Assessment of the dental fear and anxiety in patients admitted to the Dental Clinic of Hue University of Medicine and Pharmacy Hospital

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Abstract

Background: Fear and anxiety in dentistry are among the factors that hinder access to dental care. This study aimed to assess the level of fear and anxiety regarding dental treatments and related factors. **Materials and methods**: This cross-sectional descriptive study included 300 patients aged ≥ 18 years who visited the Hue University of Medicine and Pharmacy Hospital for 5 months (12/2022 to 04/2023), The levels of dental fear and anxiety were assessed using DFS and MDAS. The relationship between dental fear and anxiety and the analyzed factors was examined using a multivariate logistic regression model. **Results**: Of the total sample, 52% had dentophobia, and 51.7% had dental anxiety. The incidence of dental fear and anxiety was higher in females compared to males, in individuals with a history of painful dental treatment than in comfortable ones, and individuals with irregular dental check-ups than in regular ones. Dental fear was also higher among single individuals. **Conclusions:** Fear and anxiety related to dental treatment were widespread among adult patients. Gender, marital status, treatment history, and frequency of dental visits were associated with dental fear and anxiety.

Keywords: *dental fear, dental anxiety, related factors, multivariate logistic regression model.*

1. INTRODUCTION

Dentophobia is a term used to describe the irrational fear of undergoing dental treatment, accompanied by terrifying signs such as increased blood pressure, trembling, and discomfort [1]. Dental anxiety is a specific reaction of patients to the stress associated with dental treatment, in which unclear or vague stimuli may not appear immediately [2]. Dental patients who are afraid and anxious often tend to postpone, be uncooperative, or refuse to enter the dental clinic. Instead, they rely on antibiotics and/or painkillers and only come for examinations when there is an emergency. As a result, severe oral problems such as multiple cavities, gingivitis, bad breath, and tooth loss occur. This prolonged condition gradually impairs chewing function and affects aesthetics [3]. To assess fear and anxiety in dentistry, several reliable scales such as the Modified Dental Anxiety Scale (MDAS) and Dental Fear Survey (DFS) have been introduced and applied. Saatchi et al. (2015) used the MDAS and DFS scales and found that the rates of anxiety and dental fear were 58.8% and 39.6%, respectively [4].

Dental fear and anxiety can be influenced by various factors, such as age, gender, marital status, educational level, occupation, frequency of dental visits, and painful experiences during dental treatment [5]. A study by Kassem et al. in 2021 found that dental anxiety was twice as high in women than in men. Patients who had previous negative dental experiences were 3.45 times more likely to experience high levels of anxiety than those who were comfortable. Increasing the frequency of dental visits can reduce anxiety levels, and individuals with higher education are less likely to develop dentophobia [6].

In Vietnam, there are limited studies on dental fear and anxiety. Therefore, to provide additional evidence for improving dental treatment, we conducted this study to evaluate dental fear and anxiety in patients and their associations with age, gender, educational level, past traumatic experiences, and frequency of dental checkups.

2. MATERIALS AND METHODS

Study design and population

This cross-sectional study was conducted on patients who visited the Dental Clinic of the Hue University of Medicine and Pharmacy Hospital for 5 months (12/2022 to 04/2023). After checking in, each patient was provided with a survey form and

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was asked to answer the questions. All participants were informed of the confidentiality of their responses. Inclusion criteria were age ≥8 years and agreement to participate in the study.

The sample size was calculated based on a previous study on dental anxiety in adults in Lebanon (2021), with a prevalence of dentophobia of 22.4% [6]. Considering a power of 95% at a 5% level of significance, a minimum of 267 patients were required. A total of 300 patients were recruited for this study. The exclusion criteria were patients who were undergoing dental care for the first time, had a serious medical condition or intellectual disability, and did not complete the survey form.

Measurements

The measurement method used was a survey form that included three sections. The first section contained questions concerning sociodemographic information (age, gender, occupation, marital status, and educational level), data about the frequency of dental checkups (every 6 months, every year, sometimes, when having an emergency), and the existence of past traumatic experiences (comfortable, normal, and painful). The second section was a Vietnamese version of the DFS questionnaire, translated from the original English version by Kleinknecht in 1973 [7]. The total DFS score ranges from 20 to 100. A DFS score under 36 means "no fear". Meanwhile, higher scores indicate "moderate fear" with 36 ≤ DFS ≤ 52 or "severe fear" with DFS ≥ 53. The third section was a Vietnamese version of the MDAS questionnaire, which was translated from the original English version by Humphris et al. 1995 [8]. The total MDAS score ranges from 5 to 25 while higher scores indicate severe anxiety. Evaluations range from "no anxiety" with MDAS < 11 to "moderate anxiety" (11 ≤ MDAS ≤ 14), "high anxiety" (15 ≤ MDAS ≤ 18), and "extremely high anxiety" (MDAS ≥ 19). The English versions of the MDAS and DFS were translated into Vietnamese following a forward and backward translation process by 2 bilingual translators.

