

Original Article

Dental Fear among Patients Referred to Dental Offices in Mashhad (Iran)

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Abstract

Introduction: Dental fear is a major factor in postponing and cancelling a dental appointment. The studies in this field are still limited. The current study was conducted to examine dental fear in patients referring to dentists of Mashhad, Iran.

Materials and Methods: In a descriptive study, 400 patients were selected randomly from 20 dental offices in Mashhad. The data were collected, using Dental Fear Scale. Reliability and validity of the questionnaire have been measured and confirmed in previous studies. The data were analyzed, using the SPSS software to perform t-test, ANOVA, Spearman's rank-order correlation coefficient, and Pearson's product-moment correlation coefficient.

Results: Nearly 20.8% of the participants had mild dental fear, 57.5% and 21.8% had moderate and severe dental fear. The mean score of fear was statistically higher in females (49.95 ± 13.3) compared to males (39.69 ± 14.7). In terms of marital status, the highest mean score of fear was observed among the divorced and widows (51.82 ± 14.2). In terms of occupation, the highest mean score of fear was observed among the housewives (52.63 ± 12.89). Correlational analysis showed an inverse relationship between dental fear score and age ($r = -0.18, p < 0.001$), education level ($\rho = -0.28, p < 0.001$) and income ($\rho = -0.39, p < 0.001$).

Conclusion: Females, particularly housewives, have a significantly higher level of dental fear, and it had an inverse correlation with age, education level and level of income. Therefore, decreasing dental fear level should be considered in interventional and educational programs.

KeyWords: Dental Fear, Patients, Iran, Descriptive

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Introduction

Dental fear is a response to a threat that has been known and is an avoidance response to being exposed to a fearful situation a situation, in which the patient knows what he or she is afraid of ^[1]. Almost 40% of people in western countries are afraid of it severely. ^[2]

Dental fear is a major factor in postponing and cancelling a dental appointment. ^[3] Dental fear is one of the multidimensional emotions related to situational, social, and psychological factors. ^[4-7] Schuurs et al.

found that fearful dental patients had low self-esteem and were sensitive to their dental appearance. ^[8] The cause of dental fear has been discussed in various aspects. Most of the patients tend to associate dental fears with painful experience in childhood and negative staff behavior. ^[9-12] Different levels of dental fear among various societies may be due to many factors; for example cultural and methodological variables in those societies. ^[13] One of the most important advantages of measuring fear in patients is that the dentist realizes the fearful situations for the patient prior to the treatments, removes them as much as possible, or prevents the patient from facing the same situation ^[14].

Facing the fear of patients during dental treatment is one of initial worries in dental fear, because sometimes it prevents the patients from visiting a dentist for having dental treatment. ^[15-16]

Dental fear has been considered seriously in recent years among researchers due to negative effects they have on the patient, the dentist, and the society. Several studies confirm that dental fear is very widespread among people. ^[17]

In a study by Alizadeh and Tabrizzadeh, which was conducted in Yazd Dental School in 2003 on 231 patients, it was shown that 58% of the participants had mild to moderate fear, 36.8% of participants had moderate to severe fear level, and 5.2% had a very severe dental fear level. The study showed that the relationship between prevalence of fear on the basis of sex and already unpleasant experiences was significant and the level of fear was higher among females compared to males. Average fear intensity in diverse age groups did not show any statistically significant difference.

A significant relationship was observed between the number of visits to a dentist and dental fear. ^[18] A study, which assessed average fear intensity among young females in Saudi Arabia, showed that 21.8% had mild fear, 53% had moderate fear, and 25% had severe fear. ^[19]

In a study, titled “The Dental Fear among the Visitors of Primary Health Care Centers in Saudi Arabia”, it was shown that 13% of males and 22% of females were fearful of dental procedures. The study showed that the dental

fear increased as the education level of participants increased so that the dental fear among illiterate people was 28% while it was 47% among individuals with university education. The dentist's appearance was found to be a factor. Nearly 35% of the study participants had a severe dental fear level. According to the study, age had an inverse significant correlation with dental fear.^[20] The studies in this field are still limited and most of them have been conducted in the western countries, in which cultural and methodological differences limit the generalizability of the results.^[21] The current study was conducted to examine dental fear among a sample of patients in Mashhad, Iran. The purpose of the study was to document information that could be used in planning educational programs designed at lowering the prevalence of dental fear.

