

Evaluation of Dental Anxiety Before Oral Surgery in Epileptic Patients

Yeliz Kılınç¹, Sara Samur Ergüven², Figen Çizmeçi Şenel³, Serpil Karaoğlanoğlu⁴

¹Gazi University Faculty of Dentistry, Oral and Maxillofacial Surgery, Ankara, Turkey

²5th Yıl Oral and Dental Health Hospital, Oral Surgery Clinic, Ankara, Turkey

³Ministry of Health, Health Institutes of Turkey (TUSEB), Ankara, Turkey

⁴University of Health Sciences, Gülhane Faculty of Dentistry, Department of Restorative Dentistry, Ankara, Turkey

Address for Correspondence: Yeliz Kılınç, **E-mail:** dtykilinc@hotmail.com

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ABSTRACT

Purpose: This study aimed to assess dental anxiety levels, thereby identifying factors which may contribute to dental anxiety in epileptic patients undergoing oral surgery procedures.

Methods: Questionnaires were handed out to 85 epileptic patients before the planned oral surgery procedures. The assessment of dental anxiety levels was carried out with Modified Dental Anxiety Scale (MDAS) and questions regarding dental anxiety. The cut-off point ≥ 19 was accepted as highly anxious. Data including the patients' demographic variables were also recorded and the results were analyzed by means of Mann-Whitney U and Chi-square tests.

Results: Of 85 patients included, a rate of 17.6% (n=15) was indicated as having high dental anxiety levels. Dental anxiety had no correlation with age, age of onset, educational level, type of epilepsy, frequency of seizures, antiepileptic drug use, previous history of oral surgery, previous traumatic dental experience and the number of missing teeth ($p > 0.05$). However, gender ($p < 0.01$) and the type of oral surgery operation (impacted third molar extraction) ($p < 0.05$) were significantly related to dental anxiety.

Conclusion: Results of the present study showed that dental anxiety before oral surgery procedures in epileptic patients is prevalent despite technical, pharmacological and surgical advances in dentistry. Implementation of anxiety identification/reducing procedures aims to increase patient comfort and optimize surgical circumstances for that kind of special patient group that could be of great importance.

Keywords: Dental anxiety; epilepsy; oral surgery

INTRODUCTION

Dental anxiety is a multi-systemic response to a threatening stimulus, which results in avoidance of oral procedures. Anxiety can be defined as an emotional phenomenon to an unpleasant experience, which occurs with its associated symptoms including stress, nervousness, worry and a feeling of self-control loss (1).

Dental anxiety is despite further medical advances a widespread disorder in the general population (2). Research indicates that 70% of the general population become anxious before a dental examination, 20% of this group have high anxiety and 5% avoid dental procedures completely (3). Dental anxiety may be related to age, gender, educational status and personality (4).

Pain and discomfort, which may arise from dental procedures, cause anxiety in patients (4). Oral surgery induces high anxiety levels in comparison with other dental procedures, which is related with postoperative pain and morbidity (1). Ergüven et al. reported high dental anxiety level in 14.1% of patients referred to

the oral and maxillofacial surgery department in a dental faculty (5). This anxiety effects the cooperation to treatment in patients who are scheduled for multiple surgical procedures (1).

Epilepsy is widely encountered in oral and maxillofacial surgery. It has been estimated to affect approximately 50 million people, with a prevalence ranging from 0.5% to 0.9% in the general population (6). Patients with epilepsy require special care and management of dental problems may be challenging (7). Tooth loss, caries and periodontal disease are encountered more frequently in epilepsy and these patients need more dental treatment (8). However, the influence of epilepsy on dental procedures has been rarely mentioned in the literature.

Stress and anxiety may increase the risk of seizure during dental treatment in epileptic patients. It has been reported that epileptic seizures are the second to third common emergencies in a dental office (7).

There is a lack of information on anxiety levels of epileptic patients undergoing oral surgery procedures in the literature. The influence of factors that might be associated with dental anxiety in epileptic patients should be identified. The aim of the present study was to assess dental anxiety levels and to evaluate factors that might be associated with dental anxiety in epileptic patients undergoing oral surgery procedures.

