PREVALENCE OF DENTAL ANXIETY AMONG ADULT PATIENTS ATTENDING THE UNIVERSITY OF GHANA DENTAL SCHOOL CLINIC, ACCRA

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ABSTRACT

INTRODUCTION: There have been substantial efforts over the years to improve oral healthcare through technology, preventive methods, and dental behavioural management. Despite these efforts, dental anxiety poses considerable challenges to both patients and dentists. Its burden has however not been thoroughly explored in Ghana.

AIM OF THE STUDY: To determine the prevalence of dental anxiety among adult patients attending the University of Ghana Dental School Clinic.

METHODS: This was a survey with cross-sectional approach which assessed the level of anxiety of patients by the use of the Modified Dental Anxiety Scale. The results were presented in the form of charts and graphs while Pearson's Chi-square test was used to test the relationship between gender of patients.

RESULTS: The results revealed that 58% males, participated in the study and the prevalence of dental anxiety was 54% representing moderate, high and 'extreme anxiety'. The most commonly reported causes of dental anxiety were the sound and feel of the drill/handpiece (39%), followed by injection (37%). The level of dental anxiety was significantly influenced by the gender of patients and their experience of regularly accessing dental care.

CONCLUSION: The study found the prevalence of dental anxiety to be high among participants. Behavioural management in dental practices should therefore be prioritized to optimize care and treatment outcomes.

KEYWORDS: prevalence; dental anxiety; dental phobia; dental fear; Ghana

INTRODUCTION

In the process of providing satisfactory oral healthcare, some patients face the problem of dental anxiety. Dental anxiety is a global problem, and can be a major hindrance to oral health-seeking among patients due to extreme fear for dental treatment[1]. Defined as an aversive emotional state of apprehension or worry in anticipation of a feared stimulus of dental treatment, dental anxiety could be challenging for both patients and dental clinicians[2].

Abdul et al, [3] explained that people with high levels of dental anxiety will most probably delay or refuse visiting the dentist for treatment. This attitude may lead to more dental problems and symptomatic visiting patterns, which feeds back into the worsening of existing dental fear which consequently can affect the oral health status of the patients [4].

Dental anxiety and dental phobia can easily be interchanged but the difference needs to be clearly identified so that patients can be assisted accordingly. Dental phobia can be termed as a persistent, unrealistic, and intense fear of a specific stimulus, leading to complete avoidance of the perceived danger. The Diagnostic and Statistical Manual of Mental Disorders (DSM)-V and the International Statistical Classification of Diseases and related health problems (ICD)-10 classify dental phobia as overwhelming and irrational fear of dentistry [5, 6]. Identifying the extremity of the fear between anxiety and phobia is crucial and dental practitioners ought to be empowered to identify such patients and assist them before they graduate from state of anxiety to phobia which makes treatments very difficult or impossible[7]. The etiology of dental anxiety is multifold including previous traumatic experience and receiving dental treatment from an unfriendly or a non-empathetic dentist. These causes in particular affect the harmonious relationship between dentists and patients, which is an important aspect of patients' management[1]. Other sources of dental anxiety include - vicarious learning from anxious family members or peers who induce dental anxiety in impending patients. Vicarious learning involves emulating the behaviour of others, through observing. Daunting stimuli such as the observation of dental instruments like the needles used for administration of local anesthesia, the sound of dental drills, screaming patients and/or the odour of the dental clinic may also trigger dental anxiety in some patients [1]. The origin of dental anxiety is most frequently associated with direct traumatic dental experiences in early childhood [8], particularly if painful events during treatment are combined with the feeling of loss of control [9].

The prevalence of high dental anxiety varies from 2% to 30% worldwide, depending on the study population, the methods applied, and the scores used [10]. For instance, in Sangha, India a study by Abdul [3] recorded 56% prevalence and other countries in Asia reported of 46% rate [11]. In sub-Saharan Africa, the prevalence of dental anxiety is diverse; whereas in 2005, the prevalence rate amongst Nigerians was found to be 7.5% [12] the reported prevalence among Ghanaians was 47.3%[9]. Meanwhile in a more recent Ghanaian study conducted in 2011, researchers found a prevalence of 75 % among adult patients [13].

