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## SHORT COMMUNICATION

# An evaluation of the sociodemographic determinants of dental anxiety in patients scheduled for intra-alveolar extraction

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**Background:** Studies on anxiety in patients having intra-alveolar extraction as well as the effect of patient's sociodemographic characteristics influencing level of associated anxiety are few in our environment. The aim of this study was to statistically analyze the sociodemographic determinants of dental anxiety in patients scheduled for intra-alveolar extraction.

**Methods:** A cross-sectional study was conducted among 93 consecutive patients attending the outpatient clinic of the Department of Maxillofacial Surgery, University of Benin Teaching Hospital for intra-alveolar extraction in the months of November and December 2013. An interview-based questionnaire, Corah Dental Anxiety Scale Revised (DAS-R), was administered to evaluate levels of dental anxiety. Sociodemographic characteristics of the subjects were recorded. Descriptive statistics and regression models were done with the independent variables (sociodemographic factors) and the dependent variable being the DAS-R. A  $P < 0.05$  was considered significant.

**Results:** The internal consistency of the scale used as determined by Cronbach alpha was 0.76. Mean DAS score was  $8.12 \pm 2.58$ . Dental anxiety and age of subjects showed significant inverse relationship. Females had a higher mean DAS score (8.76) than the males (7.37) ( $P = 0.006$ ). Residence (urban/rural) was not statistically significant. Singles reported the highest DAS score (9.41) ( $P = 0.006$ ). The educational level attained was significantly related to dental anxiety ( $P = 0.005$ ). Those with secondary school education had the highest DAS score (9.26). Class V social status had the highest mean anxiety score ( $P = 0.012$ ). Stepwise linear regression showed that the best predictors for dental anxiety were sex ( $P = 0.008$ ) and marital status ( $P = 0.026$ ).

**Conclusion:** This present study demonstrates that sex and marital status are the predictive factors for dental anxiety in the overall management of patients indicated for intra-alveolar extraction.

**Keywords:** sociodemographic; determinants; dental anxiety; intra-alveolar extraction

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Dental anxiety is historically deeply rooted in people (1) and has been found to be closely related to dental fear. Fear is an unpleasant emotion or effect consisting of psychophysiological changes in response to realistic threat or danger to one's own experience (2). It is an emotional response to objective danger. Anxiety and its associated symptoms, however, are anticipatory in nature, that is, they are often felt when a stimulus is not present or readily identifiable (2, 3).

The anxious dental patient requires extra management skills from the dentist to allow for proper and effective treatment and follow-up. It has been reported that patients were more anxious when their treatment involved invasive procedures such as oral surgeries (4). The prevalence of dental anxiety is as varied as the studies carried out with

prevalence rate ranging from as low as 4.2% to as high as 42% (4–6). Various factors have been attributed to dental patients having anxiety and these include socio-demographic, nature of dental treatment, behavioral, and psychological variables (7–9).

Dental anxiety has been previously assessed using the Corah Dental Anxiety Scale, Revised (DAS-R) and the scale is considered a simple, easy to score, short, valid, and reliable test for dental visit associated anxiety (10, 11).

Generally, studies (7, 12, 13) on anxious dental patients have been approached from relationship of anxiety to the various treatment options available in the specialties of dentistry. However, there appears to be paucity of literature on the effect of the patients' sociodemographic variables on their degree of anxiety in Nigeria. The aim of

this study was therefore to determine the effect of socio-demographic variables on dental anxiety among patients attending the oral and maxillofacial outpatient clinic for extraction at the University of Benin Teaching Hospital, Benin City, Nigeria.

## Materials and methods

A personal interview questionnaire-based cross-sectional study was conducted between November and December 2013 among consecutive patients attending the outpatient clinic of the Department of Oral and Maxillofacial surgery for intra-alveolar extraction. Patients 18 years and older were recruited. Ethical approval was obtained from the research ethics committee of the hospital and informed consent was obtained from each study participant.

The sociodemographic characteristics of the patients such as age, sex, marital status, level of education, area of residence, and number of previous dental visits was recorded. The socioeconomic status of study subjects was based on a social classification described by Opeodu and Arowojolu (14).

Class I = Executive managers, company directors, professionals (doctors, lawyers, engineers), university professors, and traditional chiefs.

Class II = Civil servants, nurses, professional teachers, secretaries, clergymen, businessmen, and pensioners.

Class III = (Semi-skilled)-tailors, bricklayers, carpenters, typists, sewing mistresses, clerks, housewives.

Class IV = (Unskilled) – messengers, roadside traders, cleaners, night-guards, and farmers.

Class V = Students

Dental anxiety was measured using the DAS-R. Patients' subjective reaction to four dental situations was assessed: 1) anticipating a visit to a dental clinic, 2) waiting in the dentist's office for treatment, 3) drilling of teeth, and 4) scaling of teeth. Five possible answers in an ascending order from (a) to (e) are provided, each question thus carrying a possible maximum score of 5, with a total possible maximum score of 20 for the entire scale. Anxiety ratings were classified as: A total score of 4 to 8 = no anxiety, 9 to 12 = moderate anxiety, 13 to 14 = high anxiety, and 15 to 20 = severe anxiety. A pretest involving 25 patients was conducted to determine the internal consistency of the questionnaire (Cronbach alpha = 0.76). Subjects who had DAS scores higher than 15 were administered the dental concern assessment form designed by Clarke and Rustvold (10).

