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Evaluation of dental anxiety: Nyala Region, Sudan

An evaluation on dental anxiety

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Abstract
Aim: Dentists may commonly meet fear and anxiety during dental procedures. Patients may be frightened due to the expectation of pain, and this may cause them to delay their dental treatment. Physicians should be able to plan treatment by noticing anxiety and fear situations. Numerous scales were developed for this purpose. The Dental Anxiety Scale (DAS) and Modified Dental Anxiety Scale (MDAS) are the most commonly used scales. The aim of the present study was to evaluate the dental anxiety of a group of adult individuals in the Nyala region of Sudan.
Material and Methods: The study was conducted on adults who have been referred to the Nyala Training and Research Hospital. The present study included 104 individuals, including 43 (41.35%) males and 61 (58.65%) females with ages ranging between 20 and 57 years. The participants were asked to fill in the prepared questionnaire. Dental anxiety level was determined through the Dental Anxiety Scale (DAS) and Modified Dental Anxiety Scale (MDAS).
Results: In this study, which examined levels of dental anxiety, it was concluded that there was no difference in anxiety level between the genders ($p>0.05$). It was observed that the use of aerators in dentistry practices increases anxiety ($p<0.05$). It was concluded that the heads of the dental scaler used during scaling also increased the level of anxiety ($p<0.05$). However, it was detected that they do not have a fear of local anesthesia ($p>0.05$).
Discussion: Considering the results of the study reveals that it has not been determined under what conditions the emerging anxiety can develop. However, it was observed that anxiety level differs among nations.

Keywords
Dental Anxiety, Dental Procedures, Dental Anesthesia

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Introduction

Anxiety is the struggle of an individual under stress. It is not only a psychological but also a physiological process. The individual psychologically has delusions and fear, as well as a panic that he will experience bad things. This deteriorates the sleep pattern of the individual and initiates a process that progresses to distraction. Beyond psychological problems, headache, dizziness, arrhythmia, difficulty in breathing, paresthesia and even dry mouth may be experienced physiologically. Sweating, cold and moist skin appearance, chills, tachycardia, arrhythmia, facial flushing or pallor may be observed during clinical practice [1,2].

Dental anxiety is the strong negative emotions that an individual feels about dental practices. Sanikop et al. defined dental anxiety as an individual's concern that something bad will happen related to their dental treatment. This anxiety may be affected by the individual's personality traits, fear of pain or even the traumatic dental experience he may have had in childhood [3-5]. Even experiences that do not belong to him may affect an individual [6]. The most important reason noticed so far in the development of dental anxiety is considered the pain that the individual fears during the procedure. However, many other factors cause this condition. The most important difficulty in this situation for dentists is that patients will complicate their treatment because of this feeling [1,3,7].

Most of the physicians often encounter reactions due to fear and anxiety in their patients during dental applications. Apart from the negative dental experiences of the patients in the past, the approach of the physician to them affects these reactions. Since pediatric patients usually adopt the behaviors of the individuals around, comments of their families and friends about their experiences have a great effect. Furthermore, the instruments preferred in dental applications, the length of time spent in the waiting room can increase anxiety. When the patient sees the injector to be used, the injection and use of rotary tool (aerator) may increase this anxiety more. This increased anxiety may cause them to delay their treatment appointments, make irregular appointments, or even miss their appointments. When they realize this, their anxiety may have increased even more. Oral and dental diseases may increase and cause serious problems if they delay their dental treatments [1, 3, 8]. Oral health affects an individual's quality of life and even self-esteem. The individual's self-esteem may compromise due to dental problems because of the anxiety [9].

According to Saatchi et al., the most important reason for the development of dental anxiety is negative dental experiences in the past [10]. High dental anxiety affects physicians when creating a treatment plan. Dentists should allocate more time for these patients. Listening to the patient's complaint before the treatment and giving detailed information about the treatment are also effective to diminish these negative effects because such concerns make the treatment difficult for both the patient and the physician [1].

However, studies show that dentists do not adequately perform screening for this anxiety. It was detected in a previous study conducted on dentists that only 20% of them regularly screen the anxiety level of their patients [10]. Numerous scales were developed for this purpose. The most frequently preferred anxiety scales, especially in adults may be listed as Dental Fear Questionnaire, Dental Anxiety Scale (DAS), Modified Dental Anxiety Scale (MDAS), Corah Dental Anxiety Scale and State-Trait Anxiety Inventory [6,9,12]. A study on 1392 individuals in England concluded that MDAS had a higher reliability in patients [13]. In previous studies conducted on the Turkish population, MDAS was found to be reliable if a value of ≥19 is accepted as the intersection point, as in our study [14, 15]. In this study, we aimed to measure the level of dental anxiety in adults in the Sudan Nyala region, DAS and MDAS were used in the light of these studies to determine the anxiety levels of the patients.

