Dental Anxiety and Pain in Clinical Practice: A Survey among Urban Adults

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SUMMARY

Objective: To investigate the relationship between dental anxiety and pain of dental treatment among urban adult patients attending a Nigerian tertiary hospital. In addition, to identify the influence of age and sex on dental anxiety and pain of dental tratment.

Methods: Fifty-one patients, aged 18 to 70 years who were first time dental attendees were studied for anxiety and pain levels by completing questionnaires on dental anxtiey and visual Analogue Scales.

Results: Fifty-one patients aged 18 years and above were surveyed. Majority of the patients (76.5%) were below 40 years of age. More patients 40 years and above (66.7%) had mild pain while more patients less than 40 years of age (64.1%) had moderate or severe pain. Mild pain was found more in men (70.0%) than in women (25.8%), while moderate or severe pain was found more in women (84.2%) than in men (30.0%). Moderate or severe pain (62.1%) was more amongst patients with moderate or high dental anxiety, while mild pain (90.9%) was more amongst patients with mild Dental Anxiety. Most men had mild anxiety level (80.0%) than women (48.4%), while more women (51.6%) had moderate or high Dental anxiety than men (20.0%).

Conclusion: Pain of dental treatment was severer in younger patients and women. Also, dental anxiety was worse in women, while pain perception was higher in patients who were more dentally anxious.

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Key words: Dental anxiety, visual analogue scale, urban adult, pain level.

INTRODUCTION

Dental anxiety may be defined as a state of unpleasant feelings combined with an associated feeling of impending doom or danger from within rather than from without [1]. Dental fear is a response to a real or active threat which is usually brief. While the danger is external, the stimulus is readily identified, and the unpleasant physiologic body feelings that are associated with this emotion pass as the danger passes[2]. On the other hand, dental phobia is the extreme state of anxiety or fear that make people panic when they think of dental appointment[3]. Pain is defined by the International Association for the Study of Pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage[4].

In the dental set up, dental anxiety is a major component of distress to patients[5]. Fear of dentistry in general, and especially particular aspects of dental treatment affects a significant proportation of people of all ages and all social classes and for many years, has been recognised as a problem area in clinical dentistry [6,7]. Review of the literature shows that the origin of dental anxiety is most frequently associated with direct traumatic dental experiences in early childhood [8,9]. Contrariwise, first time dental attendees may not be exempt from dental anxiety; neither does a negative dental experience necessarilly lead to dental anxiety[10]. The "latent inhibition" theory for instance, states that a history of positive or neutral dental experience may serve as buffer against the development of traumatic association or experiences[11]. For both new and old patients, painful experiences while receiving dental treatment has been suggested as the main reason for dental anxiety, followed by fear of needles[12]. Administration of a local anaesthetic is common in routine dental practice. Though an innocuous technique, perception of pain and anxiety may vary amongst patients. Such an experience may keep patients away from seeking care, and if they seek, are more difficult to manage [13]. It is also thought to be a factor in broken and cancelled appointments, deterioration of oral and dental health [14]. No significant difference is found when pain levels of those with high dental anxiety are compared with those with moderate levels of dental anxiety[15,16]. However, Arntz *et al*[17] reported that anxious people tend to over estimate anticipated pain.

Certain factors, such as dental experience (first or regular dental attendees), age of patient, personality type and patient's memory process have been suggested to affect level of anxiety[15]. Incidence of dental anxiety varies from 12.2% in the 18 to 24 age range to 1.7% among those aged 65 years and above[18]. Udoye et al[13] reported an inverse relation between age and dental anxiety in their earlier study. Likewise, pain and age[13]. Females reported higher levels of dental anxiety and they exhibit less tolerance for pain at given stimulus intensity than men[13]. Anxiety levels may vary across races, the score being highest in Puerto Ricans, followed by Whites and least by Blacks[20,21].

Literature on the current subject is sparse amongst the Nigerian Ibos in the Southeast. Dental anxiety may cause management problems during treatment. Fore knowledge of patient's anxiety level predicts behaviour in dental chair[13]. A

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clinician will therefore be better equipped with measures for alleviating individual patient's anxiety. The purpose of the study was to investigate the relationship between dental anxiety and pain of dental treatment among urban adult patients attending a Nigerian tertiary hospital. In addition, to identify the influence of age and sex on dental anxiety and pain of dental treatment.