Data analysis

Data were processed using SPSS software (version 20.0; SPSS Inc., Chicago, IL, USA) with a p-value of 0.05 for statistical significance. The Chi-square test, Mann-Whitney Test, and Kruskal-Wallis Test were applied to analyze the differences between MDAS and FDS and other variables. Multivariate logistic regression models were used to identify the association between dental fear and anxiety with these variables.

3. RESULTS

In this study, 300 patients were recruited, aged 19 - 92, with a male-to-female ratio of 0.55:1. The majority of patients (52.7%) were aged between 18 and 34 years. The mean dental fear score was 41.99 ± 18.41. The prevalence of dental fear was 52%, of which moderate and severe fears were reported as 28.7% and 23.3%, respectively. Meanwhile, the average dental anxiety score was 11.86 ± 5.1 and dental anxiety was reported by 51.7% of the participants, with 25% moderate anxiety, 11% high anxiety, and 15.7% extremely high anxiety (Figure 1).

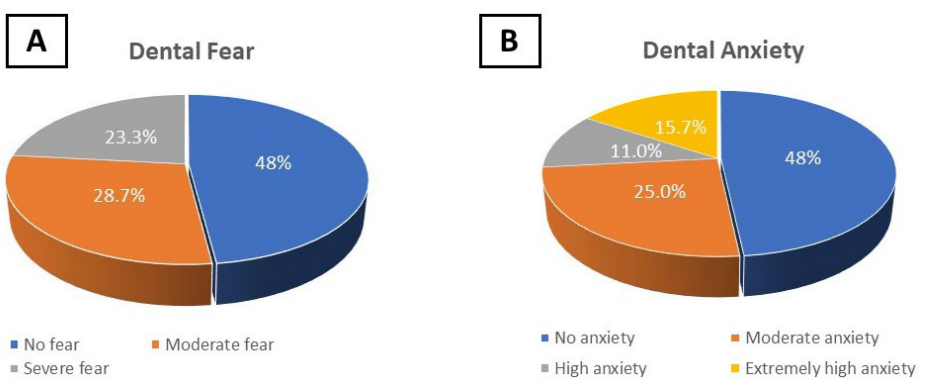

Figure 1. The prevalence of dental fear (A) and dental anxiety (B)

Table 1 shows the DFS and MDAS scores as well as the rates of dental fear (DFS > 35) and dental anxiety (MDAS > 10) in the study group. Both measured scales increased with age, whereas the prevalence of dental fear and anxiety significantly declined from young people to the elderly. Regarding gender, females had higher DFS and MDAS scores and rates than males. Students and housewives had greater

dental fear and anxiety rates than other job groups. The prevalence of dentophobia and dental anxiety was higher among single people and those with a high school education. The postgraduate students did not report any fear or anxiety related to dental treatment. Dental anxiety is more prevalent in patients who only visit the doctor in emergencies than in those who visit regularly every six months. Patients with a history of painful dental treatment had considerably higher MDAS and DFS scores than those with a comfortable experience. The differences in the fear and anxiety status related to the assessed factors were statistically significant ($p < 0.05$).

Table 1. Average DFS and MDAS scores, rate of dental fear and anxiety by relevant factors (n = 300)

