



THE IMPACT OF AUDIO-VISUAL AIDS ON ANXIETY AMONG PATIENTS UNDERGOING SURGICAL DENTAL EXTRACTION IN A RURAL COMMUNITY OF INDIA: A COMPARATIVE STUDY

Dentistry

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ABSTRACT

Anxiety is a common psychological issue experienced by many people, particularly when faced with perceived danger or threat. Dental anxiety, specifically related to surgical dental extractions, is a common phenomenon, leading to avoidance of extraction and other dental procedures. **Aims and Background:** The study aims to determine the prevalence of anxiety in patients undergoing dental surgical extraction before and after awareness session about the procedure by using the Modified Dental Anxiety Scale (MDAS) and also to evaluate the role of awareness of dental extraction procedures in the form of Audio-Visual awareness tapes of the procedure on anxiety in patients. **Materials and Method:** A sample of 150 patients in the age group of 18-55 years was examined for the study by the Department of Oral and Maxillofacial Surgery. The MDAS score was recorded before showing the Audio-visual tape about the surgical dental extraction procedure. Scores were again recorded after the patient has seen the audio-visual tape. Both scores were compared and the effectiveness of the awareness tape was assessed. **Result:** The study found a significant decrease in anxiety levels among patients who received audio-visual awareness sessions about the surgical dental extraction procedure. **Conclusion:** The use of audio-visual awareness aids as a psychotherapeutic method to alleviate dental anxiety before dental extraction was found to be significantly effective.

KEYWORDS

Dental anxiety, Modified Dental Anxiety Scale (MDAS), Surgical Dental Extraction, Audio-visual Aids.

INTRODUCTION:

Anxiety or fear can be defined as an unpleasant feeling induced by a perceived danger or threat that causes changes in metabolism or organ function and ultimately a change in behavior.¹ Anxiety related to surgical dental extractions is a fairly common phenomenon. It is a problem in simple extraction and an important factor in the avoidance of extraction². Dental anxiety is a common and extensive problem. It is estimated that 5-7% of the population never or rarely visits their dentist because of their fears.^{3,4} Dental anxiety is generally considered to have originated in childhood and develops further as a result of aversive conditioning and family influences.⁵

Psychological stress as a result of fear and anxiety can produce effects in a variety of physiological systems inclusive of the sympathetic or autonomic system and the hypothalamus-pituitary-adrenal (HPA) axis.⁶ Fear and anxiety increase the activity of the HPA axis which in turn enhances the secretion of cortisol. Cortisol also known as the stress hormone, is secreted from the adrenal cortex and dispersed to all body fluids, and can be detected in urine, serum, and saliva.⁷ Heightened cortisol levels are thus indicative of increased stress as a result of elevated fear and anxiety.⁸

The mouth cavity and the body may be affected by emotional factors as well. Many oro-mucosal diseases may arise as a direct expression of emotions or an indirect result of psychological alterations.⁹ Identifying anxious individuals can enable the dentist to anticipate the patient's behavior and be better equipped with measures to help alleviate the patient's anxiety. One of the most widely used tests is the Modified Dental Anxiety Scale (MDAS)¹⁰, which has been proven to be accurate and reliable across a wide range of languages.¹¹ The dentist must be able to identify the anxiety of the patient and be compassionate enough for better service delivery.¹²

Broadly, dental anxiety can be managed by psycho-therapeutic interventions, pharmacological interventions, or a combination of both, depending on the dentist's expertise and experience, degree of dental anxiety, patient characteristics, and clinical situation.¹³ Distraction is a non-pharmacological intervention technique, which

can divert a patient's attention away from noxious or unpleasant stimuli and is applied in clinical practice to reduce pain, anxiety, and fear associated with painful medical procedures.¹⁴

Audiovisual aid is a new approach that has gained popularity to help relieve anxiety related to dental treatment that incorporates a visual as well as an audio component prior to doing a dental procedure to decrease dental anxiety.¹⁵ A substantial portion of the patient population suffers from some degree of anxiety and would benefit from anxiety-reducing measures during treatment.¹⁶

So the purpose of our study is to evaluate the use of audiovisual aids as a psycho-therapeutic method to alleviate dental anxiety before dental extraction.

MATERIAL AND METHODS:

The present comparative study was conducted in a rural community in India, in the Department of Oral and Maxillofacial Surgery of the Chhatrapati Shahu Maharaj Shikshan Sanstha's (CSMSS) Dental College and Hospital, Aurangabad, Maharashtra, India. The study includes 150 participants aged between 18-55 years.

Inclusion Criteria Of Patients:

Patients coming to the Oral and Maxillofacial Surgery Department for surgical dental extraction.

Exclusion Criteria Of Patients:

Patients not willing to participate, Patients with reported neurological or any other systemic disorders, and patients with hearing-vision disorders.

The sample consists of 150 patients assessed as dentally anxious using the Modified Dental Anxiety Scale (MDAS). All the patients were informed about the purpose of the study. After obtaining the consent of each patient their case history, pre-operative investigations, and relevant findings were recorded. These questionnaires were given to the patients, and their subjective reactions of the patients regarding going to the dentist were recorded. Patients were asked to insert a tick the appropriate section based on their level of anxiety.