PATIENTS AND METHOD

Participants:

The study was conducted on patients referred from Oral Diagnosis Unit to the Restorative Dentistry Clinic at the University of Nigeria Teaching Hospital (UNTH) during the months of June and July, 2005. Fifty-one consecutive patients, age 18 years and above of both genders, were recruited from the clinic schedule on daily basis. Only first time dental attendees were recruited in the study. Excluded were patients that would not receive local anaesthetic for any Restorative procedure, those with history of any previous dental treatment or any procedure that could have affected their level of anxiety or pain perception. Those with any evidence of chronic disease, oral pathoses, or pregnancy were also excluded from the study.

Measures:

Dental anxiety was measured using Norman Corah's Dental Anxiety Scale [22,16] (DAS). The DAS is a 4 item Scale that measures anxiety about dental treatment. Values for each answer range from 1 to 5, giving a total range of 4 to 20 for the entire measure. The dental anxiety scale was scored by adding the individual item scores of each patient. Corah's DAS has been tested and found to be valid and reliable in assessing patient's anxiety level in dental situation similarly, patient's pain level was measured through use of a pain scale (Visual Analogue Scale, VAS). It is a horizontal line, 100mm in length in which are anchored the following word descriptors: None, mild, moderate or severe, depicting increasing pain levels.

Procedure:

From outset, patients were made to know that participation was voluntary. Dental anxiety and pain constructs were measured through the completion of two questionnaires (DAS and VAS). Before administering the DAS measure, the patient was given the opportunity to withdraw from the study if he/she felt uncomfortable in completing the measure. The DAS measure was administered to the patient sitting comfortably in the dental chair. Each patient completed the DAS questionnaire alone in the clinic. After this, the patient was administered local anaesthetic in the mucobucal fold of the upper jaw, after a careful retraction. No anaesthetic was given in the palate because of varied responses to palatal injections in clinical practice. The anaesthetic administration involved injection of a 1.8ml of 2% lignocain hydrochloride (with epinephrine, 1.80,000) using a 2.5mm, 30 gauge dental needle. After 1 - 2minutes, the patient was given a pain scale (VAS) to mark the descriptor (none, mild, moderate or severe; in that order) that best corresponded with his/her perception at the time. All assessments were done by only one researcher (the first author). In addition, patient's age and sex were recorded.

Analysis:

Analysis of data done with the SPSS for Windows, Version 6. Student t-test was used to compare means of appropriate variables, while Chi-square (x^2) was used to assess independence of categorical variables. The critical level of significance was at $P \leq 0.05$, while the confidence interval was 95%.

RESULTS

A total of 51 patients participated in the study. There were 20 males (39.2%) and 31 females (60.8%). The age range was 18 to 70 years, while the mean age was 32.9 $\pm$ 12.2. The mean age of the males was 31.8 $\pm$ 8.8 while that of the females was 33.7 $\pm$ 14.1. The mean DAS was 7.90+ 2.6 while the range was 4 - 14. In addition, the mean pain level was 4.02 $\pm$ 1.54 while the range was 1 to 8.

Most of the patients 39(76.5%) were below 40 years of age. Patients aged 40 years and above (66.7%) had more mild pain than those less than 40 years old (35.9%). Patients who are less than 40 years had more moderate or severe pain (64.1%) than those 40 years and above (23.3%). Furthermore, 25.8% of females had mild pain levels as against 70.0% males. However, more females (74.2%) had moderate or severe pain level than males (30.0%) (Table1).

