


Anxiety in patients and its relation with patients' psychospiritual behaviors

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Original Article

Abstract

BACKGROUND AND AIM: The goal of this research was to study the rate of anxiety due to dental procedures in patients referring to dental clinics in Kerman, Iran, according to Corah's Dental Anxiety Scale (DAS) and its relation with psychospiritual behaviors.

METHODS: The study participants were selected from among those referring to dental offices, dental university, and city clinics and sampling was performed using simple sampling (405 individuals). The collected data were analyzed using χ^2 test and t-test in SPSS software. Multivariate regression was also used in order to study the relation between anxiety rate and psychospiritual disorders.

RESULTS: The study was performed on 198 men and 207 women with an average age of 38.5 ± 4.2 years. Women, young men, and people with higher educational degrees had more referrals in a shorter period than men, elderly individuals, and people with lower educational level. The results of this survey demonstrated that those who had answered yes to the questions related to behavior had cancelled more of their dental appointments or had not referred. This study showed that 125 individuals (31.0%) were anxiety free, 202 (49.8%) had moderate anxiety, and 60 (18.8%) had severe anxiety. There was a clear association between sex, age, educational degree, and annual referrals and anxiety rate.

CONCLUSION: This study showed that gender, age, educational level, and annual number of referrals are effective factors on patient's anxiety rate. Moreover, there was a meaningful association between cancelled or missed appointments and depression, mood change, and avoiding the dentist.

KEYWORDS: Anxiety; Behavior; Surveys and Questionnaires; Dentistry

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Anxiety is a feeling of disseminated, unpleasant, and ambiguous fear and worry with an unknown origin and it consists of lack of confidence, distress, and physiologic motivation. The recurrence of those conditions that used to be stressful in the past

or the person was hurt by can cause anxiety.¹ Fundamentally, there are 2 kinds of anxiety. The first kind is a natural reaction to a stressful condition or danger like when someone realizes or determines an obvious threat against his/her life or safety, at this time the individual may tremble and feel

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tremors, this may cause his/her mouth to become dry, and they may have a burning pain in their stomach. Most people have experienced this sort of emotions when encountering danger and pressure. The second form of anxiety is "internal" anxiety. This kind of anxiety strikes suddenly without warning, with no external cause and sometimes it seems that the person loses control of some parts of his/her body. The word "internal" means originating from inside, which means here that the cause of anxiety is not external environmental factors but internal ones.^{2,3}

The disorders resulting from anxiety are chronic fear, lower tolerance threshold when faced with difficulties, and deficiency. These individuals will feel a severe lack of self-confidence and will not be sure of their capabilities even in dealing with small things. They will feel that they cannot concentrate on problems and their thoughts and actions do not belong to themselves.

A number of dental treatments are such painful and uncomfortable methods that most patients worry about the pain during or after the procedure.^{4,5} Dental anxiety has a clear association with feeling pain during the procedure; 4-7% of the population have severe fear and anxiety of dental procedures, and thus, need to be treated through pain and anxiety controlling methods. Feeling pain in dentistry is not only due to dental tissue or periodontium damage and, but also many other factors like mental status, former experiences of dental treatment, and use of calmative drugs. Pain and anxiety have an association, this means that pain can make the patient anxious and a patient with anxiety can experience greater pain.^{6,7}

Unfamiliarity with dental procedures, seeing different and strange instruments, and the noise of drilling (specially in those who have mental disorders) could be really destructive. Moreover, personal experience and other's stories about pain during dental procedures can also be the cause of fear. Mostly, these issues are experienced by patients who have come to the dentist so late

that total anesthesia is not possible because of inflammation and infection and sometimes the dentist has to use several painful injections or even work for moments in spite of much pain.⁸

People worry about going to the dentist for reasons like the effectiveness of local anesthesia, and the dentist hurrying and ignoring their concerns. Other factors include expecting pain, expensive costs, and the smell of sterilizing agents and antiseptics. Interruption in daily works is also a general factor effective in patients' refusal to go to the dentist, inattention to this anxiety because of refusing to visit the dentist could cause many oral health problems, and because treatment is the only solution this can lead to spending more time on the dental unit.⁹⁻¹²

The goal of this research was to study the amount of anxiety due to dental procedures in patients of dental clinics in Kerman, Iran, according to Corah's Dental Anxiety Scale (DAS) and its relation with psychospiritual behaviors.

Methods

The present cross-sectional and analytic-descriptive study was conducted on those referring to dental offices, dental university, and city clinics. Using census sampling, 405 individuals were selected as the study participants. The study participants were older than 15 years. The purpose of this survey was explained to each individual, and if they were willing to participate in the study, they were given a questionnaire. In addition, the participants were assured that their information would be kept confidential and only be analyzed statistically.

