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MANAGEMENT OF FEAR AND ANXIETY IN THE DENTAL OFFICE DURING TREATMENTS

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BACKGROUND AND OBJECTIVES: *the objective of this study was to evaluate patients' dental anxiety utilizing the modified dental anxiety scale (MDAS) questionnaire, while also investigating the potential correlation between dental anxiety and sociodemographic variables.*

MATERIALS AND METHODS: *The MDAS questionnaire was employed to evaluate the patients' anxiety levels, comprising five items, each with five response alternatives. All patients completed the MDAS questionnaire before the dental treatment. Descriptive statistics were used to quantify the frequency of answers. The Mann-Whitney U test was employed to assess anxiety levels between genders.*

RESULTS: *The study included 80 patients, comprising 43 males and 37 females, with a mean age of 40.89 ± 13.84 years. Female patients exhibited much greater anxiety regarding dental treatment than male patients. Linear regression indicated a strong correlation between age and gender with pre-treatment anxiety levels.*

CONCLUSIONS: **Age and gender significantly influence dental anxiety.**

Keywords: **dental anxiety; dental treatment; dental anxiety scales.**

1. INTRODUCTION

Dental anxiety represents intense worry or fear experienced by an individual in a dental setting, during dental treatments. This is a prevalent occurrence; hence, it poses a public health concern as dental anxiety adversely impacts the oral health of patients [1]. Furthermore, patients with dental anxiety necessitate referrals to dental professionals, resulting in increased expenses for national health systems. Moreover, treating patients with anxiety typically requires more time, so detracting from the opportunity to administer alternative treatments to the same patient or to other patients. Dental anxiety prevalence in affluent countries varies from 4% to 20%, influenced by the differing use of dental anxiety scales [2]. Individuals experiencing dental anxiety often exhibit untreated carious teeth, edentulous areas, and compromised oral health [3-5]. Furthermore, individuals with dental anxiety, particularly younger individuals and females, tend to evade dental consultations, resulting in deteriorated dental health due to postponed treatments [5-9].

Given that dental anxiety is a prevalent issue, it is essential to accurately detect it prior to seeing a dentist, utilizing a dependable and legitimate diagnostic instrument. Consequently, the researcher implemented various techniques to evaluate dental anxiety. The Modified Dental Anxiety Scale (MDAS) is a widely utilized questionnaire for evaluating dental anxiety in individuals undergoing various dental operations. MDAS was derived from Corah's initial dental anxiety scale (CDAS), which has four questions to assess an individual's anxiety level. Subsequently, CDAS was revised by Humphris et al. [10-12], incorporating a new inquiry regarding local anesthesia, with responses ranging from 'not nervous' to 'very anxious'. This questionnaire was developed in English and utilized in numerous nations [13-15]. Owing to the widespread acclaim of MDAS, this questionnaire was translated and verified into various languages [16-29].

The prior study indicated that dental anxiety may have intensified among patients if they had endured any unpleasant previous experiences [30]. Dental procedures necessitating anesthetic and rotary instruments, such as direct restorations [31] or indirect restorations [32], induce heightened anxiety in patients. Individuals with dental anxiety experience heightened pain during some dental operations, including deep fillings, root canal therapy, subgingival scrubbing, and extractions [33]. The adverse and distressing dental experiences may be attributed to the efficacy of the treatment and the professional caliber of the dentists [30]. Pain associated with dental treatment may affect the patient's compliance during the procedure. These distressing experiences in the dental office persist into adulthood [34]. Consequently, prior research focused on computer-assisted analgesia, which demonstrated markedly lower pain perception scores compared to conventional injectable anesthesia and resulted in enhanced cooperative behavior [35].

A dental clinic often consists of many tiers of dental professionals, including specialists, registry staff, general dentists, resident dental practitioners, and dental students. Although the quality of dental treatment varies irrespective of professional rank, patient satisfaction may change based on the provider of the therapy. Studies evaluated the dental anxiety of patients attending dental clinics or hospitals [25,27,36-39]. Nevertheless, limited research has been undertaken about the dental anxiety of patients visiting student dentistry clinics and intern dental practitioners. Evaluating the dental anxiety levels of patients treated by students or intern doctors is crucial, as anxiety levels vary according to the practitioners' rank [40-43]. According to the literature, no research has been performed on patients' dental anxiety assessed by intern doctors utilizing the MDAS questionnaire. This study aims to evaluate patients' dental anxiety utilizing the MDAS questionnaire and to investigate the potential correlation between dental anxiety and sociodemographic parameters.

