



## EVALUATING THE ANXIETY LEVELS IN PATIENTS UNDERGOING DENTAL EXTRACTION USING BLOOD PRESSURE

### Surgery

<b>Dr. S. P. Indra Kumar*</b>	Senior Lecturer ,Department Of Oral And Maxillofacial Surgery,Vivekanandha Dental College For Women *Corresponding Author
<b>Dr. R. J. Aravind</b>	Professor, Department Of Oral And Maxillofacial Surgery, Vivekanandha Dental College For Women
<b>Dr. T. Kavin</b>	Professor, Department Of Oral And Maxillofacial Surgery, Vivekanandha Dental College For Women
<b>Dr. R. Narendar</b>	Reader , Department Of Oral And Maxillofacial Surgery,Vivekanandha Dental College For Women
<b>Dr. E. Gayathri Priyadharshini</b>	Senior Lecturer, Department Of Periodontics ,Vivekanandha Dental College For Women
<b>M. Jeeva Sneha</b>	Intern

### ABSTRACT

**BACKGROUND:** Anxiety is defined as a feeling of apprehension, uneasiness, uncertainty or dread resulting from a real or perceived threat. The major obstacle in pursuing dental extraction is the anxiety towards dental treatment in patients undergoing extraction. Hence, it is very important to evaluate and manage anxiety during dental extraction.

**AIM** To evaluate the changes in the anxiety levels of the patients undergoing dental extraction.

**MATERIALS AND METHODS:** The prospective clinical study was conducted on 325 patients who underwent extraction in the department of Oral and Maxillofacial Surgery, Vivekanandha dental college, Namakkal, Tamil Nadu. Anxiety analysis was carried out with the help of hemodynamic changes (Systolic blood pressure-SBP and Diastolic blood pressure-DBP) at 5 occasions: Before starting the procedure, After administration of local anesthesia, Immediately after extraction, 5 minutes after extraction and finally, 10 minutes after extraction. Data collected were statistically analysed and results were obtained.

**RESULT:** The blood pressure samples collected immediately after entering the clinic, after administration of local anaesthesia and immediately after extraction were relatively high.

**CONCLUSION:** For any treatment to be successful dentist should be more considerate about feelings of patient of which anxiety is one of the important factor to be dealt with.

### KEYWORDS

Dental extraction, Hemodynamic changes.

### INTRODUCTION

The most common problem faced in dental extraction is the anxiety of patients regarding the pain and discomfort towards the treatment procedure. Anxiety towards dental treatment is a fairly common phenomenon. It is a problem in simple extraction and a factor in avoidance of extraction<sup>(1)</sup>. It is most commonly provoked by treatments involving anesthetic injection and use of the drill for tooth removal<sup>(2)</sup>. Pain is often considered as the etiology of dental anxiety.

However, advances in dentistry has made most of today's dental procedures less painful or even painless. The at most concern of the dentist towards patient is to minimize pain and anxiety during extraction procedure and to aid is faster healing and best post operative health. Fear and anxiety play an extensive role in post operative pain and patient recovery. Dental procedures such as administration of local anesthesia, extraction of tooth and minor surgical procedures can cause increased anxiety in patients which interferes with the systemic health post operatively. To avoid further complications it is the best to assess the anxiety levels during the procedure and treat the patient accordingly.

### MATERIALS AND METHODS

A prospective study was conducted among 325 patients who underwent dental extraction in the department of Oral and Maxillofacial surgery, Vivekanandha dental college for women, Namakkal, Tamilnadu during the academic years 2017-2020.

For each patient prior clinical history was taken, clinical examination was done. Each patient was informed about the study and only patients who are willing to participate in the study were included. Local anesthesia comprising of 2% lignocaine with vasoconstrictor was administered. The main duration of the procedure starting from the administration of local anesthetic solution to the completion of suturing ranges from 20-50 minutes.