The peculiar nature and consequence of dental anxiety however require ceaseless evidence and evaluation including combination of dental and psychological approaches. Wide et al [14] indicated that the type of treatment approach should be based on the level of dental anxiety and suggested Cognitive Behavioural Therapy (CBT) among others as one of the effective treatments. This study therefore aimed at determining the prevalence of dental anxiety among adult patients at the University of Ghana Dental School Clinic.

METHODOLOGY

This study adopted a cross sectional survey to determine the level of dental anxiety and its influence on patients attending University of Ghana Dental School Clinic (UGDSC). The UGDSC is a hospital based dental clinic which attends to both walk-in and referred patients seeking routine and advanced dental care. Study participants 18 years and above were randomly selected from the attendance list where each participant with an odd number was picked into the sample of 216 to participate in the study. Informed consent of each patient was sought in writing and they were made to sign before they were allowed to participate in the study. Respondents who met the inclusion criteria of been 18 years and above, were selected daily for two weeks to take part in the study. The selected participants were met separately in a private room in the clinic where the questionnaires were administered to them. Patients who were critically ill, or had speech and language impairments were excluded from the study.

The Modified Dental Anxiety Scale (MDAS) consists of 5 questions each with a 5-point rating scale, ranging from 'not anxious' to 'extremely anxious' and authored by (Humphris, 2009)[14]. The five questions are summed together to produce a total score ranging from 5 to 25. The Modified Dental Anxiety Scale (MDAS showed good internal consistency (Cronbach's $\alpha = 0.88$)[15]

The questionnaire was divided into three sections. Section A focused on demographic information; Section B assessed causes of dental anxiety and Section C assessed level of dental anxiety. The Modified Dental Anxiety Scale was a self-administered questionnaire which instructed participants to rate their emotional reactions to: an impending dental appointment, awaiting treatment while sitting in the waiting room, having teeth drilled, scaled and receiving a local anesthetic injection 15. From the five questions, the lowest possible score was 5, which indicated no dental anxiety and the highest possible score was 25, which indicated extreme dental anxiety. Previous researchers have established that participants with scores of 16 and above were considered to be dentally anxious, whereas those with scores higher than 19 were considered dentally phobic[15].

The data collected from the respondents was analyzed using Microsoft Excel and Statistical Package for Social Sciences (SPSS). The results were presented in the form of frequencies, graphs and charts. Inferential statistics were also used in the data analysis using Pearson's Chi-square test.

The study was approved by the Ethical and Protocol Review Committee of the Department of Community and Preventative Dentistry of the University of Ghana Dental School (CPDD/013/06/2020), ensuring ethical standards of the Institutional Research Committee and the Helsinki Declaration.

RESULTS

It can be observed from Table 1: that two hundred and sixteen respondents were involved in this study with mean age of 35.1±10.93 years. A greater proportion (32 %) of the respondents were aged between 30 and 39 years while a few (4 %) were aged 50 years and above. Less than half (42 %) of the study participants were female. A greater proportion of them had tertiary education (87.5%). Majority of the respondents were Christians. Half of the respondents stated they had formal employment.

Table 1 Demographic characteristics of respondents

Characteristics	Frequency (N=216)	Percentage
Age (in years)		
<20	9	4.2
20-29	63	29.2
30-39	69	31.9
40-49	66	30.6
50+	9	4.2
Mean Age (SD)	**35.1(±10.93)**	
Sex		
Male	126	58.3
Female	90	41.7
Education		
Junior High School (JHS)	9	4.2
Senior High School (SHS)	18	8.3
Tertiary	189	87.5
Occupation		
Unemployed	36	16.7
Student	45	20.8
Formally employed	108	50.0
Informally employed	27	12.5
Religion		
Christianity	207	95.8
Islam	9	4.2

Patients' visits to dental facilities and how that influence their level of anxiety was also assessed and the results showed that out of the 216 respondents, 79 % stated they had visited a dental clinic before for dental services, while 21% stated they were visiting a dental clinic for the first time (Figure 1).