METHODS

This study was carried out in 85 epileptic patients who attended the oral surgery clinic of 75. Yıl Oral and Dental Health Hospital, Ankara, Turkey, between June 2017 – June 2018. The study was performed in accordance with the Declaration of Helsinki. The study protocol was reviewed and approved by the ethics committee of Dışkapı Yıldırım Beyazıt Training and Research Hospital (Approval number: 27/37). Modified Dental Anxiety Scale (MDAS) questionnaires were handed out to the patients. They were required to complete the questionnaire before the oral surgery procedure.

The MDAS has been developed from the Corah Dental Anxiety Scale. It consists of five questions which are specifically designed to measure dental anxiety. The total score of the questionnaire ranges from 5 to 25. Patients with a score ≥ 19 is classified as highly anxious (9). The validity and reliability of the Turkish version of this questionnaire have been demonstrated in previous studies (10, 11).

Patient exclusion criteria were declining to participate and the inability to complete the questionnaires due to a mental disorder. The patients were questioned about their antiepileptic drug use, type of epilepsy and frequency of seizures. Data regarding age, age of onset, gender and educational level were recorded for each patient. In addition, previous traumatic dental experience, previous history of oral surgery, the number of missing teeth and type of planned oral surgery procedure were noted.

Statistical Analysis

Statistical analyses were done using SPSS for Windows v. 18 (SPSS Inc. USA). The descriptive statistics were described as mean \pm standard deviation or median for the continuous and discrete variables. The categorical variables were shown as the case number and (%). The compliance of the data with the normal distribution probability was analyzed by using the Kolmogorov Smirnov test. As the distribution was not normal, data including age, age of onset and the number of missing teeth were analyzed by Mann-Whitney U-test for the comparison of groups. Chi-square test was performed to compare data of groups including gender, educational level, type of epilepsy, frequency of seizures, antiepileptic drug use, previous history of oral surgery, previous traumatic dental experience and type of oral surgery procedure. P values less than 0.05 were statistically significant.

RESULTS

The distribution of data on age, age of onset, gender, educational level, type of epilepsy, frequency of seizures, antiepileptic drug use, previous history of oral surgery, previous traumatic dental

experience, the type of oral surgery procedure and the number of missing teeth with respect to MDAS cut-off points are shown in Table 1. A total of 85 participants underwent oral surgery procedure, of which 46 tooth extraction, 18 surgical removal of impacted teeth, five cyst enucleation, one alveoloplasty.

Table 1. Distribution of data according to the MDAS cut-off scores. (Frequency %,n))

Variables	MDAS<19	MDAS \geq 19	P value
	N=70 (82.4)	N=15 (17.6)	
Age, mean \pm SD	32.04 \pm 12.983	28 \pm 9.266	0.329
Age of onset, mean \pm SD	17,04 \pm 12,230	15,87 \pm 6,823	0.890
Gender, N (%)			0.003
Female	38 (54.3)	14 (93.3)	
Male	32 (45.7)	1 (6.7)	
Educational level, N (%)			0.081
Primary school	20 (28.6)	2 (13.3)	
Secondary school	18 (25.7)	2 (13.3)	
High school	24 (34.3)	6 (40)	
University	6 (8.6)	5 (33.3)	
PhD/Master	2 (2.9)	-	
Type of Epilepsy, N (%)			1
Primary/idiopathic	61 (87.1)	13 (86.7)	
Secondary	9 (12.9)	2 (13.3)	
Frequency of seizures, N (%)			0.359
Seizure-free	33 (47.1)	9 (60)	
Regular	32 (45.7)	4 (26.7)	
Irregular	5 (7.1)	2 (13.3)	
Antiepileptic drug use, N (%)			0.144
No antiepileptic drug used	5(7.1)	3 (20)	
Regular	65(92.9)	12 (80)	
Previous history of oral surgery, N (%)			0.395
Yes	56 (80)	11 (73.3)	
No	14 (20)	4 (26.7)	
Previous traumatic dental experience, N (%)			0.626
Yes	6 (8.6)	2 (13.3)	
No	64 (91.4)	13 (86.7)	
Type of oral surgery procedure, N (%)			0.021
Tooth extraction	46 (65.7)	5 (33.3)	
Impacted third molar extraction, N (%)	18 (25.7)	10 (66.7)	
Cyst enucleation	5 (7.1)	-	
Alveoloplasty	1 (1.4)	-	
Number of missing teeth, N (%)			0.581
0	23 (32.9)	4 (26.7)	
1-5	36 (51.4)	8 (53.3)	
6-10	8 (11.4)	2 (13.3)	
>11	3 (4.3)	1 (6.7)	

MDAS: Modified Dental Anxiety Scale.