Variables		N	DFS (Mean ± SD)	Dental fear (DFS > 35) n (%)	MDAS (Mean ± SD)	Dental anxiety (MDAS > 10) n (%)
Age	18 - 34	158	49.16 ± 19.32	109 (69.0%)	13.85 ± 4.99	107 (67.7%)
	35 - 54	66	38.83 ± 14.18	35 (53.0%)	9.74 ± 4.38	31 (47.0%)
	≥ 55	76	29.80 ± 11.30	12 (15.8%)	8.62 ± 3.85	17 (22.4%)
	p		< 0.05	< 0.05	< 0.05	< 0.05
Gender	Male	107	32.30 ± 12.16	35 (32.7%)	9.17 ± 3.94	34 (31.8%)
	Female	193	47.36 ± 19.10	121 (62.7%)	13.35 ± 5.06	121 (62.7%)
	p		< 0.05	< 0.05	< 0.05	< 0.05
Occupation	Students	121	48.80 ± 19.13	95 (78.5%)	14.65 ± 4.81	93 (76.9%)
	Housewives	22	51.45 ± 14.89	17 (77.3%)	14.41 ± 4.14	18 (81.8%)
	Workers, farmers	65	37.14 ± 13.75	29 (44.6%)	10.94 ± 4.49	28 (43.1%)
	Office workers	34	30.68 ± 8.93	8 (23.5%)	8.56 ± 2.82	4 (11.8%)
	Retired/old	44	25.93 ± 4.69	2 (4.5%)	7.18 ± 2.32	6 (13.6%)
	Other	14	38.93 ± 19.63	5 (35.7%)	10.64 ± 5.18	6 (42.9%)
	p		< 0.05	< 0.05	< 0.05	< 0.05
Marital status	Single	138	51.08 ± 19.03	105 (76.1%)	14.39 ± 4.89	102 (73.9%)
	Married	162	34.24 ± 13.78	51 (31.5%)	9.70 ± 4.21	53 (32.7%)
	p		< 0.05	< 0.05	< 0.05	< 0.05
Education level	Primary school	23	31.00 ± 8.62	6 (26.1%)	9.61 ± 3.45	9 (39.1%)
	Secondary school	66	33.94 ± 14.57	19 (28.8%)	9.53 ± 4.43	21 (31.8%)
	High school	166	49.07 ± 19.13	117 (70.5%)	13.74 ± 5.02	115 (69.3%)
	College/ University	41	33.85 ± 12.73	14 (34.1%)	9.76 ± 4.19	10 (24.4%)
	Postgraduate	4	27.25 ± 2.63	0 (0%)	6.50 ± 1.00	0 (0%)
	p		< 0.05	< 0.05	< 0.05	< 0.05

Frequency of checkups	Every 6 months	28	38.18 ±12.29	11 (39.3%)	11.32 ± 4.13	12 (42.9%)
	Every 12 months	85	38.21 ± 14.30	42 (49.4%)	10.79 ± 4.55	33 (38.8%)
	Emergency only	187	44.27 ± 20.41	103 (55.1%)	12.42 ± 5.39	110 (58.8%)
	p		< 0.05	> 0.05	< 0.05	< 0.05
Dental history	Comfortable	63	32.79 ± 15.58	16 (25.4%)	8.51 ± 3.74	14 (22.2%)
	Normal	193	39.47 ± 13.08	102 (52.8%)	11.54 ± 4.25	102 (52.8%)
	Painful	44	66.20 ± 22.12	38 (86.4%)	18.02 ± 4.91	39 (88.6%)
	p		< 0.05	< 0.05	< 0.05	< 0.05

Table 2. The analysis of the relationship between dental fear and other variables according to multivariable logistic regression model

Variables		**OR**	**95%CI**	***p***
Gender	Male	1	-	-
	Female	2.25	1.1 - 4.58	0.03
Marital status	Single	1	-	-
	Married	0.22	0.06 - 0.88	0.03
Frequency of checkups	Every 6 months	1	-	-
	Every 12 months	2.16	0.77 - 6.03	0.14
	Emergency only	6.59	2.14 - 20.34	0.01
Dental history	Comfortable	1	-	-
	Normal	2.76	1.2 - 6.34	0.02
	Painful	6.85	1.78 - 26.44	0.01

This study found no relationship between age, occupation, education level, and dental fear and anxiety ($p > 0.05$). Table 2 shows the results of the multivariate analysis of the relationship between dental fear and other variables. Female patients were 2.25 times more likely than male patients to experience dental fear ($p < 0.05$). Compared to single participants, married patients experienced a 4.5 times lower rate of dental fear ($p < 0.05$). Patients who visited less frequently had a 6.59 times higher rate of dental fear than those who visited regularly every 6 months ($p < 0.05$). Compared to patients who had comfortable dental histories, those with painful or normal histories were 6.85 times and 2.76 times more likely to have dental fear, respectively.

Similarly, the MDAS score showed a significant relationship with gender, frequency of checkups, and dental history in multivariable logistic analysis. Regards to dental anxiety, females were 2.34 times more likely to have dental anxiety than males ($p < 0.05$). Patients who visited the dental clinic only when in emergency had a 6.32 times greater rate of dental anxiety than those who visited regularly every 6 months ($p < 0.05$). Patients with comfortable experience had significantly lower dental anxiety than those with normal or painful history ($p < 0.05$). However, marital status was not significantly associated with dental anxiety ($p > 0.05$).