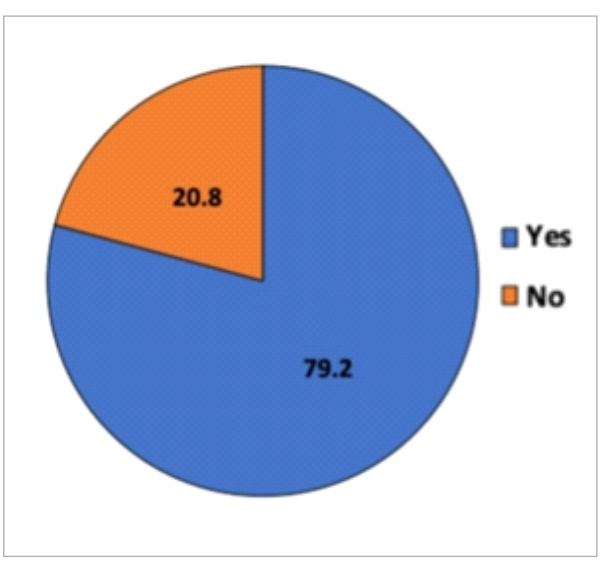

Figure 1 - Previous visit to Dental Clinic

The prevalence of dental anxiety as observed in Figure 2 indicated that: 33% patients had moderate anxiety, 17% had high anxiety and only 4 % had extreme anxiety, with modified dental anxiety score (MDAS) score ≥ 19. Not anxious participants scored ≤ 5.

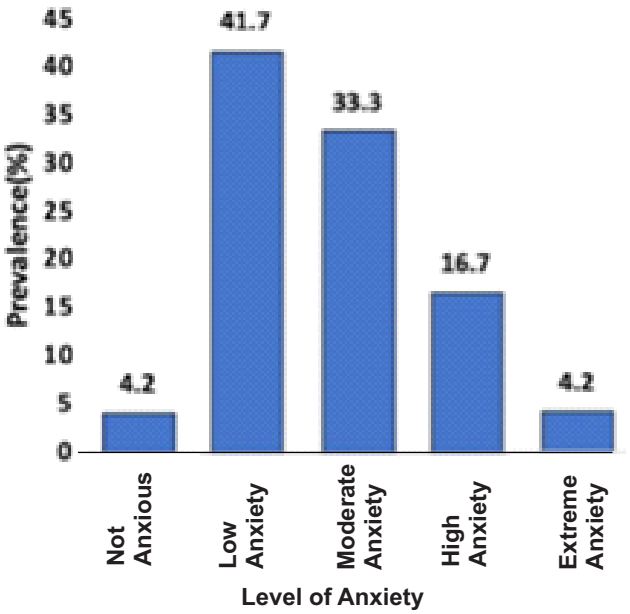

Figure 2 - Prevalence of different levels of Dental Anxiety

Reported causes of dental anxiety were also explored in this study (Figure 3). The most commonly reported cause of dental anxiety was from the sound and feel of the drill/handpiece (39 %), followed by injection (37 %) and the tilted dental chair (14 %). Others included the dental team (5 %), the environment and smell of the dental clinic (5%).

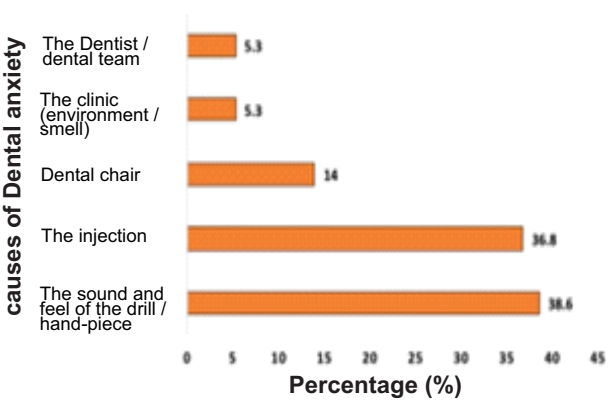

Figure 3 - Reported Causes of Dental Anxiety

The level of satisfaction with treatment was measured and it revealed that a large proportion (72 %) stated they were satisfied with their experience from previous visits to dental clinics, while 11% indicated that their previous experience at dental clinics was fearful. Also, 18% said they were very happy with their previous dental experiences (Figure 4).