The data were analyzed using SPSS version 17 software for Windows. Descriptive statistics, independent *t*-test, and ANOVA were performed. Stepwise linear regression was done with the independent variables being age, sex, occupation, marital status, educational level, and social class, and the dependent variable being the DAS score. The level of significance was set at  $<0.05$ .

## Results

The analysis included 93 subjects indicated for intra-alveolar extraction. The mean age of subjects was  $29.6 \pm 8.2$  years (range 18–54 years). There were 50 females (53.8%) and 43 (46.2%) males. Most of the participants were married (61.3%), with tertiary level of education (51.6%) and resided in urban centers (69.9%). The mean DAS score of study subjects was  $8.12 \pm 2.58$ .

Table 1 shows the demographic characteristics and associated anxiety score of the study population. The mean anxiety score was statistically significant among the age groups ( $P = 0.000$ ). The highest DAS score of 12.1 was recorded in those below 20 years of age. Subjects older than 40 years had the least mean anxiety score of 7.74. A multiple comparison test shows that the increased level of dental anxiety reported among patients less than 20 years was responsible for the significant differences observed between the age groups (Table 2). There was

**Table 1.** Sociodemographic variables of subjects and associated mean DAS scores

Variable	<i>n</i> (%)	DAS mean $\pm$ SD	<i>P</i>
Age range (years)			
<20	16 (17.2)	$12.1 \pm 2.55$	0.000
21–30	43 (46.2)	$9.30 \pm 0.55$	
31–40	28 (30.1)	$7.86 \pm 1.98$	
41–50	6 (6.5)	$7.74 \pm 2.53$	
Sex			
Male	43 (46.2)	$7.37 \pm 1.88$	0.006
Female	50 (53.8)	$8.76 \pm 2.84$	
Residence			
Urban	65 (69.9)	$8.08 \pm 2.37$	0.827
Rural	28 (30.1)	$8.21 \pm 2.91$	
Marital status			
Single	32 (34.4)	$9.41 \pm 2.24$	0.003
Married	57 (61.3)	$7.47 \pm 2.50$	
Divorced	1 (1.1)	$6.00 \pm 0.00$	
Widowed	3 (3.2)	$7.33 \pm 0.58$	
Level of education			
Informal	8 (8.6)	$8.25 \pm 2.49$	0.005
Primary	10 (10.8)	$6.10 \pm 2.73$	
Secondary	27 (29.0)	$9.26 \pm 2.54$	
Tertiary	48 (51.6)	$7.87 \pm 2.22$	
Social class			
Class I	6 (6.5)	$8.00 \pm 2.76$	0.012
Class II	32 (34.4)	$7.75 \pm 2.19$	
Class III	15 (16.1)	$8.47 \pm 1.60$	
Class IV	12 (12.9)	$6.25 \pm 2.42$	
Class V	28 (30.1)	$9.18 \pm 2.87$	
Previous dental visit			
None	46 (49.9)	$7.80 \pm 2.67$	0.209
<5	39 (41.9)	$8.21 \pm 2.22$	
>5	8 (8.6)	$9.50 \pm 2.93$	

**Table 2.** Tukey–Kramer multiple comparison test for DAS score between the age groups

Comparison	Difference	<i>q</i>	<i>P</i>
Group A vs. Group B	2.800	8.099	<0.001
Group A vs. Group C	4.240	11.460	<0.001
Group A vs. Group D	4.360	7.715	<0.001
Group B vs. Group C	1.440	5.023	<0.01
Group B vs. Group D	1.560	3.032	>0.05
Group C vs. Group D	0.120	0.226	>0.05

Group A: <20 years; Group B: 21–30 years; Group C: 31–40 years; Group D: 41–50 years.

a statistically significant difference ( $P=0.006$ ) in the anxiety level between both sexes. Females reported a higher DAS score (8.76) compared to the males (7.37).

The area of residence did not significantly influence the anxiety level though the mean DAS score of rural dwellers (8.21) was slightly higher than those of urban dwellers. Marital status showed a significant relationship with reported level of dental anxiety ( $P=0.003$ ). Those of single marital status had the highest mean DAS score (9.41) of the study population. The level of education attained by the cohort showed a significant difference ( $P=0.005$ ) in the reported DAS score. Patients with secondary school education had the highest mean DAS score of 9.26 and the lowest DAS score was seen in those with primary school education (6.10).

There was a significant difference in anxiety levels recorded among the various social class of subjects studied. Social class IV reported the lowest mean anxiety score (6.25) whereas social class V had the highest mean anxiety score of 9.18. Subjects who had visited the dental clinic more than five times were found to report higher anxiety levels (9.50) though it was not significant difference.

Table 3 shows the step wise linear regression analysis with dental anxiety as dependent variable and age range, sex, marital status, educational level, and social class as significant independent variables. The best predictors for dental anxiety were sex and marital status ( $P=0.008$  and  $P=0.026$ , respectively).

