental anxiety has been reported differently, with an overall prevalence of between 3-43%. In Iran, the studies in this field have suggested that the prevalence of dental anxiety varies from 13.3% to 58.8% (15). According to our study, it was lower. Although in most studies, the DFS questionnaire has been used to assess the frequency of dental anxiety, this difference can be related to the difference in the number of participants or in the studied population in Different research.

According to the results of this study, general anxiety and fear of dentistry have a significant relationship. In the other words, people with higher general anxiety experience more dental anxiety. This result is similar to other studies (1, 6, 8, 20, 21, 22).

Similar results were obtained in the study of Nigam et al in 2013(1), and it was shown that although dental anxiety may be seen in any individual, it is higher in patients who are generally more disturbed.

Also, there was a significant positive correlation between apparent anxiety and dental anxiety in this study, while there was no significant relationship between hidden anxiety and dental anxiety.

Akarslan in Turkey (4) as well as Hakeberg in the Netherlands (23), Hagglin in Sweden (24) found a positive relationship between hidden anxiety and dental anxiety, which contrasted with the results of our study. While in some studies similar to our study results, there was no relationship between hidden anxiety and dental anxiety (25, 26).

We found no significant relationship between age and dental anxiety. However, in some studies that specifically investigate the relationship between age and dental anxiety, this relationship was significant. Based on a study by Mohammad et al. (27) the level of dental anxiety was higher in lower age groups (12-25 years) than in older age groups mean while other studies showed there is more dental anxiety in lower age groups (28). Since the age range of participants in the present study was between 17- 53 years old (average age 30.66 years), and only 24 of the samples were under 25 this difference could be expected in the outcomes. Similarly, in the study of Kanegane et al. (29), As well as Humphris et al. (30) there was no significant relationship between age and dental fear.

In this study, men had significantly less dental anxiety than females. This result has been confirmed in several studies in the same way (4, 15, 27, 30, 31, 32). This difference in the rate of dental anxiety between the genders can be attributed to the women's greater ability to perceive and that they express their feelings more, including dental fear. In addition, psychological problems such as stress, fear, panic, and depression are more common in women than men, which may affect dental anxiety (31).

According to a study by Townend et al. (33) a child's first dental visit at an earlier age would be likely to increase his/her dental anxiety in the future. A young child's perception about dental treatments is different from that of adults or older children and considering his/her less experience, dental procedures are more fearful for them (28).

In our study, the majority of people (77%) had their first dental during or after the elementary school. In our study age at the first dental visit has not been recognized as an effective factor in increasing dental fear which was in contrast to the results of previous studies, this can be attributed to the age of our patients at first dental visit that was higher than the patients of previous studies.

Conclusion

According to the results of this research, there is a significant correlation between dental anxiety and general anxiety and also between dental anxiety and gender. Dentists should note that patients with dental anxiety are more likely to suffer from general anxiety and that dentistry fears are more prominent in women than men.

Conflicts of Interest

There are no conflicts of interest in this article.

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