Materials and Methods

This study was descriptive in nature and on the basis of the following parameters: confidence interval = 95%, the half width of the desired interval = 0.05, and the estimate of expected proportion with the variable of interest in the population = 0.473^[22] the sample size of 400 was deemed sufficient. The participants, who were at least seven years old, were recruited from the patients visiting private dental clinics in Mashhad. First, 20 dental offices were randomly selected from a list of 577 dental clinics. Secondly, 20 patients in each dental clinic were randomly selected.

With the dentists' permission, face-to-face interviews with the selected patients were conducted to collect the data. All interviews were done by the third author of this paper. The Persian version of Dental Fear Scale (DFS) was used for the purpose of data collection. The psychometric properties of the DFS have been documented.^[17,23]

The DFS includes 20 questions and a 5-point scaling, ranging from 1 to 5, is used to answer each question. The questions are divided in two parts. Part 1 included 7 questions regarding dental fear signs and part 2 included 19 questions about dental fearful situations and a single item for overall fear estimation of the subject. The total score may range from 20 to 100. The total score of lower than 34 is considered as mild fear, the score between 34 to 58 indicates moderate fear, and the score above 58 represents severe fear. The data were analyzed, using the SPSS software to perform t-test, ANOVA, Spearman's rank-order correlation coefficient, and Pearson's product-moment correlation coefficient.

Results

The mean age of the participants was 30.23 ± 10.12 and 38.3% were in age group of 20 to 29 years. With respect to gender, the majority of the participants (60%) were female. Most of participants were housewives (34%). The highest education level was high school diploma (33%). The number of dental visits during the previous year was as follows,

50.3% had visited the dentist once, 17% twice, and 32.8% three times or more. Nearly 20.8% had mild dental fear, 57.5% had moderate dental fear, and 21.8% had severe dental fear. The most frequent reported signs of fear were faster heart beat and increasing breath rate and

most important fearful situations were reported as hearing the drill and feeling the vibrations of the drill. Frequency distribution of participants' answers to dental fear scale questions are shown in Tables 1 and 2

Table 1: Frequency distribution of participants' responses to Dental Fear Scale questions– part I

| Questions | Never | | once or twice | | a few times | | Often | | nearly every time | | Item score mean |
|--|-------|------|---------------|------|-------------|------|-------|------|-------------------|-----|-----------------|
| | N | % | N | % | N | % | N | % | N | % | |
| Has fear of dental work ever caused you to put off making an appointment? | 264 | 66 | 73 | 18.3 | 40 | 10 | 15 | 3.8 | 8 | 2 | 1.58 |
| Has fear of dental work ever caused you to cancel or not appear for an appointment? | 299 | 74.8 | 62 | 15.5 | 26 | 6.5 | 11 | 2.8 | 2 | 0.5 | 1.39 |
| When having dental work done My muscles become tense | 145 | 36.3 | 123 | 30.8 | 78 | 19.5 | 38 | 9.5 | 16 | 4 | 2.14 |
| When having dental work done My breathing rate increases | 124 | 31 | 134 | 33.5 | 86 | 21.5 | 33 | 8.3 | 23 | 5.8 | 2.24 |
| When having dental work done I perspire | 161 | 40.3 | 107 | 26.8 | 64 | 16 | 42 | 10.5 | 26 | 6.5 | 2.16 |
| When having dental work done I feel nauseated and sick to my stomach | 273 | 68.3 | 74 | 18.5 | 31 | 7.8 | 13 | 3.3 | 9 | 2.3 | 1.53 |
| When having dental work done my heart beats faster | 121 | 30.3 | 128 | 32 | 71 | 17.7 | 62 | 15.5 | 18 | 4.5 | 2.32 |

Table 2: Frequency distribution of participants' responses to Dental Fear Scale questions–Part II