**Table 3.** Stepwise linear regression of predictors of dental anxiety

	<i>R</i>	<i>R</i> <sup>2</sup>	df	Beta	<i>t</i>	<i>P</i>
Sex	0.276	0.076	1	0.276	2.729	0.008
Educational level				0.087	0.856	0.855
Marital status				0.226	2.266	0.026
Social class				0.122	1.199	0.234
Age range				0.138	1.355	0.179

## Discussion

Dental anxiety is of great concern to the practice of contemporary dentistry as it affects the provision of quality care resulting from irregular attendance of clinics and delay in seeking treatment. The mean DAS score of  $8.12 \pm 2.58$  for our study population was comparable to that reported by Udoe et al. (7) when the mean DAS score of their study population undergoing extraction was considered (8.38). It was similarly comparable to a study in Germany (8.60) and much lower than those in Israel (9.40) and Russia (10.0) (15–17).

Studies (7, 18) have shown that dental anxiety decreases with increase in age. It has been adduced that this inverse relationship could be because of the ability of older people to rationalize the situation and to the overall decline in general anxiety with increasing age (19). Our findings agree with these earlier studies that the elderly have the least anxiety. We found anxiety to be highest within the second decade. This could be attributed to difficulty in adapting to the environment as well as accepting the treatment.

Although Locker and Liddell (18) and Kanegane et al. (12) reported no relationship between sex and dental anxiety, other studies have reported females to have higher mean DAS scores compared to males (13, 20). This goes in line with our study which found a statistically significant difference in anxiety levels expressed by females compared to males. This might be because females are more disposed to show and report their anxieties than males. Psychological studies indicate that women have a lower pain threshold than men, and low tolerance for painful stimuli predisposing to dental anxiety (13).

Studies (21, 22) have reported higher anxiety levels among rural dwellers compared to their urban counterparts. Our study supports this position though the difference was not statistically significant. This could be attributed to poor or lack of dental service amenities associated with rural settings. Indeed, it has also been reported that in the non-deprived areas more people attended dentist asymptotically, whereas those in deprived areas tended to seek dentist when a dental problem occurred (22).

Bulem et al. (23) posited that marriage and having children appeared to increase dental fear and anxiety. Our study did not support this assertion as the singles had the highest mean DAS score (9.41) compared to their married counterparts (7.47). This could be because of the supportive role of family that helps patients cope with their health conditions.

Patients with higher educational levels may have better oral health or visit the dentist more frequently (13). Studies have demonstrated that increased educational levels result in decreased dental anxiety (13, 24). Our findings also support these earlier studies as majority of the subjects with tertiary level of education had no anxiety (DAS <9). It is presumed they would be more knowledgeable about dental issues by way of adequate use of

resource materials to gather information and consequently be able to comprehend the nature and extent of the dental procedures.

Kulkarni et al. (25) reported socioeconomic status as an important indicator for regular dental visits. Their study showed that 37.93% of subjects in India below poverty line were regular visitors to the dentist and 45.45% above poverty line were regular dental visitors. It has been found that subjects, who visit the dentist for chiefly curative function and not a preventive one, are generally irregulars and has a low socioeconomic status and these peoples place a higher priority on reassurance from the dentist than on his professional skills (26).

Regularity of dental attendance is reported to be associated with the level of education and expressed anxiety. The higher educated and less anxious respondents are more likely to be regular (25). However, a study (27) carried out among Lithuanians contrasts with these assertions. Those of low socioeconomic status were found to be more regular visitors to the dental clinic. Our findings did not support the inverse relationship between socioeconomic status and dental anxiety as observed in the study by Kulkarni et al. (25). Our study showed that students, who made up the class V social status, had the highest reported cases of anxiety. This could be adduced to the fact that students fall within the age range commonly associated with anxiety as reported by previous studies (7, 28).

Previous unpleasant dental experience results in heightened anxiety among dental patients. It has been suggested that the more dental visits, the less the level of anxiety (1). Our study does not support the latter as those with the most previous dental visits recorded the highest mean DAS score. Interestingly, the least mean DAS score was recorded in those who had never visited the dental clinic. This finding is in accordance with the studies by Liddell et al. (19) and Brukiene et al. (27) that those who had no previous dental treatment were less anxious than others who had had invasive dental treatment. Furthermore, the number of subjects with more than five previous visits is too low to be able to reach conclusions.

Hawamdeh and Awad (29) reported that dental anxiety was not associated with sex and frequency of dental visits, but feelings of lack of control and pain anticipation were strong predictors of anxiety. Our finding was not in accordance with theirs as we found sex to be a significant predictor of dental anxiety. This was in consonance with the study by Bulem et al. (23).

## Conclusion

Sociodemographic variables such as age, marital status, educational level, and social class of subjects were found to significantly affect patients' levels of dental anxiety. Furthermore, sex and marital status were seen as the predictive factors for dental anxiety in patients. We advocate that sex and marital status should be of utmost

consideration by the surgeon in the overall anticipation and management of anxiety in the dental patient.

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