Material and Methods

Following approval from the ethics committee of Sudan Nyala Training and Research Hospital, 104 patients were informed about the study and their written consents were obtained from the Dental Clinic of Nyala Training and Research Hospital between June 2019 and January 2020. Adult volunteer patients without any psychological disorders were enrolled in the study. Patients with anxiety disorder, minors and patients over 65 years of age were excluded. Assistance was obtained from a translator who was fluent in the language of the region while preparing the questionnaire, and care was taken to ensure that the questions were in their own language. In the first part of the questionnaire, demographic data were included and questions related to gender, age, and reason for applying, which were thought to affect the level of dental anxiety were included. In the other part, DAS and MDAS which are commonly used in the evaluation of dental anxiety in adults today were used [12,16,17]. Dental procedures planned were performed on the patients after filling in the questionnaires.

The DAS was developed by Corah in 1969. This scale consisted of four questions with five options related to the patient reactions in different situations. The patients mark the answers that seem closest to them. Options are scored between 1 and 5, and the total score is calculated. A score between 5 and 20 is obtained. It is accepted that as the score increases, the level of dental anxiety increases. Scores at and over 15 indicated the highest level of anxiety. The application is easy and reliable; therefore, its use is widespread. A validity and reliability study of the scale was performed [18].

MDAS was created by adding a question to the DAS about the injection. The scoring method is the same as for DAS. Two studies conducted in Turkey demonstrated that the scale is valid and reliable [14,15].

After filling out the questionnaire forms, statistical analyzes were carried out with the help of the SPSS version 17.0 program. Consistency with normal distribution was evaluated with histogram graphics and the Kolmogorov-Smirnov test. Mean, standard deviation, and median values were used in descriptive analyses. Pearson's Chi-Square test was used when evaluating categorical variables. While the non-normally distributed (nonparametric) variables were evaluated between the two groups, they were evaluated with the Mann-Whitney U test. Evaluation between multiple groups more than two was made with the Kruskal-Wallis test. Any p-value below 0.05 was accepted as statistically significant.

Results

The present study included 104 individuals, including 43 (41.35%) males and 61 (58.65%) females with ages ranging between 20 and 57 years. The number of people who find it fun to have a dentist appointment on the DAS scale and wait impatiently was 54; however, the number of people who stated that they would be afraid of this situation was only 1 person. On the other hand, there were 36 people who stated that waiting in the waiting room would not disturb them; only 9 people stated that they would be very worried. While there were 36 people who stated that the dentist would not be disturbed by the use of a rotatory head tool during dental procedures, there were 33 people who stated that they would be very worried. Forty-three people said that they would not be disturbed by the head used in dental cleaning; however, there were 10 people who said that it would make them feel very bad (Table 1).

Considering the effect of age variable on anxiety, the average age of those who are not worried because they have a dentist appointment is higher than those who are less worried. It was observed that the age variable did not cause a significant difference in the answers given to the other questions (Table 2). When the effect of the gender variable on anxiety was examined, it was detected that the dentist appointment caused less anxiety in men when compared to women, and women had higher anxiety about a painful experience. On the other hand, the use of a rotating head device (aerator) by the dentist makes men more uncomfortable than women. Similarly, women feel less anxiety about the tool used during tooth cleaning compared to

Table 1. DAS Questionnaire Findings

		n	%
Age*		32,26±8,98	30,00 (20,00-57,00)
Gender	Male	43	-41,35
	Female	61	-58,65
How do you feel if you need to go to the dentist?	I think it will be quite a fun experience, I can't wait to go to the dentist tomorrow	54	-51,92
	I do not care	5	-4,81
	I feel a little bit uncomfortable	17	-16,35
	I am afraid because it will be painful and unpleasant	27	-25,96
	Procedures that the dentist would do scare me	1	-0,96
How do you feel while waiting in the dentist's office?	I feel comfortable	36	-34,62
	I feel a little bit uncomfortable	32	-30,77
	I feel pretty nervous	27	-25,96
	I feel very anxious	9	-8,65
You sit on the dentist's chair and the dentist will start working on your teeth with the aerator (a rotary instrument). How do you feel?	I feel comfortable	36	-34,62
	I feel a little bit uncomfortable	24	-23,08
	I feel pretty nervous	7	-6,73
	I feel very anxious	33	-31,73
	I worry so much that I sweat profusely or feel unwell as if I have a physical illness.	4	-3,85
You sit on the chair for teeth cleaning. While you are waiting, the dentist takes the tool that makes tartar scaling. How do you feel?	I feel comfortable	43	-41,35
	I feel a little bit uncomfortable	30	-28,85
	I feel pretty nervous	7	-6,73
	I feel very anxious	14	-13,46
	I worry so much that I sweat profusely or feel unwell as if I have a physical illness.	10	-9,62