| How much do you fear feel in below situations? | none at all | | little | | some-what | | much | | very much | | Item score mean |
|--|-------------|------|--------|------|-----------|------|------|------|-----------|------|-----------------|
| | N | % | N | % | N | % | N | % | N | % | |
| Making an appointment for dentistry | 216 | 54 | 123 | 30.8 | 42 | 10.5 | 18 | 4.5 | 1 | 3 | 1.66 |
| Approaching the dentist's office | 180 | 45 | 149 | 37.3 | 54 | 13.5 | 17 | 4.3 | 0 | 0 | 1.77 |
| Sitting in the waiting room | 145 | 36.3 | 129 | 23.3 | 77 | 19.3 | 45 | 11.3 | 4 | 1 | 2.09 |
| Being seated in the dental chair | 124 | 31 | 126 | 31.5 | 78 | 19.5 | 59 | 14.8 | 13 | 3.3 | 2.28 |
| The smell of the dentist's office | 120 | 30 | 124 | 31 | 83 | 20.8 | 50 | 12.5 | 23 | 5.8 | 2.33 |
| Seeing the dentist walk in | 163 | 4.8 | 119 | 29.8 | 73 | 18.3 | 33 | 8.3 | 12 | 3 | 2.03 |
| Seeing the anesthetic needle | 74 | 18.5 | 104 | 26 | 97 | 24.3 | 74 | 18.5 | 51 | 12.8 | 2.81 |
| Feeling the needle injected | 62 | 15.5 | 106 | 26.5 | 99 | 24.8 | 86 | 21.5 | 47 | 11.8 | 2.88 |
| Seeing the drill | 45 | 11.3 | 95 | 23.8 | 96 | 24 | 111 | 27.8 | 53 | 13.3 | 3.08 |
| Hearing the drill | 46 | 11.5 | 95 | 23.8 | 89 | 22.3 | 105 | 26.3 | 65 | 16.3 | 3.12 |
| Feeling the vibrations of the drill | 49 | 12.3 | 93 | 23.3 | 91 | 22.8 | 100 | 25 | 67 | 16.8 | 3.11 |
| Having your teeth cleaned | 74 | 18.5 | 127 | 31.8 | 72 | 18 | 77 | 19.3 | 50 | 12.5 | 2.76 |
| All things considered, how fearful are you of having dental work done? | 78 | 19.5 | 140 | 35 | 88 | 22 | 58 | 14.5 | 36 | 9 | 2.59 |

There was a statistically significant higher level of dental fear among females compared to males. Differences on the basis of marital

status and job were also statistically significant. Results are summarized in Table 3.

Table 3: Distribution of Means and standard deviations of dental fear score by selected demographic characteristics

| variable | Mean | SD | Dental Fear | | |
|-----------------------|-------|-------|-------------|--|--|
| | | | p-value | Tukey post hoc test | |
| Sex | | | | | |
| Male | 39.69 | 14.7 | p < 0.001 | | |
| Female | 49.95 | 13.3 | | | |
| Marital status | | | | | |
| Single | 46.49 | 14.08 | | | |
| Married | 44.27 | 15.3 | p < 0.001 | Divorced and widow > single, married | |
| Divorced and widow | 51.82 | 14.2 | | | |
| Job | | | | | |
| Housewife | 52.63 | 12.89 | | | |
| Farmer and worker | 38.12 | 11.47 | p < 0.001 | Housewife > Retired, Student, Unemployed, Farmer, worker | |
| Retired | 43.47 | 14.94 | | | |
| Student | 38.89 | 13.54 | | | |
| Unemployed. | 43.4 | 12.56 | | | |

The Pearson's correlation showed a statistically significant inverse correlation between dental fear score and age ($r = -0.18$, $p < .001$).

The inverse correlation with the number of visiting a dentist was not statistically significant ($r = -0.08$, $p = .096$). Moreover, according to Spearman's correlation coefficient, dental fear score had a statistically significant inverse correlation with education level ($\rho = -0.28$, $p < .001$) and income level ($\rho = -0.39$, $p < .001$).

Discussion

In the present study, which is aimed to measure the amount of dental fear among patients visiting a dentist, 20.8% had a mild dental fear, 57.5% had a moderate dental fear, and 21.8% had a severe dental fear. The assessment of dental fear among young females in Saudi Arabia showed that 21.8% had a mild dental fear, 53% had a moderate dental fear, and 25% had a severe dental fear,^[19] which showed that the level of dental fear

was a bit higher among the current study's participants.

As far as we know, the most frequent signs and situations for dental fear was not reported in literature, but the present study revealed that drilling is the most important fearful situation and then needles comes at the second place. The results may be addressed in educational programs.