Table 3. The analysis of the relationship between dental anxiety and other variables according to multivariable logistic regression model

Variables		OR	95%CI	*p*
Gender	Male	1	-	-
	Female	2.34	1.13 - 4.85	0.02
Frequency of checkups	Every 6 months	1	-	-
	Every 12 months	0.83	0.28 - 2.47	0.74
	Emergency only	6.32	1.88 - 21.28	0.003
Dental history	Comfortable	1	-	-
	Normal	3.50	1.46 – 8.37	0.005
	Painful	10.78	2.57 - 45.12	0.001

4. DISCUSSION

In the current study, the rates of fear and anxiety regarding dental treatment in the Dental Clinic of Hue University and Pharmacy Hospital were 52% and 51.7%, respectively. This indicates that fear and anxiety regarding dental procedures remain widely prevalent. This rate is lower than that reported by Jeddy et al. (2018), reporting 64,2% of fear and anxiety [9], but higher than that reported by Kassem et al. (2021), with 22.4% fear and 31.5% anxiety [6]. This variation may be due to differences in geographical areas, cultural characteristics of location, or various sample sizes and sampling techniques.

In this study, we examined the effects of various factors on dental fear and anxiety, including gender, age, occupation, marital status, educational level, dental treatment history, and frequency of dental visits. The results of our regression analysis showed that rates of dental fear and anxiety were higher in females than in males. Similar to the study by Kassem et al., the prevalence of dental fear and anxiety in women was twice as high as that in men [6]. Women express more fear and anxiety because they are more aware of dangerous threats. They can expose their emotions easily, while men are stricter and tend to maintain their anxieties and fears. Physiological conditions, such as social anxiety disorder, panic attacks, depression, and stress, are more common in women and may be associated with dental fear and anxiety. Additionally, compared to men, women have lower pain levels and pain tolerances, which can cause fear and anxiety about dental treatment [10].

Regarding marital status, the level of dentophobia in this study was significantly higher among single people than among married people (4.5 times). This correlation was consistent with the results reported by Egbor et al. [11]. This could be a result of the family's supportive involvement in helping the patients manage their medical conditions.

A history of painful oral treatment is a major component of increasing fear and anxiety. Patients with a history of painful dental treatment had rates of dentophobia and anxiety 6 and 10 times greater than those with a comfortable history. This outcome is in line with that of previous studies [6, 9]. Many people's dental fear and anxiety originate from past experiences of dental treatment, such as extreme pain, bleeding, or unprofessional dental work that leaves them in a lot of pain, or discomfort during dental examinations and other dental procedures [12].

The frequency of check-ups also showed significant effects on dental fear and anxiety. Patients who did not visit the dentist regularly were more likely to experience dental fear and anxiety than those who were followed up regularly every 6 months. This result is consistent with those of previous studies [4, 9]. Patients with fear and anxiety prefer to avoid or delay visits and even cancel appointments, resulting in more severe dental conditions [13].

As reported in previous studies, older people showed less fear and concern about their teeth than younger people [14, 15]. Older people may have better tolerance for pain or treatment due to increased exposure to sickness throughout their lives. Young people may also lack sufficient expertise or experience with therapy tools, such as needles, handpieces, or other equipment [15]. In addition, housewives and students were more likely to be exposed to dental fear and anxiety than other occupations. The majority of housewives are

women who are more sensitive and easily express their emotions [16]. Furthermore, the degree of dental fear and anxiety decreases as education level increases, oral awareness rises, and dental appointments become more regular [4, 6, 17]. People with higher levels of education frequently have access to information on oral health and dental procedures, as well as a greater awareness of the health services offered [18]. Our study also found significant differences in dental fear and anxiety levels between the other variables of age, occupation, and education levels. However, the multivariable logistic regression model found no correlation between dental fear and anxiety with these factors ($p > 0.05$).

This study still has some limitations, including a small sample size and an unrepresentative community, because most of the participants were young patients (18-34 years old, or 52.7%), and students made up 40.3% of the population being studied. Studies with larger sample sizes are recommended to better understand the incidence and severity of dental phobia and anxiety in society. Two of the main difficulties in obtaining dental care are fear and anxiety, which negatively impact both oral health and quality of life. Our research contributes to the evaluation of dentophobia and anxiety, as well as associated factors, which helps to improve treatment options or environments that are appropriate for each patient.

5. CONCLUSION

This study revealed that dental fear and anxiety are common in the dental clinic of Hue University of Medicine and Pharmacy Hospital. Being female, single, and having previous traumatic dental experiences are risk factors for developing dentophobia and dental anxiety. Besides that, regular dental visits show lower dental fear and anxiety levels.

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