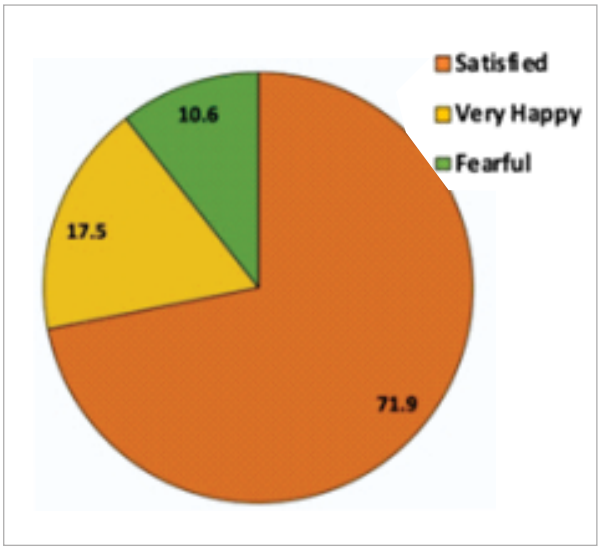

Figure 4- Respondents' assessment of treatment at Dental Clinics

Demographic factors influencing dental anxiety were determined using Pearson's Chi-square test. The test showed that there was a statistically significant association between sex and dental anxiety outcomes (2 (1,216) = 32.20, $p < 0.05$). The low to moderate categorization of dental anxiety had about 92% of male respondents. On the other hand, about 60% of female respondents had low to moderate dental anxiety as against the remaining 40% who had high to extreme dental anxiety.

The test also revealed that "ever visit a dental clinic" (those who had ever visited dental clinic or not) was significantly associated with dental anxiety (2 (1,216) = 20.13, $p < 0.05$). For respondents who answered "No", half had low to moderate anxiety and the other half, high to extreme dental anxiety. However, for those who responded "Yes" majority (83%) had low to moderate dental anxiety. Participants who had experience with dental care had low to moderate levels of dental anxiety and the result is presented in Table 2

Table 2 Demographic factors influencing Dental anxiety

	Anxiety				
Characteristic	**Low to Moderate N (%)**	**High to Extreme N (%)**	**Total N (%)**	**Chi-square**	**p-value**
Age (years)				215.01	2.21941E-45 ***
< 20	9(100.0)	0(0.0)	9		
20-29	54(85.7)	9(14.3)	63		
30-39	42(60.9)	27(39.1)	69		
40-49	48(72.7)	18(27.3)	66		
50+	9(100.0)	0(0.0)	9		
Sex				32.20	1.38954E-08 ***
Male	116(92.3)	10(7.7)	126		
Female	54(60.0)	36(40.0)	90		
Education				10.29	0.0058
Junior High School (JHS)	9(100.0)	0(0.0)	9		
Senior High School (SHS)	18(100.0)	0(0.0)	18		
Tertiary	135(71.4)	54(28.6)	189		
Religion				2.47	0.1159
Christianity	162(78.3)	45(21.7)	207		
Islam	9(100.0)	0(0.0)	9		
Occupation				13.19	0.0042***
Unemployed	36(100.0)	0(0.0)	36		
Student	36(80.0)	9(20.0)	45		
Formal employment	81(75.0)	27(25.0)	108		
Informal employment	18(66.7)	9(33.3)	27		
Ever visit dental clinic				20.13	7.2343E-06 ***
No	21(50.0)	21(50.0)	42		
Yes	144(82.8)	30(17.2)	174		
Stories about Dental clinic				0.8	0.6703
Fair	36(80.0)	9(20.0)	45		
Good	99(73.3)	36(26.7)	135		
Very good	27(75.0)	9(25.0)	36		

***** significant at p-value <0.05**

DISCUSSION

This study revealed that 33% of patients experienced moderate anxiety, while 17% recorded high anxiety and 4 % had extreme anxiety. Thus, prevalence of varying degrees of dental anxiety among adult patients visiting the University of Ghana Dental School Clinic were recorded. This result is in accordance with previous studies done in Ghana on dental anxiety including one by Ofori et al., [9] where the prevalence of 47% was recorded and a study by Okang et al., [13] which had a prevalence of 75 %. The rise in the prevalence of dental anxiety is clearly seen from these studies, which calls for some interventions.

