

The Relationship Between Dental Fear and Sociodemographic Variables

Sosyodemografik Değişkenlerle Dental Anksiyete Arasındaki İlişki

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Abstract

Purpose: The aim of the study was to investigate the effects of age, gender and educational level on the dental anxiety of patients admitted to the Department of Restorative Dentistry and Endodontics at Erciyes University Faculty of Dentistry.

Patients and Methods: In the study, 324 patients were asked to complete a questionnaire. The survey consisted of two sections. The first section requested participants sociodemographic information such as including age, gender and educational level. The second section consisted of the Modified Dental Anxiety Scale (MDAS).

Results: No correlation was found between age and MDAS ($r = -0.011$, $p = 0.844$). Females tend to be more anxious than males ($p < 0.001$). The results showed that educational level had no significant effect on dental anxiety ($p = 0.837$).

Conclusions: In this study, it was observed that dental anxiety was not affected by age or education level, and that the dental anxiety levels of females were higher than males.

Key words: **Demography; Dental Anxiety; Test Anxiety Scale.**

Özet

Amaç: Bu çalışmanın amacı Erciyes üniversitesi Diş Hekimliği Fakültesi Diş Hastalıkları ve Tedavisi Anabilim dalına başvuran hastaların dental anksiyeteleri üzerine eğitim düzeyi, yaş ve cinsiyetin etkisini değerlendirmektir.

Hastalar ve Yöntemler: Bu çalışmada 324 hastaya anket uygulandı. Anket iki bölüme ayrılmıştır. İlk bölüm katılımcıların yaş, cinsiyet ve eğitim düzeyi gibi sosyodemografik özelliklerini sorgulamaktadır. İkinci bölüm ise Modifiye Dental Anksiyete Skalası'ndan oluşuyordu.

Bulgular: Yaş ve MDAS arasında bir ilişki bulunmadı ($r = -0,011$; $p = 0,844$). Kadınların erkeklerden daha fazla anksiyeteye eğilimli oldukları görüldü ($p < 0,001$). Sonuçlar eğitim düzeyinin dental anksiyete üzerine önemli bir etki oluşturmadığını gösterdi ($p = 0,837$).

Sonuçlar: Bu çalışmada, dental anksiyetenin yaş ve eğitim düzeyinden etkilenmediği ve kadınların dental anksiyete düzeyinin erkeklerden daha yüksek olduğu görüldü.

Anahtar kelimeler: **Demografi; Diş hekimliği anksiyetesi; Anksiyete değerlendirme ölçeği.**

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Introduction

Fear is usually defined as an individual's response to a real threatening event or dangerous situation to protect one's life (1). Different terms have been used in the literature to describe: consternation in dentistry such as dental anxiety, dental fear, and dental phobia. While a real, immediately present and specific stimulus, such as needles or drilling, is thought to cause dental fear, in the case of dental anxiety, the source of the threat is ambiguous, unclear, or not immediately present (2, 3). However in for both situations the patients emotional responses are almost the same (3).

Dental treatment may cause pain and discomfort. Even the expectation of pain increases dental anxiety; it is a recognized problem for both patients and dental health providers. Dental anxiety refers to patients specific response towards dental situation-associated stress (4). Dental anxiety is a very common dental health problem in the populations of many countries and the prevalence of dental anxiety has been the subject of many studies (5-7). Proposed factors in dental anxiety are previous traumatic experiences, environmental factors, low pain threshold, communicational issues and social interactions (8). Dental anxiety is also strongly associated with oral hygiene (9). In comparisons of dentally anxious and non-anxious patients, more decayed, fewer filled and significantly more missing teeth were found in cases of anxious patients (10). Therefore dental anxiety is a psychological disorder impairing both oral health and health quality.

The effects of anxiety on pain perception were investigated and it was reported that in clinical situations of acute pain, anxiety and pain may be indistinguishable (11). Anxiety not only lowers the pain threshold but also leads to the perception of painless stimuli as painful which results in a long-term avoidance of dental treatment resulting in deterioration in oral health, ultimately leading to pain and distress, and a negative effect on social life (12-14). Some researchers reported that the prevalence of dental anxiety is 5-20 % in populations, and that females are more anxious than males (15, 16).