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2. MATERIALS AND METHODS

This prospective study was conducted in accordance with the standards of the Declaration of Helsinki. Patients requesting dental treatment at the clinic were enrolled in this study following a meticulous evaluation of the inclusion and exclusion criteria. The selected dental practitioners are attending to new patients seeking routine dental care at the clinics. The physicians were selected for this study due to their higher engagement with new patients and their practice of comprehensive dentistry. All patients were systematically selected till the conclusion of the data collection period for this investigation. Patients' *inclusion criteria:* patients who needed dental treatment; ages between 18 to 70 years; willing to participate and gave consent to be treated and *exclusion criteria*: any systemic disease; age < 18 years and > 70 years; cannot read, speak and write; cognitive difficulties; pregnant patients and patients who were taking anxiety medicine.

A printed version of the MDAS questionnaire [40] was administered to all patients prior to the commencement of treatment to evaluate their anxiety levels. The MDAS questionnaire comprises five questions, each accompanied by five response options: not anxious, slightly anxious, fairly anxious, very anxious, and extremely anxious, to be completed by the patients. The replies were rated on a scale of one to five according to the intensity of anxiety. 'Not anxious' received a score of one, while 'extremely anxious' received a score of five. The cumulative scores for all questions totaled a maximum of 25. A cut-off score of 19 was established to differentiate between high and low levels of anxiety. A MADS score of ≥ 19 indicates high-level anxiety, while a score of < 19 signifies low-level anxiety [40]. Additional clinical information, including age, gender, and necessary treatment, was documented alongside the questionnaire from each enrolled patient.

All statistical analyses were conducted utilizing the DATAtab program. Descriptive data were examined using frequency distribution analysis. Kolmogorov-Smirnov normality test was conducted to evaluate the data's normality. The Mann-Whitney U test was utilized to assess pre-treatment dental anxiety between genders.

3. RESULTS

A total of 80 patients including 43 males and 37 females with a mean age of 40.89 ± 13.84 years were included in the current study. Kolmogorov-Smirnov statistics was used to assess the normality of the data, and it presented that data were normally distributed. Descriptive statistics of the participants are exhibited in Table 1 and Figure 1.

Pre-treatment questionnaire was given to all patients before starting the treatment. The frequency of their responses is shown in Table 2. It showed that the majority of the patients (34.3%) were 'fairly anxious' before starting the treatment. The lowest percentage of the patients (0.50%) were 'extremely anxious' (Table 2, Figure 1 and Figure 2). The distribution of the level of anxiety and gender is presented in Figure 2 and Figure 3.

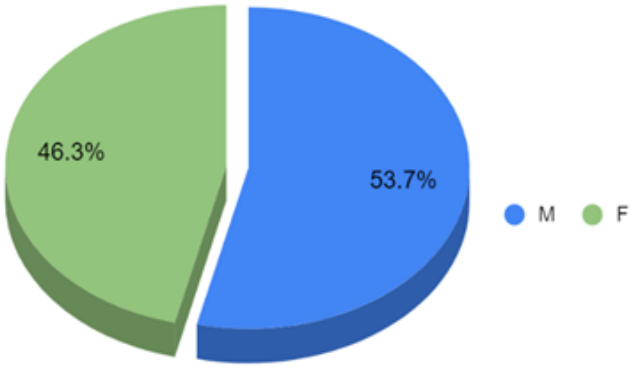
Notes: Q1: If you go to the dentist for treatment tomorrow, how would you feel; Q2: If you were sitting in the waiting room (waiting for treatment), how would you feel; Q3: If you were about to have a tooth drilled, how would you feel; Q4: If you were about to have your teeth scaled and polished (teeth cleaning), how would you feel; Q5: If you were to about to have the local anesthetic injection in your gum above an upper back tooth, how would you feel.