Table 2. Statistically significant results of groups corresponding to MDAS cut-off points. (Frequency %,n)

		MDAS<19	MDAS≥19	P value
Gender	Male	45.7% (32)	6.7% (1)	p=0.003
	Female	54.3% (38)	93.3% (14)	
Type of planned oral surgery procedure	Extraction	65.7% (46)	33.3% (5)	p=0.021
	Impacted third molar extraction	25.7% (18)	66.7% (10)	
	Cyst enucleation	7.1% (5)		
	Alveoloplasty	1.4% (1)		

MDAS: Modified Dental Anxiety Scale.

Fifteen patients (17.6%) had a high dental anxiety level in the present study. No statistically significant relationship was determined between the level of anxiety and age (p=0.329), age of onset (p=0.890), educational level (p=0.081), type of epilepsy (p=1), frequency of seizures (p=0.359), antiepileptic drug use (p=0.144), previous history of oral surgery (p=0.395), previous traumatic dental experience (p=0.626) and the number of missing teeth (p=0.581).

Statistically significant results of groups corresponding to MDAS scores are shown in Table 2. MDAS scores displayed a statistically significant difference between genders among groups; accordingly, levels of anxiety were higher in females than males (p=0.003). A comparison of groups between the type of oral surgery procedures revealed a statistically significant difference in MDAS scores (Table 2). The anxiety levels were higher among those who underwent impacted third molar extraction (p=0.021).

DISCUSSION

Performing dental procedures in anxious patients may be challenging. Patients having high levels of anxiety may consider the procedure a very stressful experience. Some patients may avoid dental treatment by delaying their appointments. Moreover, anxious patients may feel uncomfortable during procedures, which in turn may cause stress on the operating surgeon, impairing his or her surgical performance and leading to longer operative times (4). Anxiety has a negative impact on pain and patient recovery, and thus, reducing anxiety levels may facilitate a comfortable procedure (1).

It has been reported that oral surgery procedures were found to be the most anxiety-triggering procedures among 67 stimulants (12). In a previous study, Hermes et al. reported higher levels of anxiety in patients undergoing oral surgery procedures in comparison with individuals having other types of medical operations (13).

The levels of anxiety and its contributing factors for different oral surgery procedures have been evaluated by means of different methods (14). Zhang et al., who assessed the dental anxiety and pain perception in patients with oral implant surgery, reported a prevalence of 66.6% and 11.9% moderate and high preoperative dental anxiety, respectively. The results of this study indicated that dental anxiety might increase pain perceptions of the patients during oral implant surgery (15). Muglali and Komerik investigated factors that may be linked with the anxiety of patients

having minor oral surgery procedures (4). They concluded that jaw fatigue and fluid collection in the mouth was associated with high anxiety levels both before and after the operation. Reyes-Gilabert et al. evaluated pre and postoperative anxiety levels in patients undergoing oral surgery procedures (1). They found higher preoperative anxiety scores than the postoperative ones, highlighting the importance of psychological factors related to pre and postoperative anxiety.

Patients with epilepsy have a significant poorer oral health when compared to non-epileptic patients. This may be attributed to the fact that these patients receive less dental treatment due to the risk of seizure. Furthermore the seizures can cause tooth and oral soft tissue injuries and oral health is worsened (8). Epileptic patients also have a significantly worse quality of life accompanied by more compromised physical and psychological health levels than the general population (16).

It has been reported that statistically, every dentist encounters epileptic seizures by the patients in his/her professional life (8). Anxiety is one of the most important factors that may trigger seizures (7). Moreover, anxiety is a common comorbid condition of epilepsy and has a significant impact on the patients (17). Therefore, it is essential to identify highly anxious epileptic patients using appropriate measurement scales.

Neither specific nor general data on the anxiety of epileptic patients undergoing oral surgery procedures could be found in the current literature. This study aimed to evaluate the anxiety levels of epileptic patients attending an outpatient clinic who were scheduled for different oral surgery procedures. Among many scales used to assess dental anxiety, the MDAS was chosen in this research. MDAS consists of five questions. The scale is reliable and quick to administer. It has cut off values to determine the level of anxiety (mild, moderate or high). While more sophisticated measures designed for the detailed identification of the individual's dental anxiety exist, the MDAS has the advantage of simplicity. It has been found to be acceptable both to patients and the dental team (18).