The dentist needs to know about the patients possible emotional feelings before the beginning of treatment so as be able to choose the best way to treat the patient. Dentists identify treating anxious patients as a major source of stress which may compromise their performance (17, 18). Managing dental anxiety is therefore recognized

as an important issue in dental practice and for this reason different scales have been developed in order to assess dental anxiety. However, for clinical practical purposes, the questionnaires and their interpretation should not take too much of the dentists time there is a need for a short clinical dental anxiety scale. The Corah Dental Anxiety Scale has proven to be a favorite in dental (19). It is a simple, easy to score, short, valid and reliable test for dental visit-associated anxiety (4, 19-21). Humphris and co-workers (22) developed a modified scale from the original Corah Dental Anxiety Scale. The Modified Dental Anxiety Scale (MDAS) is a brief, 5 item questionnaire with a constant answering scheme for each item ranging from not anxious to extremely anxious. It is summed together to construct a Likert scale with a minimum score of 5 and a maximum of 25 and a cut-off value of 19 and above has been determined empirically to indicate high dental anxiety that may require special attention by dental personnel (23). The MDAS was shown to be more extensive, highly valid and reliable, with a simpler and more suitable answering system. It does not increase patient fears when completed and is relatively quick to complete and scoring is easy (23) The MDAS will, therefore, be used to measure dental anxiety in the current study. The aim of this study was to determine the relationship between dental fear and sociodemographic variables.

Patients and Methods

The study was conducted at Erciyes Universitys Faculty of Dentistry in the Department of Restorative Dentistry and Endodontics. This study was carried out in accordance with the Declaration of Helsinki. Furthermore Local Ethics Committee approval and participants written informed consents were obtained. Patients about to undergo restorative and endodontic treatment were approached by one clinician and asked to complete the questionnaire. The study samples included 324 patients (166 males, 158 females). The average age of the patients was 37.73 ± 12.27 (S.D.) years. After being informed about the study, all the points in the questionnaire were explained and clarified and then the patients filled in the questionnaires.

The survey consisted of two sections. The first section requested the patient's sociodemographic information such as including age, gender and education (primary school, high school, university). The second section consisted of the MDAS. The following 5 questions, with multiple choice answers, were asked:

If you went to your dentist for treatment tomorrow, how would you feel?

If you were sitting in the waiting room, how would you feel?

If you were about to have a tooth drilled, how would you feel?

If you were about to have your teeth scaled and polished, how would you feel?

If you were about to have a local anesthetic injection in your gum, how would you feel?

Moreover, a simplified 5-point scale-answering scheme was devised ranging from not anxious (5 points) to extremely anxious (25 points). The scores for each of the 5 item responses were summed up to give an estimated value of dental anxiety.

Statistical Analysis. A Shapiro-Wilk W-test was used to evaluate the normality. The correlation between age and MDAS scores was analyzed by means of the Spearman correlation coefficient. A Mann-Whitney U test was used to assess the differences between the male and female MDAS scores. A Kruskal-Wallis test was used to determine the differences between educational levels and MDAS scores. For all analyses, a probability level of $p < 0.05$ was considered to be statistically significant.

Results

No correlation was found between age and MDAS ($r = -0.011$, $p = 0.844$). Females tended to be more anxious than males ($p < 0.001$). The results showed that education had no significant effect on dental anxiety ($p = 0.837$) (Table I).

Table I. Dental anxiety scores of patients according to gender and education level.

Parameter	Dental anxiety score (MDAS)		U/Chi-square	P
	Mean±Standard Deviation	Median (25% - 75%)		
Gender			8801.54	<0.001
	Male	7.86±3.90	6 (5-10)	
	Female	10.23±4.69	9 (6-14)	
Education			0.357	0.837
	Primary School	9.31±4.75	7 (5-13)	
	High School	8.91±4.26	8 (5-12)	
	University	8.74±4.28	7.5 (5-11)	

Discussion

Dental anxiety is a universal problem affecting large populations throughout the world. Extreme dental anxiety leads to avoidance of dental care which results in severe adverse consequences not only for the patients oral health, but also for his/her general health in the form of sleep disturbances and negative impact on social interactions and work performance (9, 24).

From among the many scales in the literature, developed to assess dental anxiety, the MDAS was preferred in this research to evaluate the level of patient anxiety because it is brief, relatively quick to complete, easy to score and does not increase patient fears when completed (23, 25-28).

In previous studies, dental anxiety has been frequently reported to vary with sex, age, or education and social class (23). In this survey the patient's sociodemographic details including age, gender and education were correlated with MDAS scores and the results of the study showed no statistically significant difference in anxiety levels between the age groups. In previous reports which are incompatible with our results, Hakeberg et al. (7), Humphris et al. (22), Oliveira and Colares (29), Klinberg et al. (30), Vassend et al. (31) and Milgrom et al. (32) reported that age was strongly associated with dental anxiety and younger subjects were more anxious than older ones. However, Oktay et al. (9) and Kanegane et al. (33) found similar results with our study.