Table 1. Participants sociodemographic characteristics

age	n	Mean	SD	Min.	Max.	Mean ± SD	p value
M	43	38.98	14.44	18	67	38.98 ± 14.44	.322[1]
F	37	43.11	12.95	18	69	43.11 ± 12.95	

N – number; SD – standard deviation; min – minim; max – maxim;
[1]Kolmogorov-Smirnov test

Figure 1. Distribution by gender:



Pre-treatment dental anxiety was compared between the gender by the Wilcoxon U test, and it showed a significant difference in all questions. Female patients were more anxious before treatment compared to male patients (Table 3).

Table 2. Frequency of the response to the pre-treatment MDAS questionnaire

	Not Anxious	Slightly anxious	Fairly anxious	Very anxious	Extremely anxious
Q1	16	34	25	5	0
Q2	10	27	31	12	0
Q3	18	24	28	10	0
Q4	12	30	29	7	2
Q5	11	16	24	29	0

Notes: MDAS: modified dental anxiety scale; Q1: If you go to the dentist for treatment tomorrow, how would you feel; Q2: If you were sitting in the waiting room (waiting for treatment), how would you feel; Q3: If you were about to have a tooth drilled, how would you feel; Q4: If you were about to have your teeth scaled and polished (teeth cleaning), how would you feel; Q5: If you were to about to have the local anesthetic injection in your gum above an upper back tooth, how would you feel; * statistical significance.

4. DISCUSSION

The present study sought to evaluate the dental anxiety of participants in the dental clinic during

Figure 2. Distribution of the level of anxiety by question

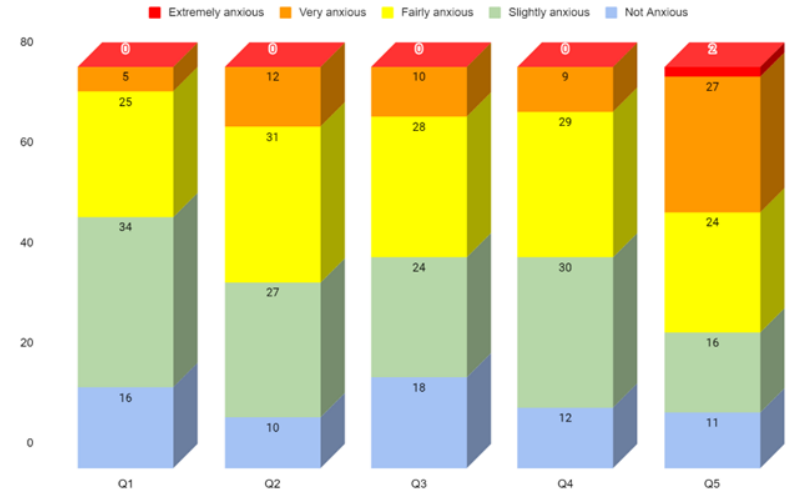
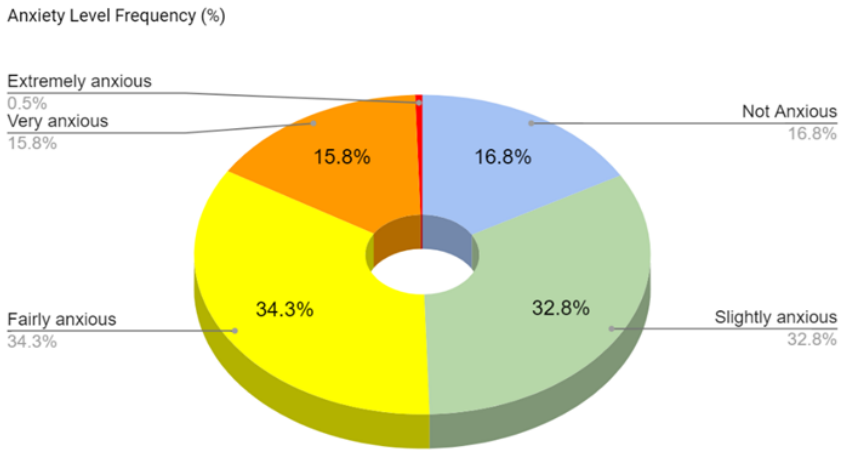


Figure 3. Distribution of the level of anxiety



dental treatments. The findings of the present investigation indicated that females exhibited greater anxiety before to commencing the treatment than males. Age and gender are significantly correlated with dental anxiety; conversely, treatment type shows no correlation with dental anxiety.

