

# Dental anxiety in patients referring to dental clinics differs between women and men in Ahvaz city, Iran

Elaheh Mali<sup>1</sup>, Fatemeh Babadi<sup>2</sup>, Maria Cheraghi<sup>3</sup>

<sup>1</sup>Department of Community Oral Health, School of Dentistry, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

<sup>2</sup>Department of Oral and Maxillofacial Medicine, School of Dentistry, Ahvaz Jundishapur University of Medical Sciences, Iran

<sup>3</sup>Social Determinants of Health Research Center, Department of Community Oral Health, School of Dentistry, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

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## Address for correspondence:

Maria Cheraghi, PhD  
Social Determinants of Health Research Center  
Department of Community Oral Health  
School of Dentistry  
Ahvaz Jundishapur University of Medical Sciences  
Ahvaz, Iran  
e-mail: mariacheraghi@gmail.com

## Abstract

**Introduction:** Dental anxiety reduces the level of oral health and quality of life. We aimed to assess anxiety in patients referring to dental clinics differs among women and men in Ahvaz city, Iran.

**Material and methods:** It was a descriptive-analytical study conducted on 397 patients who had referred to dental clinics in Ahvaz city, 2020. The patients were selected using a non-random sampling method. The administered instruments included the Demographic Variables Questionnaire and the Dental Anxiety Inventory. Descriptive statistics were applied to describe the participants' characteristics using, mean, and standard deviation. Kolmogorov-Smirnov tests was run to assess data distribution. Furthermore, to determine the relationship between variables, independent *t*-test and one-way analysis of variance were used. Data has entered and analyzed by using SPSS software version. Lever of significant was considered less than 0.05.

**Results:** Findings of the study showed that the mean and standard deviation of the dental anxiety scores was  $87.51 \pm 30.64$  (scores ranged from 36 to 180). Based on the results, 38% of the participants were men ( $n = 151$ ) and 62% were women ( $n = 246$ ). The mean age of participants was 41.7 years with a minimum of 18 years. The relationship between anxiety and gender was statistically significant ( $p < 0.01$ ). The mean scores of anxiety had no significant difference with regard to the variables of age, education, type of employment, ethnicity, or number of referrals ( $p < 0.05$ ).

**Conclusions:** The level of dental anxiety was significantly different among the patients considering their gender, so that women tolerated higher levels of anxiety. Authorities are suggested to prioritize their interventions to manage dental anxiety with the priority of women.

**Key words:** dental, anxiety, patients, Ahvaz.

## Introduction

Dental anxiety is one of the important reasons for patients to refrain from referring to dental service centers, which leads to deterioration of oral health and quality of life and depression among people (Saber and Nahash 2018). This anxiety is sometimes accompanied by much fear and panic in patients that deprives dentists of the opportunity to provide any kind of services (Gelder *et al.* 2009). In general definitions, anxiety is an imaginary threat from an unknown and unfamiliar phenomenon that arises from expectation of an undesirable event by individuals (Mohammed *et al.* 2014). In fact, many

people experience dental anxiety as a reaction to an unknown danger, especially when they have not experienced it before (Bracha *et al.* 2006). Most anxious people associate dentistry with pain, which is one of the factors affecting the increase of psychological reactions to pain and its transmission (Cheraghi *et al.* 2015; Gelder *et al.* 2009). Moreover, recurrence of these anxious reactions during the examination or treatment process affects dentists and reduces their efficiency (Saber and Nahash 2018).