The questionnaire consisted of 4 parts; a demographic information form, general dentistry questions form, the DAS,¹³ and a self-report health questionnaire including the behavioral category questionnaire¹⁴ and general questions about dental procedures that may cause anxiety.

Corah's DAS: DAS consists of 4 questions. Each question is scored on a 5-point scale

ranging from 1 to 5. The minimum and maximum scores of the scale are 4 and 20, respectively; scores of 1-8, 9-12, 13-14, and 15-20 are representative of no anxiety, moderate anxiety, strong anxiety, and serious and severe anxiety or dental phobia, respectively.¹³

Self-report health questionnaire: The behavioral category contains 10 questions with yes or no answers. "Yes" has 2 scores and "No" has 1 score. The minimum total and maximum scores of the scale are 10 and 20, respectively. Scores of 10-12, 13-15, and 16-20 are considered to illustrate no psychospiritual problem, a moderate disorder, and a serious psychospiritual disorder or dental phobia.¹⁴

The collected data were analyzed using χ^2 test and t-test in SPSS software (version 13; SPSS Inc., Chicago, IL, USA). Multivariate regression was also used in order to study the relation between anxiety rate and psychospiritual disorders. Moreover, $P < 0.05$ was considered as significant.

Results

In this survey, 420 questionnaires were distributed 405 of which were returned (response rate: 96.4%). The participants included 198 men and 207 women with an average age of 38.5 ± 4.2 years and age range of 17-62 years [40.0 ± 5.4 years in men (range: 17-48 years) and 37.6 ± 2.4 in women (range: 25-62 years)]. Table 1 shows the demographic characteristics of the participants.

Table 1. Demographic characteristics of patients

Characteristics	n (%)	
Gender	Male	198 (49)
	Female	207 (51)
Occupation	Employed	379 (94)
	Unemployed	26 (6)
Education	≤ Diploma	26 (6)
	≥ Diploma	379 (94)

Among the participants, 31% (125 people), 25% (101 individuals), 20% (82 individuals), and 10% (41 individuals) reported that the last time they visited the dentist was,

respectively, within the last 1-3 months, 4-6 months ago, during the last year, and about 2 years ago. Moreover, 14% (56 individuals) of the participants had not visited the dentist for more than 2 years. This research also showed that 24% (98 individuals) of the participants had not referred to the dentist during the previous year. It also showed that 5% (21 individuals) of the participants had referred to the dentist more than 3 times, 16% (65 individuals) 3 times, 15% (61 individuals) 2 times, and 40% (162 individuals) for at least 1 time.

The last referral of individuals and number of referrals had a clear association with sex ($P = 0.02$), age ($P = 0.04$), and education level ($P = 0.03$). In other words, women, young men, and people with higher educational degrees had more referrals in a shorter period than men, elders, and people with lower educational level.

This study showed that the problems experienced during dental procedures were tachycardia ($n = 21$; 5%), blurred vision ($n = 12$; 2%), nausea ($n = 25$; 6%), fainting ($n = 52$; 13%), palpitation ($n = 185$; 46%), and vertigo ($n = 21$; 8%). A significant relation was observed between making problems and sex ($P = 0.01$) and educational level ($P = 0.02$). Women had more complaints than men, and individuals with lower educational degrees reported more problems.

Moreover, 114 individuals (28.2%) reported pain in spite of anesthesia injection, among which 91 were women and 21 were men. In addition, 51 individuals' (12.6%) answer to the question "Have you ever had a bad dental therapy treatment?" was positive (21 men and 31 women).

This study showed that lack of sufficient time ($n = 124$; 31%), lack of need for treatment ($n = 58$; 14%), fear of dental treatment ($n = 212$; 52%), and cost ($n = 278$; 69%) were the reasons for not going to the dentist or few referrals to the dentist. Sex ($P = 0.25$), education level ($P = 0.08$), and age ($P = 0.12$) had no clear relationship with avoiding referral.