Anxiety level of patients when recorded by analyzing the hemodynamic change (SBP & DBP) at 5 occasions such as :

1. Before starting the procedure
2. After administration of local anesthesia
3. Immediately after extraction
4. 5 minutes after extraction and finally
5. 10 minutes after extraction.

The data collected were statistically analysed and results were obtained.

### STATISTICAL ANALYSIS

Regression Statistics	
Multiple R	0.352716
R Square	0.124409
Adjusted R Square	0.115382
Error	0.828049
Observations	99

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	9.45004	9.45004	13.7822	0.000343
Residual	97	66.5095	0.68566		
Total	98	75.9596			

	Coefficient	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.570064	0.13822	4.12408	7.86E-05	0.29572	0.84440	0.29572	0.84440
	1	0.481529	3.71245	0.00034	0.20082	0.66222	0.20082	0.66222

### Results of anxiety levels of A and B

**Result of B and C**  
SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.592859
R Square	0.351482
Adjusted R Square	0.344796
Standard Error	0.674063
Observations	99

ANOVA				
	df	SS	MS	Significance F
Regression	1	23.88659	23.88659	52.5718
Residual	97	44.07301	0.45436	
Total	98	67.9596		

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.248537	0.101646	2.44512	0.01628	0.046798	0.45027	0.04679	0.45027
1	0.560771	0.077341	7.25064	1.01E-10	0.407271	0.71427	0.40727	0.71427

**Result of C and D**  
SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.074567
R Square	0.00556
Adjusted R Square	-0.00469
Standard Error	0.681426
Observations	99

ANOVA				
	df	SS	MS	Significance F
Regression	1	0.251839	0.251839	0.54235
Residual	97	45.04109	0.46434	
Total	98	45.29293		

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.630452	0.102756	6.13542	1.85E-08	0.42651	0.83439	0.42651	0.83439
1	0.05758	0.078186	0.73644	0.46323	-0.0976	0.21275	-0.0976	0.21275

**Result of D and E**  
SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.007466
R Square	5.57E-05
Adjusted R Square	-0.01025
Standard Error	0.646185
Observations	99

ANOVA				
	df	SS	MS	Significance F
Regression	1	0.002258	0.002258	0.00540
Residual	97	40.50279	0.41755	
Total	98	40.50505		

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.701729	0.097442	7.20150	1.28E-10	0.508334	0.89512	0.50833	0.89512
1	0.005452	0.074142	0.07353	0.94153	-0.1417	0.15260	-0.1417	0.15260

**RESULTS**

The blood pressure samples collected immediately after entering the clinic, after administration of local anaesthesia and immediately after extraction were relatively high when compared to samples collected 5 minutes and 10 minutes after extraction.

**DISCUSSION**

More than any other health sciences, dentistry has been associated with anxiety, fear and pain<sup>(3)</sup>. Most of the dental treatments are performed with use of local anaesthesia and an increase in Blood pressure is common even in normotensive patients<sup>(4)</sup>. Increase in blood pressure may be due to psychological and physiological stress, painful stimuli,

inability to cope with the procedure all of which can lead to anxiety. Emotional factors have potential influence on the oral cavity and body as well. Many oro-mucosal diseases may arise as a direct expression of emotions or indirect result of psychological alteration<sup>(5,6)</sup>. Anxious patients suffer from more intense post operative pain and shows higher psychological co-morbidity and incidence of post-traumatic stress reaction<sup>(7)</sup>. The commonest causes of pre-operative dental anxiety is extraction of tooth.