According to worldwide research, dental anxiety is a common phenomenon. For example, the prevalence of dental anxiety was 14.9% in

the young adult population in Australia, while it was 12.5% in Canada, and 12.6% in Russia (Udoye *et al.* 2005; Saatchi *et al.* 2015). In other words, most studies estimated the prevalence of dental anxiety within the range of 2.5% to 19% (Sabeti and Nahash 2018). Feelings of anxiety, fear, and pain caused by dental treatments play an important role in the dentist-patient relationship, which in turn influences the choice and design of treatments (Fayad *et al.* 2017). Dental anxiety gradually weakens the oral health and has negative effects on patients' quality of social life. It also leads to dissatisfaction of patients during the treatment (Saatchi *et al.* 2015). Investigation of dental anxiety and its related factors is one of the ways to improve the quality of patients' treatment (Muhannad *et al.* 2020); however, routinizing such assessments has its own challenges and limitations (Tellez *et al.* 2015).

Based on the available evidence, a statistically significant relationship exists between dental anxiety and low levels of life satisfaction (Tellez *et al.* 2015). Some studies indicated that this type of anxiety is directly related to all social relationships and their mental states (Sabeti and Nahash 2018). According to the DSM-IV index, this type of anxiety is a type of phobia in patients that can lead to panic attacks in people prone to social phobia and other phobias (Halonen *et al.* 2018; Tellez *et al.* 2015). Even in some studies, the cause of anxiety was associated with bad memories of the past treatments (Halonen *et al.* 2018). According to some reports, dental anxiety is associated with factors such as age, education, gender, and socio-economic status (Fayad *et al.* 2017).

To observe oral health as a factor having a strong influence on the population's general health, people are required to refer to dentists in dental clinics for periodic examinations and treatments (Sabeti and Nahash 2018). So, dentists should be able to diagnose the level of anxiety in individuals before treatment and plan an appropriate treatment program according to their level of anxiety (Saatchi *et al.* 2015). However, it is not clear how dentists should manage this challenge since no specific solutions are available from the scope of psychology or psychiatry for potential interventions in this regard (Halonen *et al.* 2018). Various studies have placed special emphasis on the study of dental anxiety and its related factors as the first step in planning interventions (Mehrstedt *et al.* 2004; Addicks *et al.* 2017; Muhannad *et al.* 2020). Given that the level of anxiety and its causes are different in

various societies and ethnicities and no research has ever investigated the status of dental anxiety in Ahvaz, this study was conducted. The aim was to assess anxiety and its related factors in patients who referred to clinics in Ahvaz city during 2020.

## Material and methods

### Study area

The study was carried out in Ahvaz city in Khuzestan metropolis in southwestern of Iran, with a citizen count of ~1.3 million and situated at 31°19'13"N and 48°40'09"E (Fig. 1) (Goudarzi *et al.* 2019; Jamshidi *et al.* 2016). The temperature sometimes exceeds 50°C during summers and the humidity on some days reaches more than 90%.

### Participants and implementation method

This descriptive-analytical research was conducted to determine the level of anxiety in patients who referred to dental clinics in Ahvaz city, Iran, 2020. The studied clinics, located in Khuzestan province, Ahvaz city in the southwest of Iran, are affiliated to Jundishapur University of Medical Sciences. Yaghooti Khorasani *et al.* (2014) estimated the sample size as 368 people considering the probability of dental anxiety prevalence as 40% (P), study accuracy of 0.05 (d), and confidence coefficient of 2% ( $Z_{1-\alpha} 2.1 = 96.1$ ):

$$n = \frac{z^2 \cdot P(1-P)}{d^2 \cdot (1-\frac{\alpha}{2})}$$

Finally, due to the possible loss of samples and increase of accuracy in the study, 397 people entered the study.

By attending dental clinics and ensuring observance of the inclusion criteria in Table 1, eligible individuals were selected to enter the study. The research questionnaires were completed by the patients, their companions, or the researcher.