*median ± SD was given instead of n; median (min-max) was given instead of %

Table 2. Evaluation of the Age variable through DAS and MAS Questionnaires

		Age		p
		Mean±SD	Median	
Gender	Male	32,56±8,80	30	0,521
	Female	32,05±9,18	29	
How would you feel if you were going to the dentist tomorrow?	I think it will be quite a fun experience, I can't wait to go to the dentist tomorrow	31,94±9,69	29,5	0,14
	I do not care	40,2±10,21	40	
	I feel a little bit uncomfortable	32±6,19	30	
	I am afraid because it will be painful and unpleasant	31,04±8,16	27	
	Procedures that the dentist would do scare me	47±.	47	
How do you feel while waiting in the dentist's office?	comfortable	34,89±10,12	32	0,302
	a little bit uncomfortable	31,06±8,34	29	
	pretty nervous	30,78±8,20	29	
	very anxious	30,44±7,45	30	
You sit on the dentist's chair and the dentist will start working on your teeth with the aerator (a rotary instrument). How do you feel?	comfortable	33,67±9,13	32	0,369
	a little bit uncomfortable	31,04±9,87	29	
	pretty nervous	29,29±3,20	29	
	I very anxious	31,67±9,30	30	
	I worry so much that I sweat profusely or feel unwell as if I have a physical illness.	37±4,24	38,5	
You sit on the chair for teeth cleaning. While you are waiting, the dentist takes the tool that makes tartar scaling. How do you feel?	comfortable	33,63±8,64	32	0,32
	a little bit uncomfortable	32,77±9,77	30	
	pretty nervous	30,86±7,27	30	
	very anxious	30,21±9,84	27	
	I worry so much that I sweat profusely or feel unwell as if I have a physical illness.	28,7±7,85	26	
How would you feel if you were going to the dentist tomorrow?	Not worried	35,03±9,23	33	0,043
	Very little worried	29,93±8,29	29	
	Less worried	34,7±9,03	32,5	
	Very worried	36±10,33	35	
	Much worried	40±.	40	
How would you feel if you were sitting in the waiting room for treatment?	Not worried	34±9,12	32,5	0,425
	Very little worried	31,35±9,45	29	
	Less worried	30,86±7,56	31	
	Very worried	33,82±8,23	32	
How would you feel if you were to have tooth filling in one tooth.	Not worried	33,9±8,98	32,5	0,433
	Very little worried	33±9,93	30	
	Less worried	30,74±7,94	30	
	Very worried	28,79±5,98	29	
	Much worried	40±.	40	
How would you feel if your teeth were to be cleaned and polished?	Not worried	32,86±8,48	31	0,927
	Very little worried	32,31±9,61	29	
	Less worried	31,56±8,06	30	
	Very worried	31,08±8,80	30	
How would you feel if you were to have a local anesthetic injected into your gums on your upper back tooth?	Not worried	34,56±9,41	33	0,497
	Very little worried	32,66±10,64	29	
	Less worried	31,74±6,38	30	
	Very worried	30,48±7,10	29	

(a p-value of the Mann-Whitney U Test below 0.05 was accepted as statistically significant)

men. No significant results could be obtained when comparing the genders regarding the other questions (Table 3).