Table 2. The behavioral category of the self-report health questionnaire

Questions	Answer	
	Yes [n (%)]	No [n (%)]
Did you ever delay a dental visit because you were frightened?	225 (56)	180 (44)
Did you ever avoid a dental appointment because you were frightened?	205 (51)	200 (49)
Did you ever avoid a regular dental visit because you were frightened?	194 (48)	211 (52)
Are you available and able to sit through a three-hour dental appointment?	287 (71)	118 (29)
Are there some aspects of the appearance of your teeth and jaw that need to be changed?	56 (14)	349 (86)
Do you often feel depressed or moody?	74 (18)	331 (82)
Do you often feel anxious or nervous?	84 (21)	321 (79)
Have you ever had psychiatric or psychological counseling?	22 (5)	383 (95)
Did you ever avoid a dental visit because you were frightened?	180 (44)	225 (56)
Do you ever feel uncomfortable asking questions from doctors?	112 (28)	284 (70)

Patients' responses to the behavioral category of the self-report health questionnaire are presented in table 2. The results of this survey demonstrated that those who had answered yes to the questions related to behavior (questions 6, 7, and 9) had cancelled more of their dental appointments or had not referred. In other words, they had given more positive answers to questions 3, 4, and 6, and cancelling pattern in the two sample groups, which were classified according to yes or no answers to the questions about behavior, was meaningful [degree of freedom (df) = 85; t-test = 25.2; P = 0.03].

Table 3 presents the Pearson correlation coefficient between behavior-related items (questions 6, 7, and 9) and the number of cancelled or delayed appointments. As can be seen in this table, there is a meaningful relationship between cancelled or missed appointments and depression, mood change, and avoiding to go to the dentist (P < 0.05). Depression and mood change also had association with avoiding the dentist (P < 0.05).

According to the behavioral category of the self-report health questionnaire, 251 individuals (62%) had no psychospiritual disorder, 125 individuals (31%) had moderate

psychospiritual disease, and 290 persons suffered from serious psychospiritual disorder.

Patients' answers to DAS are presented in table 4. This study showed that 125 individuals (31.0%) were anxiety free, 202 persons (49.8%) had moderate anxiety, 60 participants (18.8%) had strong anxiety, and 18 individuals suffered from severe anxiety or dental phobia. The highest score on this scale was 18 and the lowest reported 5. There was a clear association between sex (P = 0.02), age (P = 0.04), educational degree (P = 0.04), and annual referrals (P = 0.01) and anxiety rate. In other words, more women than men, more young people than older individuals, more high educated individuals than individuals with lower educational degrees reported less anxiety (P = 0.04).

Table 5 illustrates data related to dental procedures and patient's anxiety after each operation. According to the results, the most common causes of anxiety in patients (men and women) were concerns about the costs, tooth extraction, noise or feeling of drilling during tooth cleaning, and being hasty and nervous because of their oral condition. Both men and women reported the least anxiety in taking radiographs.

Table 3. Correlations of behavior-associated items with canceled/missed appointments noted

	Depressed or moody	Anxious or nervous	Avoid dental appointment	Cancelled/missed appointment noted
Depressed or moody	1.000	0.512*	0.215*	0.115*
Anxious or nervous	0.512*	1.000	0.154*	0.068
Avoid dental appointment	0.215*	0.154*	1.000	0.105*
Cancelled/missed appointment noted	0.115*	0.068	0.105*	1.000

*Correlation is significant at the 0.05 level (2-tailed).

Table 4. Patients' answers to the Corah's Dental Anxiety Scale (DAS)

Questions	Answers				
	I would look forward to it as a reasonably enjoyable experience.	I would not care one way or the other.	I would be a little uneasy about it.	I would be afraid that it would be unpleasant and painful.	I would be very frightened of what the dentist would do.
	n (%)	n (%)	n (%)	n (%)	n (%)
1- If you had to go to the dentist tomorrow, how would you feel about it?	80 (20) Relaxed	52 (13) A little uneasy	179 (44) Tense	55 (14) Anxious	39 (9) I am so anxious that I sometimes break out in a sweat or almost feel physically sick.
2- When you are waiting in the dentist's office for your turn in the chair, how do you feel?	85 (21)	121 (30)	72 (18)	102 (25)	25 (6)
3- When you are in the dentist's chair waiting while the dentist gets the drill ready to begin working on your teeth, how do you feel?	75 (19)	158 (39)	55 (14)	102 (25)	15 (4)
4- You are in the dentist's or hygienist's chair to have your teeth cleaned. While you are waiting and the dentist is getting out the instruments that he or she will use to scrape your teeth around the gums, how do you feel?	142 (35)	43 (11)	85 (21)	125 (31)	10 (2)