### Research tools

The study instruments included the Demographic Variables Questionnaire (age, gender, education, marital status, and employment) and Dental Anxiety Inventory (DAI). This questionnaire consists of 36 questions related to the causes of dental anxiety in individuals. Stouthard *et al.* (1990) calculated internal consistency of this scale as 0.96-0.98 using Cronbach's  $\alpha$ . They also reported that its reliability

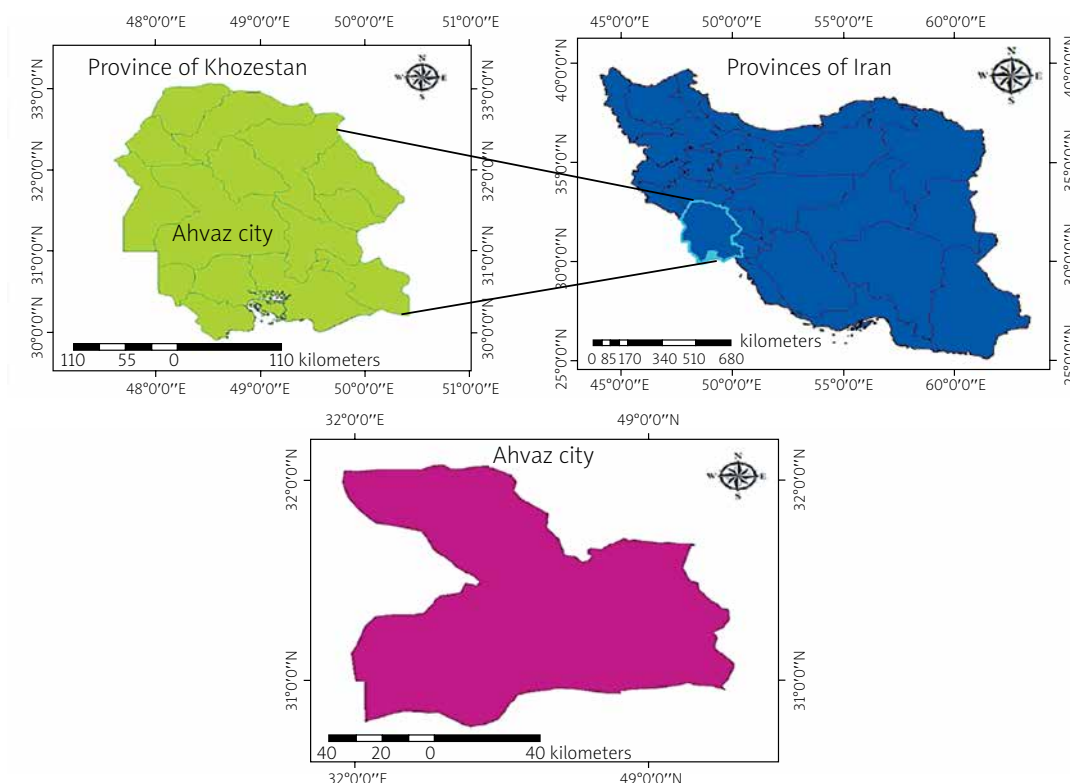


Fig. 1. Location of Ahvaz city (Goudarzi et al. 2019)

was within the range of 0.84-0.88 in different groups using the test-retest method. In Iran, Yousefi and Piri investigated the reliability of DAI via internal consistency and test-retest methods. As they reported, both methods resulted in similar findings confirming optimal reliability of this questionnaire. Items of this questionnaire should be scored on a five-point Likert scale, ranging from 1 (*completely disagree*) to 5 (*completely agree*). The attainable scores from this questionnaire are within the range of 36 to 180, where higher scores represent higher levels of dental anxiety.

### Data analysis

Descriptive statistics were applied to describe the participants' characteristics using mean, and standard deviation. Kolmogorov-Smirnov tests was run to assess data distribution. Furthermore, to determine the relationship between variables, independent *t*-test and one-way analysis of variance were used. Data has entered and analyzed by using SPSS software version. Lever of significant was considered less than 0.05.