The DAS showed a negative correlation with age (Pearson's Correlate = - 0.24). The association between DAS and pain level was statistically proven (p=0.000). Out of 20 patients that had moderate or high DAS, 62.1% had moderate or severe pain level, while 9.1% had mild pain level. Similarly, out of 31 patients that had DAS, 90.9% had mild pain level, while 37.9% had moderate or severe pain level (Pearson's Correlate = 0.06). Females were observed to be more dentally anxious than

Table 1: Pain Level by Age and Sex

Pain Level	(Age(years)		Sex	
	< 40 N = 39(%)	≥40 N=12 (%)	Female N =	Male N =
Mild	14 (35.9)	8(66.7)	8(25.8)	14(70.0)
Moderate or Severe	25(64.1)	4(33.3)	23(74.2)	6(30.0)

Pain level by Age: $x^2 = 3.54$; df = 1; p = 0.06
Pain level by Sex: $x^2 = 9.68$; df = 1; p = 0.0002*
Key: Mild = 1 - 3; Moderate = 4 - 7; Severe = 8 - 10

Table 2: Das by Pain Level, Age and Sex

Das	Pain Level		Age (Yrs)		Sex	
Mild Moderator High	Mild (%)	Moderate or Severe (%)	<40 (%)	≥40 (%)	Female (%) N=31	Male (%) N=20

DAS by Pain level: $X^2 = 314.73$; df=1; p = 0.000*
DAS by Age: $X^2 = 1.33$; df=1; p = 0.249
DAS by Sex: $X^2 = 5.10$; df=1; p = 0.024*
Key: DAS = Dental Anxiety Score Mild DAS = 1 - 8; Moderate DAS = 9 -12; High DAS = >13.

males (p = 0.024; Pearson's Correlate 0.36). Males (80.0%) had more mild DAS than females (48.4%), while females (51.6%) had more moderate or high DAS than males (20.0%) (Table 2).

DISCUSSION

The current study is limited by the study's sample size and other confounding factors capable of affecting dental anxiety which could not be excluded during sampling. A previous study [13] using Corah's Dental Anxiety Scale (DAS) evaluated the levels of dental anxiety among patients undergoing various dental treatments in a Nigerian teaching hospital. DAS is a 4 item scale originally developed for use in adults [5,19]. The scale enjoys the merits of being brief and quick to administer. [20] On the other hand, the VAS [21] is a simple instrument for rating pain experience in a very simplified and unambiguous way. The values may not easily be directly measured. As such, the assessment may be highly subjective. The scale may be of most value when looking for a change within individuals rather than across a group of individuals at one point.

The age and sex distribution in the present study is consistent with those of Maggirias et al [18] and Udoye et al [13]. Most females consistently had moderate or severe pain level than men. This may be linked to the females' psychological make-up and their easy susceptibility to stress than men. Younger patients' proneness to moderate or severe pain in the current study may be linked to their poorer pain rationalization ability.

The significant association between dental anxiety and pain levels found in the current work conforms with that of Wardle[6]. However, dental anxiety may not be related to the memory of actual pain felt. Arntz et al [17] reported that experienced pain may be less than the anticipated pain in highly anxious patients. Also early experience of a painful treatment might cause a corresponding heightened anxiety [23]. The current study's report of a decreasing DAS as aged increased agrees with the finding of Udoye et al [13]. Dental anxiety may arise during adulthood, younger adults being particularly vulnerable. Maggirias et al [19] reported that DAS varies from 12.2% in those aged 18 to 24 years, to 1.7% among those aged 65 years and above. It is believed that anxiety is more common among the younger than in older population[13]. This may be linked to differences in historical and cultural backgrounds.

Previous study[24] indicated that women had higher levels of anxiety, as well as having less tolerance for pain at a given stimulus than men. The present work agrees with the above report. However, Pela et al [25] in their report found no significant difference in anxiety levels amongst sexes. The mean DAS (7.90+ 2.61) in the current study was slightly higher than that of other study (7.33+3.20)[13], but lower than that of Thompson et al (9.64+ 3.45)[36] among Austratians. The DAS differences acros studies may be linked to the type of population studied, population's dental experience or cultural practices.

CONCLUSION AND RECOMMENDATION

Severe pain of dental treatment was more in younger patients. Likewise, moderate or severe pain in women. Pain perception was higher in more dentally anxious patients while women had higher DAS. For predictable treatment, attention should be paid in relieving pain of dental treatment in women and in younger patients, as well as adopting measures to reduce anxiety in women gender more prone to anxiety.