The results of this study also showed that the dental fear in females is more than males, which has also been reported in other studies. [24-27]

In this study, an statistically significant inverse correlation was observed between age and dental fear, which has been reported in other studies. For example, in a study by Kent^[28], it was reported that the elementary students have more dental fear than do the high school and college students. A study in Turkey also showed that the dental fear score decreased with the increase of age.^[29] Thus, it is important to realize that as the age naturally increases, due to various life experiences and dealing with difficult life events, the tolerance rate increases and probably the pains and discomforts become more tolerable. [18, 30] According to the results of this study, the highest score of dental fear observed in divorced and widows, which is consistent with a study in Canada.^[27]

In this study, as the number of visiting a dentist increased, the level of dental fear decreased but it was not statistically significant. A study in Australia showed a

linear relationship between visiting a dentist and the prevalence of dental fear. It has been reported that dental fear prevalence among people who have not visited a dentist over 10 years was 31%, while it was 14.2% among those people who have visited a dentist during the previous 12 months^[31]. More researches in this area is recommended.

Based on the results of this study, there was an inverse significant correlation between income level and fear score, which is consistent with a study in Australia.^[31] A study in Malaysia also showed as income increased, the prevalence of dental fear decreased.^[32]

The results of the present study showed a statistically significant inverse correlation between education level and dental fear. In a study in Australia, the prevalence of dental fear among illiterate people was 15.2%, while in people with doctoral education it was 9%, and it was concluded that an inverse relationship existed between prevalence of dental fear and education level.^[31] A study in Babol also reported statistically significant differences among university students in different semesters on the basis of dental fear.^[33]

Conclusion

The level of dental fear in Iran is not much more than the level of dental fear in other countries. Since dental fear level was higher among females, particularly housewives, and there was an inverse correlation with income level, education level, and age, these people must be specifically considered in designing educational programs.

The external validity of the study is delimited to patients visiting private clinics in Mashhad. Thus, it is recommended to replicate the study in other parts of the country as well as including patients from the public sector in an attempt to increase the generalizability of the results.

Clinical Significance: Younger females and those with lower education and income level should be considered in interventional and educational programs aimed at decreasing

dental fear level. Dentists also should be aware that mentioned people have a higher level of dental fear and do their best efforts in order to lower their dental fear in treatment visits considering the situations of drilling and using needle as the most fearful situations.

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References

1. Bracha HS, Vega EM, Vega CB. Posttraumatic dental-care anxiety (PTDA): Is dental phobia a misnomer?. *Hawaii dental journal*. 2006; 37(5): 9-17.
2. Doebling S, Rowe MM. Negative perceptions of dental stimuli and their effects on dental fear. *JDH / American Dental Hygienists' A*. 2000; 74(2): 110-6.
3. Gürsoy M, Pajukanta R, Sorsa T, et al. Clinical changes in periodontium during pregnancy and postpartum. *J Clin Periodontol*. 2008; 35(7):576-83.
4. Javadinejad S, Tahmourespour S, Ghasemi D, et al. The Relationship Between 6 to 8 year Oldchildren's dental fear and their parents' fear. *Knowledge & Research in Applied Psychology*. 2013;14(4):85-91
5. Saag M, Olak J. Impact of mothers' health attitudes on dental health of their children. *EPMA Journal*. 2014; 5(1): 111.
6. Maslak EE, Vlasova DS, Yanovskaya ML, et al. Factors Associated with Dental Fear in 12-35 Months Children Living in Krasnooktyabrski District of Volgograd—a pilot study. Revised Submission for Dental Biostat Special Issue of JDOCE. *Journal of Dental, Oral and Craniofacial Epidemiology*. 2013; 1(3):11-18.
7. Shim YS, Kim AH, An SY. Dental Fear and the associated Factors of some Middle School Students in Cheongju-City. *The Journal of the Korea Contents Association*. 2013; 13(9): 295-304.
8. Schuurs AH, Duivenvoorden HJ, Makkes PC, et al. Personality traits of patients suffering extreme dental anxiety. *Community Dent Oral Epidemiol*. 1998; 16(1):38-41.
9. Torriani DD, Ferro RL, Bonow MLM, et al. Dental Caries Is Associated with Dental Fear in Childhood: Findings from a Birth Cohort Study. *Caries research*. 2014; 48(4): 263-70.
10. Klinberg G, Sillén R, Noren JG. Machine learning methods applied on dental fear and behavior management problems in children. *Acta Odontologica Scandinavica*. 1999; 57(4):207-15.