In their report Kanegane et al. (33) explained their finding with the small number of patients examined over 50 years of age. For the present survey the patients treated in the Restorative Dentistry and Endodontics, clinics were enrolled and the youngest age was 15 with the average age being 37. This, therefore, may be a reasonable explanation why anxiety levels for the age groups showed no difference.

In the literature, although Locker et al. (6), Kanegane et al. (33), and zdemir et al. (34) reported no relation between gender and dental anxiety, many authors have shown that dental anxiety is more common in women (31, 32, 35, 36). The result of our study is similar to the most recent reports that female demonstrate higher levels of dental anxiety than male. This difference may be explained by women being more able to express their feelings of fear in our society (37). Also, physiological emotions such as social phobia, panic, depression, stress and fear are more common in females and dental anxiety may be associated with such emotions (37, 38).

Patients with higher educational levels may have better oral health or visit the dentist more regularly (39). In some studies it was demonstrated that increased educational levels result in decreased dental anxiety (39, 40). However, in our study, differences in educational level did not influence the dental anxiety level as was the case in the studies of Hakeberg et al. (7), Oktay et al. (9), Kanegane et al. (33), Vassend et al. (31), Özdemir et al. (34) and Ay et al. (41).

In conclusions, In this study, it was observed that dental anxiety was not affected by age or education level, and that the dental anxiety levels of females were higher than males. Further studies with a larger sample size are required to investigate the effect of various correlates on dental anxiety.

References

1. Bay EJ, Algase DL. Fear and anxiety: a simultaneous concept analysis. *Nurs Diagn* 1999; 10(3):103-111.
2. Jaakkola S, Rautava P, Aromaa M, et al. Dental fear: one single clinical question for measurement. *Open Dent J* 2009; 28(3):161-6.
3. Milgrom P, Weinstein P, Getz T. *Treating fearful dental patients-a patient management handbook, 2nd ed.* Seattle: University of Washington; 1995.
4. Roy-Byrne P, Milgrom P, Khoon-Mei T, Weinstein P, Katon W. Psychopathology and psychiatric diagnosis in subjects with dental phobia. *J Anx Dis* 1994; 8(1):19-31.
5. Teo CS, Foong W, Lui HH, Vignehsa H, Elliott J, Milgrom P. Prevalence of dental fear in young adult Singaporeans. *Int Dent J* 1990; 40(1):37-42.
6. Locker D, Liddell AM. Correlates of dental anxiety among older adults. *J Dent Res* 1991; 70(3):198-203.
7. Hakeberg M, Berggren U, Carlsson SG. Prevalence of dental anxiety in an adult population in a major urban area in Sweden. *Community Dent Oral Epidemiol* 1992; 20(2):97-101.
8. ter Horst G, de Wit CA. Review of behavioral research in dentistry 1987-1992: dental anxiety, dentist-patient relationship compliance and dental attendance. *Int Dent J* 1993; 43(3 suppl 1):265-78.
9. Oktay EA, Koak MM, Şahinkesen G, Topu FT. The role of age, gender, education and experiences on dental anxiety. *Gülhane Tıp Dergisi* 2009; 51(3):145-8.
10. Esa R, Savithri V, Humphris G, Freeman R. The relationship between dental anxiety and dental decay experience in antenatal mothers. *Eur J Oral Sci* 2010; 118(1):59-65.
11. Litt MD. A model of pain and anxiety associated with acute stressors: distress in dental procedures. *Behav Res Ther.* 1996; 34(5-6):459-76.
12. Meng X, Heft MW, Bradley MM, Lang PJ. Effect of fear on dental utilization behaviors and oral health outcome. *Community Dent Oral Epidemiol* 2010; 35(4):292-301.
13. Walsh LJ. Anxiety prevention: implementing the 4 S principle in conservative dentistry. *Auxilliary* 2007;17(5):24-6.
14. Berggren U. *Dental Fear and Avoidance: A Comparison of Two Modes of Treatment.* *J Dent Res* 1984; 63(10):1 223-27.
15. Peretz B, Zadik D. Dental anxiety of parents in an Israeli kibbutz population. *Int J Pediatr Dent* 1994; 4(2):87-92.
16. Peretz B, Moshonov J. Dental anxiety among patients undergoing endodontic treatment. *J Endod* 1998; 24(6):435-7.
17. Toet A, Smeets MA, van Dijk E, Dijkstra D, van den Reijen L. Effects of Pleasant Ambient Fragrances on Dental Fear: Comparing Apples and Oranges. *Chemosens Percept* 2010; 3(3-4):182-9.
18. Hill KB, Hainsworth JM, Burke FJ, Fairbrother KJ. Evaluation of dentists' perceived needs regarding treatment of the anxious patient. *Br Dent J* 2008;204(8):E13; discussion 442-3.
19. Corah NL. Development of a dental anxiety scale. *J Dent Res* 1969; 48(4):596.
20. Kent G. Anxiety, pain and type of dental procedure. *Behav Res Ther* 1984; 22(5):465-69.
21. Taani DQ. Dental fear among a young adult Saudian population. *Int Dent J* 2001; 51(2):62-6.
22. Humphris GM, Morrison T, Lindsay SJ. The modified dental anxiety scale: validation and United Kingdom norms. *Community Dent Health* 1995; 12(3):143-50.
23. Humphris GM, Dyer TA, Robinson PG. The modified dental anxiety scale: UK general public population norms in 2008 with further psychometrics and effects of age. *BMC Oral Health* 2009; 9:20.
24. Lehrner J, Eckersberger C, Walla P, Potsch G, Deecke L. Ambient odor of orange in a dental office reduces anxiety and improves mood in females patients. *Physiol Behav* 2000;71(1-2):83-6.