REFERENCES

1. Weiner A. A., Sheeham D. V., Differentiating anxiety panic disorders from psychologic dental anxiety. *Dent Clin North Am* 1988; **32:** 823–840.
2. Weiner A. A. The basic principles of fear, anxiety and phobias as they relate to the dental visit. *Quintessence Int Dent Digest* 1980; **11:** 119–123.
3. Rubin G. J., Slovin M., Krochak M. The psychodynamics of dental anxiety and dental phobia. *Dental Clin of North Am* 1988; **32:** 647–656.
4. The International Association for the Study of Pain. http://www.ha/cyon.com/iasp Assessed November 29, 2006.
5. Corah N. L., Gate E. N., lllig S. J. Assessment of a dental anxiety scale. *J Am Dent Assoc* 1978; **97:** 818–819.
6. Wardle J. Fear of dentistry. Br. J Med Psychology 1982; **55:** 119–126.
7. Bergins M., Berggren U., Bogdanovo, Hakeberg M. Dental anxiety among adolescents in St. Petersburg, Russia. *Eur. J Oral Sci* 1997; **105:** 117–122.
8. Locker D., Shapiro D., Liddell A. Negative dental experiences and their relationship to dental anxiety. *Community Dent Health* 1996; **13:** 86–92.
9. Locker D., Liddell A., Dampster L., Shapiro D. Age of onset of dental anxiety. *J Dent Res* 1999, **76:** 790–796.
10. Wijk van A. J., Hoogstraten J. Experience with dental pain and fear of dental pain. *J Dent Res* 2005; 84:947 - 950.
11. Davey G. C. Dental phobias and anxieties: evidence for conditioning processes in the acquisition and modulation of a learned fear *Behav Res Ther* 1980; **27:** 51–58.
12. Enkling N, Marwinski G.Johren P. Dental anxiety in a representative sample of a large German City. *Clinical Investigation* 2004; **10:** 84–91.
13. Udoye CI, Oginni AO, Oginni FO. Dental anxiety among patients undergoing various dental treatments in a Nigeria Teaching Hospital. *J Contemporary Dent Pract* 2005; **6:** 091–098.
14. Gatchel R. J., Ingersoll B. D., Bowman L. The prevalence of dental fear and avoidance: a recent survery shorty. J *Am Dent Assoc* 1988; **116:** 641–647.
15. Gillahan J. E. The cause of dental anxiety may not be pain, http://cleringhorse.missouriwestrn.edu/manuscripts/336asp 11128/2005
16. Van Buren J, Kleinknecht RA. An evaluation of the McGill pain questionnaire for use in dental pain assessment. *Pain* 1979; **6:** 23–33.
17. Arintz A.,Van Eck M., Heijmans M. Predictions of dental pain: The fear of any expected evil is worse than the evil itself. *Behav Res and Ther* 1990; **28:** 29–41.
18. Maggirias J., Locker D. Five year incidence of dental anxiety in an adult populaiton. *Community Dent Health* 2002; **19:**173 – 179.
19. Liddel A., Locker D. Gender and age differences in attitudes to dental pain and dental contrat. *Community Dent Oral Epidemiol* 1997; **25:** 314–318.
20. Law S., Britten N. Factors that influence the patient centeredness of a consultation . *Br J Gen Pract* 1995; **45:** 520 –524 .

21. Weisnberg M. K veindle M. L., Schachat R. Pain, anxiety and arthritis in Black, White and Puerto Rican patients. *Psychosom Med* 1975; **37:** 123–135.
22. Corah N. L. Development of a dental anxiety scale. *J. Dent Res*. 1969; **48:** 596.
23. Klepac R. K., Dowling J., Hauge G. Characteristics of clients seeking therapy for the reduction of dental avoidance: Reactions to pain. *J of Beh. and Experimental Psychiatry* 1982; **13:** 293–300.
24. Law S., Britten N. Factors that influence the patient centeredness of a consultaion. *Br J Gen Prarct* 1995; **45:** 520–524.
25. Pela O. A., Reynolds C. R. Cross cultural application of Revised children's manifest Anxiety scale: normative and reliability data for Nigerian primary shcool children. *Psychological Reports* 1982; **51:** 1135–1138.
26. Thompson M. W., Stewart J. F., Carter K. D. Dental anxiety among Australians. *Int Dent J* 1996; **46:** 320–324.