As far as studies regarding dental anxiety in the literature are concerned, results of the heterogeneous group of patients who are healthy or having various systemic diseases are described. However, this study has presented the results of a specific patient population suffering from a chronic disease. To the authors' knowledge, this is the first study evaluating the dental anxiety levels of only the epileptic patients undergoing oral surgery procedures.

The results of the present study indicate that high dental anxiety levels among epileptic patients amounted to a rate of 17.6%. Medical experience influences dental anxiety as well as dental experience. Patients who have chronic systemic diseases receive more diagnostic and therapeutic interventions. These factors may contribute to the high anxiety levels in these patients (19). The nature of epilepsy as a chronic disease may have contributed to a high level of dental anxiety in these patients.

Tooth extraction involves some potential risks and complications which may affect the patient's quality of life. Patients with high levels of anxiety become more anxious about tooth extraction (20). In a previous study Sirin et al. concluded that third molar extraction was the most powerful anxiety-triggering procedure among different minor oral surgery procedures (14). They indicated that the patients undergoing third molar surgery scored higher than other operational procedures, including the removal of hard and soft tissue pathologies, implant placement and tooth extraction. The present finding concerning the type of the oral surgery procedure was consistent with the literature since the authors have found significantly higher anxiety levels in patients having impacted third molar extraction.

Studies have reported that females have higher anxiety levels compared to males (4, 14). The results of the present study demonstrate that the influence of gender was found to be a significant factor. Female patients had higher MDAS scores than male patients. Our findings agree with these studies that dental anxiety has a significant correlation with the female gender.

It has been indicated that the effect of negative dental experience is a relevant factor for tooth extraction anxiety (20, 21). This may have an impact on the increase of negative cognition, thereby contributing to increased negative effects, such as anxiety (20). De Jongh et al. reported that traumatic dental experience was related to anxiety (22). However, there was no consistent finding in the present study and no relationship was determined between the previous history of traumatic dental experience and the level of dental anxiety.

The age has been identified as one of the reliable factors determining dental anxiety. However, different findings were obtained from the studies. Some studies investigating the age as a factor report no significant correlation (4, 23), whereas some report a positive significant (24) or negative significant correlation (25). In the present study, no significant difference was found between the age and dental anxiety levels.

Although Egbor and Akpata (25) and López-Jornet et al. (26) stated a significant association between educational level and dental anxiety, other studies have reported no meaningful relationship (4, 23, 27). This goes in line with the present study, which found no significant difference in anxiety levels of patients with different educational levels.

There have been some studies that have investigated the relationship between anxiety and the number of missing teeth. In

a Turkish study of patients attending a dental faculty clinic, it has been indicated that there was no significant relationship between the number of missing teeth and dental anxiety (28). Similar to this study, Zinke et al. reported no significant difference between these parameters (2). Our findings support these earlier studies as the difference was not statistically significant.

There was no statistical correlation between the age of onset, type of epilepsy, frequency of seizures, antiepileptic drug use and dental anxiety levels. It may be difficult to compare the results of these variables with previous studies since the present study specifically includes data of an epileptic patient group. Therefore, variables linked specifically to epilepsy should be identified in subsequent studies.

A relationship between previous dental experience and dental anxiety has been proposed. Garip et al. demonstrated that the anxiety levels of the patients having third molar surgery previously were higher than those who had not (29). Kaakko et al. reported higher anxiety in patients who had previously experienced tooth extraction (30). However, there was no difference in the anxiety levels of the patients who had previously had oral surgery and those who had not.

In conclusion, the present study indicates that impacted third molar extraction is a significant anxiety-provoking event in a patient population suffering from epilepsy. Female gender has a significant correlation with dental anxiety. The results further suggest that a considerable rate of high dental anxiety exists in this population. The surgeon needs to recognize these patients to avoid a possible seizure attack. Therefore, screening the anxiety levels with appropriate measurement scales is essential and can prepare the surgical team to handle the patient. Considerations also should be given to the administration of anxiety-reducing protocols in the surgery practice. Further studies are needed to illuminate better the factors contributing to dental anxiety in large epilepsy populations.

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