Table 5. The patients' answers to concerns or anxiety over the dental procedures

Dental procedures	Level of concern or anxiety			
	Low [n (%)]	Moderate [n (%)]	High [n (%)]	Do not know [n (%)]
1. Sound or vibration of the drill	87 (21)	228 (56)	75 (19)	15 (4)
2. Not being numb enough	158 (39)	75 (19)	220 (5)	150 (37)
3. Dislike the numb feeling	120 (30)	60 (15)	25 (6)	200 (49)
4. Injection	158 (39)	75 (19)	22 (5)	150 (37)
5. Probing to assess gum disease	287 (71)	71 (18)	2 (0.5)	45 (11)
6. The sound or feel of scraping during teeth cleaning	250 (62)	45 (11)	25 (6)	85 (21)
7. Gag reflex, for example during impressions of the mouth	180 (44)	33 (8)	45 (11)	147 (36)
8. X-rays	80 (20)	20 (5)	3 (1)	302 (75)
9. Rubber dam	78 (19)	200 (49)	25 (6)	102 (25)
10. Jaw gets tired	100 (25)	101 (26)	52 (13)	152 (38)
11. Cold air hurts the teeth	130 (32)	50 (12)	15 (4)	210 (52)
12. Not enough information about procedures	150 (37)	35 (9)	20 (5)	200 (49)
13. X-rays	80 (20)	140 (35)	85 (21)	100 (25)
14. Extraction	205 (51)	25 (6)	100 (25)	75 (19)
15. Fear of being injured	140 (35)	45 (11)	20 (5)	20 (5)
16. Panic attacks	80 (20)	25 (6)	0 (0)	300 (74)
17. Not being able to stop the dentist	115 (28)	150 (37)	55 (14)	85 (21)
18. Not feeling free to ask questions	150 (37)	40 (10)	15 (4)	200 (49)
19. Not being listened to or taken seriously	150 (37)	40 (10)	15 (4)	200 (49)
20. Being criticized, put down, or lectured to	150 (37)	40 (10)	15 (4)	200 (49)
21. Smells in the dental office	150 (37)	85 (21)	20 (5)	150 (37)
22. I am worried that I may need a lot of dental treatment.				
23. I am worried about the cost of the dental treatment.	55 (14)	87 (21)	208 (51)	55 (14)
24. I am worried about the number of appointments and the time that will be required for necessary appointments and treatment, time away from work, or the need for childcare or transportation	140 (35)	130 (32)	15 (4)	120 (30)
25. I am embarrassed about the condition of my mouth.	80 (20)	140 (35)	85 (21)	100 (25)
26. I do not like feeling confined or not in control.	150 (37)	40 (10)	15 (4)	200 (49)

Discussion

From a psychiatric point of view, anxiety includes fidgetiness, dread, and unpleasant, disseminated fear with a feeling of danger of close incidence that has no known origin. Fear and anxiety are similar in that both are activated as a response to danger and both have the same physiologic reactions.

Facing patient's anxiety and fear during treatment is one of the primary concerns in dentistry. This problem could decrease follow-up and sometimes cause avoidance of treatment.^{15,16} Moreover, one of the important factors in dentistry is to control fear and anxiety. Studies have shown that 40% of the population in western communities is concerned about going to the dentist and 20% is severely scared of it. The present study was conducted to survey patients' anxiety rate about dental procedures and its relation with

individual's psychospiritual status. In this research, 405 individuals were studied, among which 125 individuals (31.0%) had no anxiety, 202 persons (49.8%) had moderate anxiety, 60 persons (18.8%) had severe anxiety, and 18 individuals (4.4%) had serious anxiety or dental phobia.

Epidemiologic studies showed that 3 to 20% of individuals have fear of and anxiety about dental treatments that can cause problems.^{17,18} The prevalence of anxiety in the young adult population was reported as 14.9% in Australia, 12.5% in Canada, and 12.6% in Russia.¹⁹

In a study by Locker et al. on young adults, 12.5% of individuals had high dental anxiety.^{20,21} Furthermore, in the study by Kaakko et al., 22.0% of dentistry and medicine students had strong anxiety which was in line with the present study results.²¹

In the studies by Ghasempour et al.²² and Moore et al., moderate anxiety was detected in 6% of individuals, which is much lower than that in our study.²³ However, in the studies by Quteish Taani on Saudian students²⁴ and Rao et al. on Indian students,²⁵ the prevalence of moderate anxiety reported was higher than that in our study.

This diversity in anxiety rates could be because of differences in study populations or study instruments. In this study, DAS was used, which is the most reliable questionnaire in studying patient anxiety and has suitable validity and reliability.

Numerous researches have shown that there is a clear relationship between anxiety rate and sex, and women show more anxiety than men,²⁶⁻²⁸ which is in line with the present study findings.