Many different scales, such as Corah's Dental Anxiety Scale (DAS), Kleinknecht's Dental Fear Survey (DFS), Spielberg's state/trait anxiety inventory (STAI), Litt's oral surgery confidence questionnaire (OSCQ), Gale's ranking questionnaire (RE), Stouthard's dental anxiety inventory (DAI) Weiner's fear questionnaire (FQ), Morin's adolescents fear of dental treatment cognitive inventory (AFDTCI), The visual analog scale (VAS) and the original questionnaire have been used to qualitatively or quantitatively measure dental anxiety<sup>(7)</sup>. However the most feasible and easiest method of measuring changes in anxiety level is by measuring the blood pressure before, during and after the extraction procedure. By measuring the levels during the treatment procedure the dentist can be more aware of the patient's anxiety and can take possible measures to ease the patient.

Several studies have shown that younger people tend to have more severe dental anxiety than older people<sup>(8,9)</sup>. However, in this study there was no difference in anxiety levels in accordance with age. In the present study systolic and diastolic blood pressure remained significantly increased before and during extraction and a drop in blood pressure was seen after the extraction in most of the cases. These findings are consistent with the study by Brand<sup>(10)</sup> and Yoshito Nakamura<sup>(11)</sup>. As per Brand et al changes in systolic and diastolic blood pressure are induced by patient's anticipation to scheduled treatment and the actual dental treatment itself.

Changes in blood pressure can be influenced by pain and patient-related factors such as age, gender, hypertension, previous experience with dental treatment and psychological response<sup>(12)</sup>. However according to Nicholas blood pressure is always highest at the start of the surgical procedure, as a result of endogenous adrenaline release caused by patient anxiety or fear of visiting the dentist<sup>(13)</sup>.

For a successful dental treatment, a gentle, supportive, professional, sympathetic, quiet, and more considerate approach should be followed when managing patients with dental anxiety. On their first visit, patients should be dealt with more sensitively to avoid the increasing their anxiety and thus avoid their repulsion to dental care<sup>(14)</sup>.

Several studies suggested various techniques to reduce anxiety during extraction procedure. Some studies suggested that listening to music reduces the anxiety level during extraction<sup>(15,16)</sup>. In one of the recent studies by Myriam et al., the use of music was compared with acoustic control condition (rippling water) in the reduction of stress relief before the procedure, rippling water showed a better reduction of stress when compared to music<sup>(17)</sup>.

McCaul and Mallet developed a theory base on distraction technique, the patient is made to concentrate on the tip of toes so that they were not able to perceive the painful stimuli<sup>(18)</sup>. previous studies have shown that distraction captures the individual sense such as vision, hearing and touch such that active engage the individual emotions. idle distraction would involve multiple sensory modalities, active emotional involvement and participation of patient to complete with the signals from noxious stimuli<sup>(19,20)</sup>. A study conducted by Asl et al concluded that the virtual reality has a huge impact in reducing anxiety level when compared to other distraction techniques<sup>(21)</sup>.

Alteration in the mental status of an individual can be elucidated by assessment of blood pressure. from a psychological point of view, it is important to give patients the technique that will help them deal the type of surgery, especially when anxiety is involved so that the intervention takes place with a minimum of discomfort and recovery is as fast and complete as possible<sup>(22)</sup>.

**CONCLUSION**

For any treatment to be successful dentist should be more considerate about feelings of patient of which anxiety is one of the important factor to be dealt with. so, in order to control anxiety newer methods and treatment strategies are welcome in the field of literature and in

practice. This article will lay a strong base for the upcoming innovations to reduce anxiety in dental field.