### Results

In the present study, the participants included 38% men ( $n = 151$ ) and 62% women ( $n = 246$ ). The mean age of participants was 41.7 years with

Table 1. Inclusion and exclusion criteria

<b>Inclusion criteria</b>	1. Patients referred to the dental department
	2. Those who had informed consent to participate in the study
	3. No mental health problems
	4. Do not take psychiatric drugs
<b>Exclusion criteria</b>	Patients who did not cooperate and incomplete information

a minimum of 18 years. Based on the findings, the mean score of dental anxiety was  $87.51 \pm 30.64$  in the patients. Other characteristics of the studied participants and their average anxiety scores are shown in Table 2.

According to Table 1, dental anxiety had a significant relationship with gender ( $p < 0.01$ ), so that women perceived anxiety more than men. The mean scores of anxieties were not significantly different with regard to different factors such as the patients' education, type of employment, frequency of dental visits, ethnicity, and age ( $p < 0.001$ ).

### Discussion

The aim of this study was to evaluate the level of dental anxiety in patients. Based on the findings, the patients' dental anxiety mean

**Table 2.** Frequency distribution of dental anxiety mean scores according to the participants' demographic characteristics who referred to dental clinics in Ahvaz in 2020

Demographic variables		Frequency (%)	Dental anxiety means scores	P-value (statistical test)
Age	18-30 years	74 (18.6)	87.77	$p = 0.589$ One-way ANOVA
	31-40 years	104 (26.2)	89.92	
	41-50 years	125 (31.5)	85.77	
	51-60 years	82 (20.7)	85.34	
	60 years and over	12 (3)	97.83	
Gender	Male	151 (38)	82.15	$p < 0.006^*$ Independent – T
	Female	246 (62)	90.80	
Education	Illiterate	3 (0.8)	107.67	$p = 0.348$ One-way ANOVA
	Primary school-Diploma	54 (13.6)	90.83	
	Academic	340 (85.6)	89.80	
Occupation	Self-employed	49 (12.3)	85.78	$p < 0.215$ One-way ANOVA
	House-keeper	81 (20.4)	91.63	
	Worker	9 (2.3)	80.56	
	Employee	173 (43.6)	89.35	
	Others	85 (21.4)	81.55	
Ethnicity	Bakhtiyari	97 (24.4)	86.77	$p = 0.665$ One-way ANOVA
	Turkish	17 (4.3)	75.82	
	Arab	49 (12.3)	88.51	
	Fars	187 (47.1)	88.88	
	Lori	27 (6.8)	74.78	
	Others	20 (5)	89.40	
History of referrals	Once at most	315 (79.3)	87.50	$p = 0.516$ One-way ANOVA
	2-6 times	66 (16.6)	89.47	
	More than 6 times	16 (4)	79.63	

\* $p < 0.05$ 

scores were lower than the DAI mean scores, which is similar to the results of other studies (Fayad *et al.* 2017; Muhannad *et al.* 2020; Yaghooti Khorasani 2014; Morovati Sharif *et al.* 2012; Sharifi 2011). We also found that more than 20% of the patients had two to six dentistry referrals. Although dental anxiety of our patients was not at a significant level, the measured level of anxiety can be of great importance since the patients' anxiety level did not change significantly with a higher number of visits to the dentist ( $p = 0.516$ ). Although the highest mean anxiety scores were among the illiterate and the elderly, this difference was not statistically significant among different age groups ( $p = 0.589$ ). Therefore, these findings should be considered further in future studies. In other words, these insignificant results can be explained by the small number of illiterate participants and those over 60 years of age in this study. Consequently, future studies using appropriate sample size and among different age groups may result in more accurate findings (Javadinejad *et al.* 2013)

with regard to different anxiety levels among the elderly or the illiterate individuals (because no significant difference was observed in anxiety scores of participants from different educational groups;  $p = 0.348$ ). This finding can also be explained by noting that the variables related to illiteracy were only related to the elderly participants in this research. This indicates a limitation of our study with regard to the sampling method in terms of the research objectives. So, future researchers are suggested to study the existence or severity of the relationship of anxiety with education and age variables.