A number of causative stimuli have been proposed to cause dental anxiety. In this study, the most commonly reported causes of dental anxiety were from the sound and feel of the drill/handpiece, followed by injection and the dental chair. Other minor causes included the appearance of dental teams, the environment and smell of the dental clinic. In a comparative study by Armfield and Milgrom [16], they stated that one of the most commonly reported concerns with respect to dental anxiety was receiving the injection. The issue of the high anxiety in relation to receiving injection in turn caused dentists and patients to often avoid difficult injections, hence, resulting in poor pain control[17]. The daunting visual stimulus of a sharp needle to be injected into the body is known to cause intense apprehension among patients [16].

Though not a prominent cause of dental anxiety among participants in this study, it was interesting to find that Settineri et al [18] found that key sources of dental anxiety in their study were from the (tilted-back) dental chair position and various sensory stimulants linked with dental treatment. According to Settineri et al [18], the tilting back of the dental chair caused patients to lose control and feel vulnerable as they were not seated upright [16].

It is also interesting to note, Gadbury-Amyot and Williams [19] stated that dental anxiety could result in longer intervals between dental visits, poorer oral function, esthetics and

higher frequency of oral symptoms. These results suggest the need for proper counseling of patients on dental procedures. This could possibly calm patients' nerves, reducing the harboring of anxiety [19].

In this study, there was a significant association between sex and dental anxiety as well as experience with dental care and dental anxiety. More females experienced high to extreme levels of anxiety, while males experienced low to moderate levels of dental anxiety. These results are similar to studies done by Farooq and Ali [20] and Gadbury-Amyot et al [19], where females reported higher levels of dental anxiety than males. Similarly, in a study by Heidari et al [21] analyzing 'Oral health status of non-phobic and dentally phobic individuals,' they found that participants reporting dental anxiety were mostly women [21]. Ghanaian studies by Ofori et al., [9] and Okang et al. [13], had similar results with females also reporting higher levels of dental anxiety and fear than men. But these findings may be true mostly because women are more likely to seek treatment and utilize healthcare services than men and therefore record more cases of anxiety than men. In a study by Thompson et al.,[22] they concluded that women reported that they would visit a family physician in response to both physical and mental health concerns to a greater extent than men did [22]. Similarly, Farooq and Ali [20] noted that females tend to be more anxious in difficult situations than men, hence the reason for high dental anxiety among them. Furthermore, studies carried out by Milgrom et al [23] indicated that women are more likely to admit their fears and anxieties than men.

In this study, majority of participants reported satisfactory experiences from their previous visits to dental clinics while minority of participants reported that their previous experiences at dental clinics were fearful. It was found that there was significant association between patients who had previous dental experience and dental anxiety. In this study 84 % participants with previous experience with dental care had low to moderate levels of dental anxiety, while 50% of those without experience with dental care had high to extreme levels of dental anxiety. The differences seen can be attributed to better knowledge on the importance of oral care and possible previous pleasant experiences among returning patients. But in a study by Locker et al [24], results showed that the relationship between previous dental experiences and high dental anxiety was strong. In their study, those who experienced dental anxiety had previous painful experiences (71%), frightening (23%) and embarrassing experiences (9%). These anxiety-inducing experiences manifested in feeling faint, fainting or having a panic attack while at the dental clinic [24].

These varying perspectives according to the studies illustrated by Locker [24] demonstrate that some dental procedures are not pleasant but regular visits to the dentists may result in early detection of such problems or prevention of same.

CONCLUSION

The study found great levels of dental anxiety among respondents visiting the University of Ghana Dental School Clinic. There was 54 % prevalence of moderate to extreme dental anxiety, confirming the results of studies by [9;13]. The most commonly reported causes of dental anxiety were from the sound and feel of the drill/handpiece, followed by injection. With respect to factors influencing dental anxiety, there was significant association between sex and dental anxiety as well as experience with dental care and dental anxiety. Findings from this study may provide useful information for the dental team at the University of Ghana Dental School Clinic and provide insight into dental anxiety that may be experienced by patients.

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