## REFERENCES

1. Yusa H, Onizawa K, Hori m, Takeda S, Takeda H, Fukushima S, Yoshida H, Tsukuba. Anxiety measurements in university students undergoing third molar extraction. *Oral surg oral med oral path oral radiol endod* 2004;98:23-7.
2. Sneha Shitole, Mounesh kumar CD, Suresh KV, M I Parkar, pankaj Bajirao Patil, Ashwinirani S.R. Assessment of dental anxiety in patients undergoing surgical extraction of teeth: study from western Maharashtra. *British biomedical bulletin*; 2015;3:2:232-238.
3. Kleinknecht RA, Klepac RK, Alexander L.D. Origins and characteristics of fear of dentistry. *J Am Dent Assoc* 1973;86:842-8.
4. Vandana R Gadve, Ramakrishna Shenoi, Vikas Vats, Amit Shrivastava. Evaluation of anxiety, pain and hemodynamic changes during surgical removal of lower third molar under local anaesthesia. *Annals of Maxillofacial Surgery*; 2018;8;2:247-253.
5. Suresh KV, Gniger CC, Ahmmed YA, Kumar KCMramod RC, Nayak AG et al. Psychosocial characteristics of oromucosal disease in psychiatric patients: observational study from Indian dental college north Am J. *Med Sci* 2014;6:570-4.
6. Suresh KV, Shenai P, Chatra C, Rond YAA, Bilahari N, Pramod RC, et al. Oral mucosal diseases in anxiety and depression patients: Hospital based observational study from south india. *J. Ckin Exp Dent* 2015;7(1):e95-9.
7. Albert HB, Schuurs, Hoogstraten J. Appraisal of dental anxiety and fear questionnaires: a review. *Community Dent oral Epidemiol* 1993;21:329-39.
8. Elter JR, Strauss RP, Bech JD. Assessing dental anxiety, dental care use and oral status in older adults. *J Am Dent Assoc* 1997;128:591-7.
9. Locker D, Lidell AM. Correlates of dental anxiety among older adults. *J Dent Res* 1991;70:198-203.
10. Brand HS, Gortzak RA, Palmer-Boura CC, Abraham RE, Abraham-Impinjn L. Cardiovascular and neuroendocrine responses during acute stress induced by different types of dental treatment. *Int Dent J* 1995;45:45-8.
11. Nakamura Y, Mastsumura K, Miura K, Kurokawa H, Abe I, Takata Y, et al. Cardiovascular and sympathetic response to dental surgery with local anaesthesia. *Hypertens Res* 2001;24:209-14.
12. Nichols C. dentistry and hypertension. *J AM Dent assoc.* 1997;128:1557-62. [PubMed][Google Scholar]
13. Freeman R. A psychodynamic theory for dental phobia. *Br Dent J* 1998;184:170-2
14. Brand HS, Abraham-Injn L. Cardiovascular responses induced by dental treatment. *Eur J Oral sci.* 1997;104:245-52.
15. Bartlett DL. Physiological response to music and sound stimuli. In: Hodges DA, editor. *Hand book of music psychology.* Sam Antonio.. University of texas; 1996. p.343-85.
16. Hodges DA. Psychophysiological response to music. In: Juslin JA, Sloboda JA, Editor. *Handbook of music and emotion: theory, research, application.* new york: oxford university press; 2020. p.279-311.
17. Thoma MV, La Marca R, Bronnimann R, Finkel L, Ehlert U, Nater UM. The effect of music on the human stress response. *PLoS one* 2013;8:e70156.
18. McCaul KD, Malott JM. Distraction and coping with pain. *psychol bull* 1984;95:516-33.
19. Wismeijer AA, Vingerhoets AJ. The use of virtual reality and audio visual eye glass systems as adjunct analgesic techniques: A review of the literature. *Ann Behav med* 2005;30:268-78.
20. Slifer KJ, Tucker CL, Dahquist LM. Helping children and caregivers cope with repeated invasive procedures: how are we doing? *J Clin psychol* 2002;9:131-52.
21. Morris LD, Louw QA, Grimmer somers K. The effectiveness of virtual reality on reducing pain and anxiety in burn injury patients: A systematic review. *Clin J pain* 2009;25:815-26.
22. Lago-mendez L, Diniz-freitas M, senra rivera C, Seoane-pesqueira G, Ganbara-rey JM, Garcia-Garcia A. Post operative recovery after removal of a lower third molar : role of traid and dental anxiety. *oral surg oral med oral pathol oral radiol End od* 2009;108:855-60.