Based on the findings, the dental anxiety scores were significantly different between men and women ( $p < 0.01$ ), indicating that women suffer from higher levels of anxiety in visiting the dentist. This finding is supported by most similar studies conducted in different countries (Fayad *et al.* 2017; Javadinejad *et al.* 2013; Eroglu *et al.* 2013; Freeman 1985), which shows the importance of gender and its effect on the level of dental anxiety. Consequently, women should

receive priority in educational and interventional programs in this field.

Based on the findings, no significant relationship was found between the patients' dental anxiety and variables such as education, ethnicity, age, referral history, and employment ( $p < 0.05$ ). However, these results are not completely consistent with other studies (Saber and Nahash 2018; Muhannad *et al.* 2020; Sharifi 2011; Santos 2020), which means that demographic factors have no significant relationship and do not play an effective role in dental anxiety. Therefore, it is better to investigate stronger and more predictive environmental-social variables related to the dentistry or service providers, such as dentists. In line with other similar studies, we found that factors resulting from managing the clinics and therapeutic factors related to the dentists and environment are of great importance (Farhadi Nasab 2009; Grath and Bedi 2004).

Finally, despite the small effect of demographic variables, it can be argued that female gender and other environmental factors are probably more decisive, compared with other demographic factors, for dental anxiety. Some experts, including Eroglu, believe that the two variables of female gender and sociocultural factors play the most important role in dental anxiety, which is in line with our findings (Eroglu *et al.* 2017).

### Study limitations

Since the questionnaires were completed based on information provided by the individuals themselves and the number of questions was high, the results may have been influenced by the individuals' situation and their psychological issues in answering the questionnaires. Furthermore, the study sample size, location, and specific dentistry facilities may limit the generalizability of the study results.

### Conclusions

Findings of the study showed that the level of dental anxiety was significantly different among the participants based on their gender, so that women tolerate higher levels of anxiety. So, authorities are suggested to prioritize their interventions to manage dental anxiety, especially among women.

### Ethics approval and consent to participate

In order to observe ethical considerations, all participants were assured that their information

would remain confidential and all questionnaires were coded to this end. Moreover, the participants were clearly explained about the study objectives and finally those who were willing to participate were enrolled. This study was also approved in the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences with the Ethics Code of IR.AJUMS.REC.1399.113.

### Availability of data and materials

Upon request, we can offer onsite access to external researchers to the data analyzed at Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran. To do so, Dr. Maria Cheraghi should be contacted.

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### Disclosure

The authors declare no conflict of interest.

### References

1. Addicks SH, McNeil DW, Randall CL, et al. Dental care-related fear and anxiety: distress tolerance as a possible mechanism. *JDR Clin Trans Res* 2017; 2: 304-311.
2. Bracha S, Vega E, Vega C. Posttraumatic dental-care anxiety: is "dental phobia" a misnomer? *Hawaii Dental J* 2006; 37: 17-19.
3. Cheraghi M, Najafian M, Amoori N, et al. Risk factors of postpartum depression in Ramhormoz city, Iran. *Neuropsychiatry i Neuropsychologia* 2015; 10: 1-4.
4. Eroglu CN, Ataoglu H, Kucuk K. Factors affecting anxiety-fear of surgical procedures in dentistry. *Niger J Clin Pract* 2017; 20: 409-414.
5. Farhadi Nasab A. Anxiety and its causes in patients referring to Hamedan Public Dental Office in 2005. *Journal of Dentistry, Tehran University of Medical Sciences and Health Services* 2009; 21: 25-31.
6. Fayad M, Elbieh A, Baig M, Alruwaili SA. Prevalence of dental anxiety among dental patients in Saudi Arabia. *J Int Soc Prev Community Dent* 2017; 7: 100-104.
7. Freeman R. Dental anxiety: a multifactorial aetiology. *Br Dent J* 1985; 159: 406-408.
8. Gelder MJ, Andreasen NC, Lopez-ibor JJ. *New Oxford textbook of psychiatry*. Oxford University Press 2009.
9. Grath C, Bedi R. The association between dental anxiety and oral health-related quality of life in Britain. *Community Dent Oral Epidemiol* 2004; 32: 67-72.