Stabholz and Peretz showed that sex has the most strong effect on scores.²⁷ In addition, in a research done on 18-year-old individuals in Norway by Skaret et al., there was a clear difference between the 2 genders regarding anxiety.²⁰ In a study performed in 1998 in America by Johansson and Berggren, the average anxiety score was reported to be 7.81 in men and 8.73 in women;²⁹ thus, sex did not have an effect on this score.³⁰

The higher prevalence of anxiety in women than men has been reported in various studies. This could be because of the fact that generally the prevalence of anxiety disorders is higher in women compared to men.³¹⁻³⁴

The study by Peretz and Mann revealed a higher prevalence of anxiety in students who had been under treatment than others.³⁵ In another survey performed by Skaret et al. on 18-year-old Norwegian individuals, students who had more dentistry experience reported 9.9 times more anxiety.²⁰

Moreover, in a study in France, people who had never referred to the dentist had a higher average anxiety score.²⁹

Anxious patients usually have fewer and more delayed referrals to the dentist and only refer for treatment when they start to feel pain. This social habit usually results in

patients requiring more complicated dental procedures, which increases dental anxiety, interferes with dentists' abilities to provide dental care, and more importantly, based on evidence, places patients oral health at risk. Reports have shown more teeth loss, more carries, less filled surfaces, more periapical lesions, and more bone resorption in phobic patients compared to the control group.^{23,35-37}

This study showed a meaningful association between age and anxiety rate, and old people reported less anxiety, which is in line with previous studies.^{23,36,37} In these studies, increase in age has caused a decrease in anxiety; however, Locker and Liddell,³⁸ and Elter et al.³⁹ found a direct relation between increasing age and increasing anxiety. Nevertheless, there were other studies that did not report age as an effective factor on anxiety rate.^{40,41}

Naturally, with increasing age as the individual becomes more experienced and overcomes more difficulties and different events, her/his tolerance is increased, and thus, she/he can probably tolerate problems better. In this study, there was an inverted relationship between educational level and anxiety rate, which is in line with the findings of other studies.^{14,38,40,41}

In this study, being worried about treatment costs, tooth extracting, the noise or feeling of drilling when cleaning the teeth, and being nervous and confused because of one's oral condition were the most common causes of anxiety.

Stabholz and Peretz measured anxiety in different treatments. The highest anxiety rate was related to tooth extracting followed by scaling.²⁷ In the study by Johansson and Berggren, the highest anxiety rate was related to turbine and tooth drilling.³⁰

In the study by Peretz and Mann, the highest prevalence of anxiety was related to seeing the needle.³⁴ Moreover, tooth drilling was also reported as an anxiety factor among Indian medicine and dentistry students.²⁸

The difference in factors which cause dental anxiety is due to the fact that in some

studies this question was an open-ended question while in some other studies only dental procedures were asked and socioeconomic factors were not considered.

This study showed a meaningful relationship between cancelled or missed appointments and depression, mood change, and avoiding the dentist. However, there was no significant relationship between missed or cancelled visits and anxiety, and nervousness. Furthermore, there was a significant association between depression, mood change, and avoiding the dentist, which was in line with the findings of Lin.¹⁴

Roy-Byrne et al.⁴² and Berggren et al.⁴³ showed that dental fear may be the result of a history of depression, drug abuse, and phobia and it seems that depression moods affect cognitive behaviors of timid patients. Researchers have reported that patients' delaying referral to the dentist could be because of depression. Therefore, behaviors like impatience, irritability, not paying attention, and disassociation are also related to dental anxiety development.⁴⁻⁷

Dental anxiety studies have shown that patients who have undergone psychiatric treatments and have succeeded to control their anxiety have less tendency to cancel dental appointments, have completed more dental treatments, and pursued dental cares more regularly and effectively.^{4-7,14}

Stewart et al. found no correlation between depression and high anxiety rate

and cancelling dental appointments.¹¹ With the comparison of the findings of Stewart et al. and the present study, it is evident that anxiety rates (high or low) may not represent patients' presence in dental appointments. This issue weakens the correlation between these 2 factors, which has been demonstrated in other studies. In the research by Sergl et al., anxiety was not.⁴⁴

Berggren et al. found that patients with high general fear that have undergone behavioral therapy are able to complete dental treatment without decrease in their anxiety.⁴³ Moreover, McCracken et al. found that decreasing anxiety leads to a decrease in chronic pain and increase in patients' satisfaction.⁴⁵

Conclusion

This study showed that gender, age, educational level, and number of annual referrals are effective factors on patient's anxiety rate. Furthermore, there was a meaningful association between cancelled or missed appointments and depression, mood change, and avoiding the dentist.

Conflict of Interests

Authors have no conflict of interest.

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