25. Humphris GM, Hull P. Do dental anxiety questionnaires raise anxiety in dentally anxious adult patients? A two-wave panel study. *Prim Dent Care* 2007; 14(1):7-11.
26. Humphris GM, Clarke HM, Freeman R. Does completing a dental anxiety questionnaire increase anxiety? A randomised controlled trial with adults in general dental practice. *Br Dent J* 2006; 201(1):33-5.
27. Newton JT, Edwards JC. Psychometric properties of the modified dental anxiety scale: an independent replication. *Community Dent Health* 2005; 22(1):40-2.
28. Humphris GM, Freeman R, Campbell J, Tuutti H, D' Souza V. Further evidence for the reliability and validity of the Modified Dental Anxiety Scale. *Int Dent J* 2000; 50(6):367-70.
29. Oliveira MM, Colares V. The relationship between dental anxiety and dental pain in children aged 18 to 59 months: a study in Recife, Pernambuco State, Brazil. *Cad Saude Publica* 2009;25(4):743-50.
30. Klingberg G, Berggren U, Carlsson SG, Noren JG. Child dental fear: cause-related factors and clinical effects. *Eur J Oral Sci* 1995;103(6):405-12.
31. Vassend O. Anxiety, pain and discomfort associated with dental treatment. *Behav Res Ther* 1993;31(7):659-66.
32. Milgrom P, Fiset L, Melnick S, Weinstein P. The prevalence and practice management consequences of dental fear in a major US city. *J Am Dent Assoc* 1988;116(6):641-7.
33. Kanegane K, Penha SS, Munhoz CD, Rocha RG. Dental anxiety and salivary cortisol levels before urgent dental care. *J Oral Sci* 2009;51(4):515-20.
34. Özdemir AK, Özdemir HD, Coşkun A, Taşveren S. Investigation of patient anxiety in prosthesis clinics and other clinics in faculty of dentistry. *Cumhuriyet Üniversitesi Diş Hekimliği Fakültesi Dergisi* 2001;4(2):71-4.
35. Kanegane K, Penha SS, Borsatti MA, Rocha RG. Dental anxiety in an emergency dental service (in Portuguese). *Rev Saude Publica* 2003;37(6):786-92.
36. Liddell A, Locker D. Gender and age differences in attitudes to dental pain and dental control. *Community Dent Oral Epidemiol* 1997; 25(4):314-8.
37. Dohrenwend BP, Dohrenwend BS. Social and cultural influences on psychopathology. *Annu Rev Psychol* 1974;25:417-52.
38. Ritsner M, Ponizovsky A, Nechamkin Y, Modai I. Gender differences in psychosocial risk factors for psychological distress among immigrants. *Compr Psychiatry* 2001;42(2):151-60.
39. Ekanayake L, Dharmawardena D. Dental anxiety in patients seeking care at the University Dental Hospital in Sri Lanka. *Community Dent Health* 2003;20(2):112-6.
40. Peretz B, Kaplan R, Stabholtz A. The influence of a patient-management course to dental hygiene students on the dental anxiety of their patients. *J Dent Educ* 1997;61(4):368-73.
41. Ay S, Özdemir D, Öztürk M, Polat S. An assessment of dental anxiety in oral surgery patients. *Gülhane Medical Journal* 2002;44(4):395-8.