10. Goudarzi G, Alavi N, Geravandi S, et al. Ambient particulate matter concentration levels of Ahvaz, Iran, in 2017. *Environ Geochem Health* 2019; 41: 841-849.
11. Halonen H, Nissinen J, Lehtiniemi H, et al. The association between dental anxiety and psychiatric disorders and symptoms: a systematic review. *Clin Pract Epidemiol Ment Health* 2018; 14: 207-222.
12. Jamshidi M, Nazari I, Malayeri HT, et al. Pattern of drug abuse in addicts self-referred drug rehabilitation centers in Khuzestan province – Iran, 2014-2015. *Arch Med Sado-wej Kryminol* 2016; 66: 1-12.
13. Javadinejad SH, Ghasemi D, Yazdi F. The relationship between dental fear in children ages 6 to 8 with fear of their parents. The relationship between dental fear in children ages 6 to 8 with fear of their parents. *Knowl Res Appl Psychol* 2013; 14: 54-58, 91.
14. Mehrstedt M, Tonnies S, Eisentraut I. Dental fear, health status, and quality of life. *Anesth Prog* 2004; 51: 90-94.
15. Mohammed RB, Lalithamma T, Varma DM, et al. Prevalence of dental anxiety and its relation to age and gender in coastal Andhra (Visakhapatnam) population, India. *J Nat Sci Biol Med* 2014; 5: 409-414.
16. Morovati Sharif A, Bad MA, Haerian Ardakani A, Falahzade H. Evaluation of dental anxiety in patients referred to private dental offices in Mashhad. *Journal of Yazd School of Public Health* 2012; 35: 42-49.
17. Muhannad H, Navin A, Mansour K. Evaluating factors associated with fear and anxiety to dental treatment – a systematic review. *J Family Med Prim Care* 2020; 9: 4530-4535.
18. Saatchi M, Abtahi M, Mohammadi G, et al. The prevalence of dental anxiety and fear in patients referred to Isfahan Dental School, Iran. *Dent Res J (Isfahan)* 2015; 12: 248-253.
19. Saberi V, Nahash B. Dental anxiety and its related factors in patients referred to the Faculty of Science and Services. *Dentistry Journal of Guilan University of Medical Sciences* 2018; 27: 9-16.
20. Santos HLF, Barreto JO, Brito Bastos CF, et al. Factors influencing fear and anxiety in patients undergoing minor oral surgery and dental implants: a literature review. *Res Soc Develop* 2020; 9: e544996657.
21. Sharifi HP. Principles of psychometric and psychological testing Tehran. Roshd publisher 2011. 14th ed.
22. Stouthard ME, Hoogstraten J. Prevalence of dental anxiety in the Netherlands. *Community Dent Oral Epidemiol* 1990; 18: 139-142.
23. Tellez M, Kinner DG, Heimberg RG, et al. Prevalence and correlates of dental anxiety in patients seeking dental care. *Community Dent Oral Epidemiol* 2015; 43: 135-142.
24. Udoye CI, Oginni AO, Oginni FO. Dental anxiety among patients undergoing various dental treatments in a Nigerian teaching hospital. *J Contemp Dent Pract* 2005; 6: 91-98.
25. Yaghooti Khorasani MM, Sistani F. Dental fear and anxiety among students of Rafsanjan University of Medical Sciences. *Quarterly Journal of Sabzevar University of Medical Sciences* 2014; 21: 1.
26. Yousefi R, Piri F. Psychometric properties of Dental Anxiety Inventory. *J Mashhad Dental School* 2017; 41: 69-78.