Table 3. Evaluation of gender variables with DAS and MDAS Questionnaires

		Male		Female		p
		n	%	n	%	
How would you feel if you were going to the dentist tomorrow?	I think it will be quite a fun experience, I can't wait to go to the dentist tomorrow	24	-55,81	30	-49,18	0,015
	I do not care	5	-11,63	0	0	
	I feel a little bit uncomfortable	8	-18,6	9	-14,75	
	I afraid because it will be painful and unpleasant	6	-13,95	21	-34,43	
	Procedures that the dentist would do scare me	0	0	1	-1,64	
How do you feel while waiting in the dentist's office?	comfortable	14	-32,56	22	-36,07	0,085
	a little bit uncomfortable	18	-41,86	14	-22,95	
	pretty nervous	10	-23,26	17	-27,87	
	very anxious	1	-2,33	8	-13,11	
You sit on the dentist's chair and the dentist will start working on your teeth with the aerator (a rotary instrument). How do you feel?	comfortable	10	-23,26	26	-42,62	0,002
	a little bit uncomfortable	18	-41,86	6	-9,84	
	pretty nervous	4	-9,3	3	-4,92	
	very anxious	9	-20,93	24	-39,34	
	I worry so much that I sweat profusely or feel unwell as if I have a physical illness.	2	-4,65	2	-3,28	
You sit on the chair for teeth cleaning. While you are waiting, the dentist takes the tool that makes tartar scaling. How do you feel?	comfortable	12	-27,91	31	-50,82	0,01
	a little bit uncomfortable	20	-46,51	10	-16,39	
	pretty nervous	4	-9,3	3	-4,92	
	very anxious	4	-9,3	10	-16,39	
	I worry so much that I sweat profusely or feel unwell as if I have a physical illness.	3	-6,98	7	-11,48	
How would you feel if you were going to the dentist tomorrow?	Not worried	9	-20,93	20	-32,79	0,543
	Very little worried	27	-62,79	31	-50,82	
	Less worried	5	-11,63	5	-8,2	
	Very worried	2	-4,65	4	-6,56	
	Much worried	0	0	1	-1,64	
How would you feel if you were sitting in the waiting room for treatment?	Not worried	8	-18,6	20	-32,79	0,217
	Very little worried	25	-58,14	26	-42,62	
	Less worried	7	-16,28	7	-11,48	
	Very worried	3	-6,98	8	-13,11	
How would you feel if you were to have tooth filling in one tooth.	Not worried	8	-18,6	12	-19,67	0,412
	Very little worried	25	-58,14	25	-40,98	
	Less worried	6	-13,95	13	-21,31	
	Very worried	4	-9,3	10	-16,39	
	Much worried	0	0	1	-1,64	
How would you feel if your teeth were to be cleaned and polished?	Not worried	10	-23,26	19	-31,15	0,348
	Very little worried	23	-53,49	31	-50,82	
	Less worried	6	-13,95	3	-4,92	
	Very worried	4	-9,3	8	-13,11	
How would you feel if you were to have a local anesthetic injected into your gums on your upper back tooth?	Not worried	6	-13,95	10	-16,39	0,235
	Very little worried	23	-53,49	21	-34,43	
	Less worried	7	-16,28	12	-19,67	
	Very worried	7	-16,28	18	-29,51	

(a p-value of the Mann-Whitney U Test below 0.05 was accepted as statistically significant)

Discussion

It was concluded in many studies that the anxiety experienced during dental practices affects the oral health and quality of life of the person [19].

In our study, we aimed to evaluate the level of anxiety observed among residents of the region.

A higher dental anxiety value was reached in 7% of the individuals who participated in our study. It was reported that the dental anxiety value evaluated with MDAS in Turkey was 8.8% [14]. Dental anxiety was evaluated with MDAS in UK and was found to be 19 % [16]. A previous study conducted in Hong Kong reported the dental anxiety rate as 12.5% [20]. This situation shows us that dental anxiety situation varies according to geographical regions.

Many patients experience varying degrees of anxiety prior to dental practice. Oral surgery practices are particularly associated with a high level of anxiety (Olson S. A Examination of Dental Distress and Anxiety-Related Vulnerability Factors. University of Mississippi. 2018.). Sanikop et al. listed the factors most associated with increasing levels of dental anxiety as follows: the use of rotating head instruments and local anesthesia procedure. In our study, the use of a rotary tool is similar to this study in terms of leading to anxiety in individuals. However, individuals in our study stated that local anesthesia applications did not worry them [3].

Ozcelik et al. and Sanikop et al. stated that the long time spent in the waiting room before treatment may increase this anxiety, it was observed in our study that the time spent in the waiting room did not have an increasing effect on dental anxiety [1, 3].

In the present study, men were more courageous for going to their appointments than women. There are many studies addressing those women who have higher dental anxiety; however, in our study, women were more anxious about going to an appointment, they seemed to be more fearless about the procedures to be performed [21]. When male and female individuals were examined, it was seen that results such as tooth polishing, which is performed with rotary tools and more aesthetically, are less of a concern for women. We can attribute this to the courage of women in aesthetic practices. However, it was concluded in consideration of the general population that the patients were not worried about procedures such as filling or calculus removal and they were eager for these treatments ($p>0.05$). Considering the difficulty of accessing dental treatments in this region, we can say that their anxiety does not prevent them from having dental procedures.

Conclusion

As a result of the research, it was observed that approximately 7% of the patients who have been referred to the dental clinic had a higher level of dental anxiety. Gender, age, and the instruments chosen during dental treatment may cause a change in this anxiety. In the light of these results, dental anxiety continues to exist in the whole society to an undeniable extent; however, it was observed that it does not affect the desire for dental treatment in geographies where it is difficult to reach treatment. These studies should be conducted on large patient series in wider geographies. The responsibility of dentists is to determine the dental anxiety of individuals and make appropriate treatment plans.

Limitations

The main limitations of this study include a lack of questioning past dental experiences, conducting the study on a limited number of people, and getting help from an interpreter for communication.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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