11. Milgrom P, Vignehsa H, Weinstein P. Adolescent dental fear and control: prevalence and theoretical implications. *Behav Res Ther.* 1992; 30(4): 367-73.
12. Eli I, Uziel N, Bath R, et al. Antecedents of dental anxiety: learned responses versus personality traits. *Community Dent Oral Epidemiol.* 1997; 25(3): 233-7.
13. Ten Berge M, Veerkamp JS, Hoogstraten J, et al. Childhood dental fear in the Netherlands: prevalence and normative data. *Community Dent Oral Epidemiol.* 2002; 30(2): 101-7.
14. Schuller AA, Willumsen T, Holst D. Are there differences in oral health and oral health behavior between individuals with high and low dental fear? *Community Dent Oral Epidemiol.* 2003; 31(2):116-21.
15. Dionne RA, Yagiela JA, Moore PA, et al. Comparing efficacy and safety of four intravenous sedation regimens in dental outpatients. *J Am Dent Assoc.* 2001; 132(6):740-51.
16. Frere CL, Crout R, Yorty J, et al. Effects of audiovisual distraction during dental prophylaxis. *J Am Dent Assoc.* 2001; 132(7):1031-8.
17. Ollendick TH, Yang B, King NJ, et al. Fears in American, Australian, Chinese, and Nigerian children and adolescents: a cross-cultural study. *J Child Psychol Psychiatry.* 1996; 37(2):213-20.
18. Tabrizzadeh M, Agham Alizadeh F. Assessment of the rate of fear in different dental situations in Yazd Dental School. *Beheshti Univ Dent J.* 2003; 21(4):464-73.
19. Akeel RF, Abduljabbar A. Dental anxiety among patients attending King Saud University, College of Dentistry. *Saudi Dental Journal.* 2000; 12(3): 124-8.
20. Al dosari AM. Dental Fear among Visitors of Primary Health Care Centers in Saudi Arabia. *Tropical Dental Journal.* 1996; 76:4-7.
21. Bedi R, Sutcliffe P, Donnan P, et al. Dental caries experience and prevalence of children afraid of dental treatment. *Community Dent Oral Epidemiol.* 1992; 20(6): 368-71.
22. Ofori MA, Adu-Ababio F, Nyako EA, et al. Prevalence of dental fear and anxiety amongst patients in selected dental clinics in Ghana. *Health Education Journal.* 2009; 68(2):130-9.
23. Kirkpatrick DR. Age, gender and patterns of common intense fears among adults. *Behav Res Ther.* 1984;22(2):141-50.
24. Peretz B, Efrat J. Dental anxiety among young adolescent patients in Israel. *Inter J Paediat Dent.* 2000;10(2):126-32.
25. Raciene R. Prevalence of Dental Fear Among Vilnius Pupils Aged 12 to 15 Years. Determining Factors. *Baltic Dent Maxillofac J* 2003; 5(2):52-6.
26. Răducanu AM, Feraru V, Herteliu C, et al. Assessment of The Prevalence of Dental Fear and its Causes Among Children and Adolescents Attending a Department of Paediatric Dentistry in Bucharest. *OHDMBSC.* 2009; 8(1):45-8.
27. Locker D, Liddell A, Burman D. Dental fear and anxiety in an older adult population. *Community Dent Oral Epidemiol.* 2006; 19(2):120-4.
28. Kent G, Croucherd R. *Achieving oral health: The social content of dental care.* 3rd Ed. Oxford: Wright Co. 2001; 83-106.

29. Oba AA, Dülgergil CT, Sönmez IS. Prevalence of Dental Anxiety in 7- to 11-Year-Old Children and Its Relationship to Dental Caries. *Med Princ Pract.* 2009;18(6): 453–7.
30. Goettems ML, Schuch HS, Demarco FF, et al. Impact of dental anxiety and fear on dental care use in Brazilian women. *Journal of Public Health Dentistry.* . 2014;20(1):45-51.
31. Armfield JM, Spencer AJ, Stewart JF. Dental fear in Australia: who's afraid of the dentist? *Australian Dental Journal.* 2006;51(1):78-85.
32. Norkhafizah S, Azizah Y, Yew LH. Factors associated with dental visit and barriers to utilisation of oral health care services in a sample of antenatal mothers in Hospital Universiti Sains Malaysia. *BMC public health.* 2010;10(1): 75
33. Ghasempour M, Hadadi A. Dental fear and anxiety among dental and medical students of Babol University of Medical Sciences. *Journal of Islamic Dental Association of Iran.* 2005; 17(3):9-14