Numerous dental anxiety scales exist to evaluate the degree of dental anxiety experienced by individuals [9]. The Dental Anxiety Scale (DAS) [44] and the Modified Dental Anxiety Scale (MDAS) [14] are the most commonly utilized questionnaires for assessing dental anxiety, however they have certain drawbacks. The Index of dentistry Anxiety and Fear Scale (IDAF-4C) was introduced to address the shortcomings of existing questionnaires; nonetheless, its application in dentistry research remains limited [5,9]. This study employed the MDAS questionnaire, consistent with other research [25,38-40]. The study was conducted in Romania, where Romanian is the most widely spoken language, and the Romanian version of the MDAS was the established questionnaire utilized. Consequently, the present study employed the original English form of the MDAS.

The present investigation indicated that females exhibited greater anxiety before to the therapy than males. This

Table 3. Gender-based distribution of anxiety levels by question

MDAS	Gender	Mean	p value
Q1	Male	39.22	< .05*
	Female	58.34	
Q2	Male	42.57	< .05*
	Female	55.37	
Q3	Male	43.54	< .05*
	Female	69.44	
Q4	Male	45.10	< .05*
	Female	62.04	
Q5	Male	41.37	< .05*
	Female	65.58	

result are in line other research on dental anxiety, indicating that female patients exhibited elevated scores on the MDAS questionnaire [7,37,40,45]. Prior research demonstrated that females possess lower pain thresholds, which heightens the apprehension associated with dental treatment [46]. This may explain the elevated MDAS scores observed among females in this study. Furthermore, other study demonstrated that females exhibit greater anxiety with the administration of local anesthetic and dental drills [47]. This statement aligns with the results of the current investigation. The MDAS questionnaire indicated that female patients experienced extreme anxiety with local anesthetic. Furthermore, the literature indicates that pain is linked to the vibrating feeling and injections during dental procedures, which eventually heightens patient anxiety [33,48]. Nonetheless, patients tend to experience reduced anxiety even with intricate treatments that do not include anesthetic or tooth preparation, including as orthodontics or bleaching procedures.

The patient age range in this study was 18 to 70 years, with a mean age of 40.89 ± 13.84 years. A prior study indicated a connection between dental anxiety and age range. Younger individuals are more likely to experience dental anxiety than young adults [40,49,50]. This is not suitable for every instance. The present investigation demonstrated a substantial correlation between age and dental anxiety; however, it exclusively involved adult patients. In contrast to earlier studies [43,51], the age range was not subdivided into additional categories; hence, this study could not ascertain which precise age range exhibited greater dental anxiety.

The duration of the visit and the clinical setting induced the greatest anxiety in patients during the treatment. The dental operations in the clinical environment typically occur in a large open space where numerous doctors care to patients, resulting in many individuals congregating in a single room with diverse issues. Consequently, it is typical to experience anxiety regarding the

clinical setting, particularly if the patient is undergoing dental treatment for the first time. Moreover, dental treatments are typically protracted, and an extended treatment duration heightens anxiety levels [52]. Consequently, the duration of the appointment heightened anxiety levels among patients, which is a legitimate finding according to the previously cited study.

A prior report indicated that past experiences with dental care affect subsequent dental encounters. A more positive prior dental experience correlates with reduced anxiety in subsequent appointments [53]. Consequently, given the favorable results regarding the competencies and interpersonal abilities of intern dental practitioners, it may be inferred that patients may have reduced anxiety concerning their forthcoming dental appointments.

The degree of dental anxiety varies between younger patients and mature ones. The present investigation exclusively comprised adult patients. Incorporating diverse patient demographics may influence the results of the present investigation. Consequently, additional research should be undertaken to mitigate the shortcomings of the present study. Future research on dental anxiety could be conducted across multiple institutions, including various universities, with a bigger sample size regardless of race. Various dental anxiety surveys should be evaluated and compared alongside the elements that may influence dental anxiety.

5. CONCLUSIONS

Female patients had higher levels of anxiousness than their male counterparts. Age and gender significantly influence dental anxiety; however, treatment modalities are not correlated with pre-treatment and post-treatment dental anxiety.

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