Modified Dental Anxiety Scale Questionnaire:

Questions	Not anxious	Slightly anxious	Fairly anxious	Very anxious	Extremely anxious
1)If you went to the dentist for TREATMENT TOMORROW, how would you feel?					
2)If you were sitting in the WAITING ROOM (waiting for treatment), how would you feel?					
3)If you were about to have a TOOTH DRILLED, how would you feel?					
4)If you were about to have your TEETH SCALED AND POLISHED, how would you feel?					
5)If you were about to get a LOCAL ANESTHESIA INJECTION in your gum, above an upper back tooth, how would you feel?					

Each item scored as follows:

Not anxious=1; Slightly anxious=2; Fairly anxious=3; Very anxious=4; Extremely anxious=5.

All five items add up to a total score, which ranges from 5 to 25: The cutoff age is 19, which denotes a patient who is highly dentally anxious about visiting the dentist and may even be dentally phobic.

Next, an audio-visual awareness tape of the procedure of dental extraction was shown and explained to the patients. The tape included a detailed explanation of the dental extraction procedure. A trained oral surgeon answered any possible questions of the patient.

After this, the MDAS was recorded again from the now-aware patients, and the scores were calculated. The scores before and after the audio-visual awareness regime are compared statistically by using SPSS software.

RESULTS:

The results of this study can provide insights into managing dental anxiety and improving the quality of dental care for patients.

Dental anxiety of 150 patients between 18 and 55 years was calculated for Study members overall, and males and females separately. Statistical significance was tested using Chi-square tests (for categorical dependent variables) or t-tests (for continuous dependent variables) and Pearson's correlation test for correlation between the variables

Age- among the 150 patients included in the study, 87 were female and 63 were male. The mean age of the patients was 37.4 years. These subjects were put into three different groups on the basis of their age (Group 1=<30 years, Group 2= 31-40 years, Group 3>50 years). It was seen that the majority of the respondents belonged to the age group 31-50 years (47.33%). The outcome of audio-visual intervention has shown a significant decrease in anxiety levels in all three age groups, which indicates the specific effect of audio-visual intervention in all the age groups. Pearson Correlation coefficient is -0.35 which shows a negative association between age and anxiety levels. (Table 1)(Graph 1)

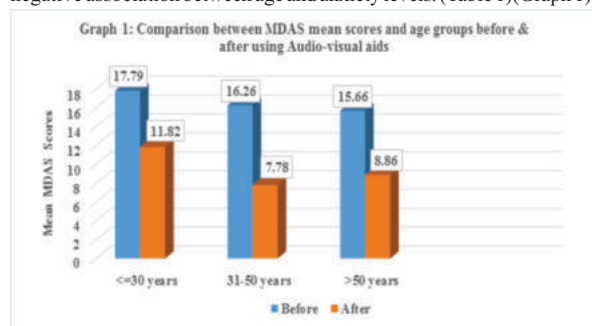


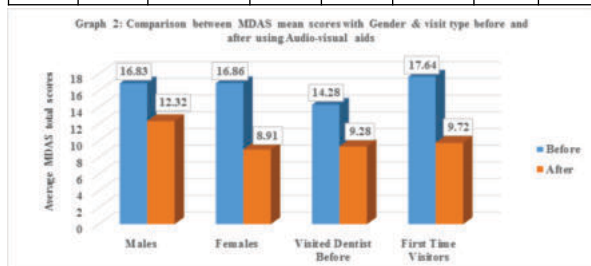
Table 1: Comparison between age and anxiety levels- *-Statistically Highly Significant

Variable	Categories	Number of Participants	Percent age	Mean MDAS Score	Standard Deviation (SD)	Statistical test	P Value
Age	≤30 yrs	64	42.67%	11.828	5.48	One-way ANOVA Test F value 15.862	<0.001*
	31-50 yrs	71	47.33%	7.787	2.75		
	>50 yrs	25	10%	8.87	4.08		

Gender- The subjects were put into two groups on the basis of their gender (males and females). The mean MDAS scores in males were 12.322 & in females were 8.919. On statistical analysis using an unpaired t-test, it was statistically insignificant. The outcome of audio-visual intervention has shown a decrease in anxiety levels in females, whereas the males didn't show any significant decrease in anxiety post audio-visual aid intervention. Pearson's correlation coefficient value is 0.3 shows Stress levels are positively correlated with gender meaning for males stress levels increase and for females, it decrease. The strength of the relationship is moderate. (Table 2)(Graph 2)

Table 2- Comparison between Gender and Anxiety levels

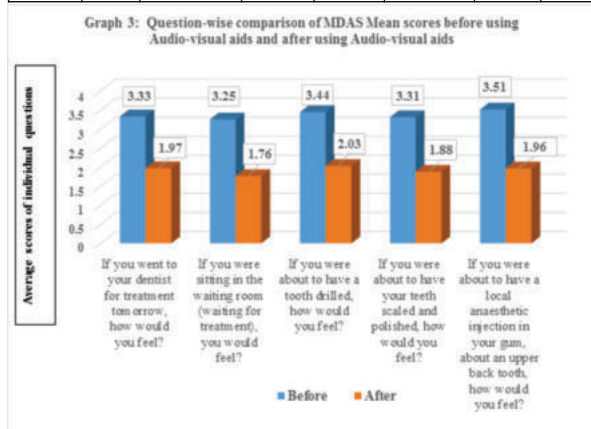
Variable	Categories	Number of Participants	Percent age	Mean MDAS Score	Standard Deviation (SD)	Statistical test	P Value
Gender	Male	31	20.67%	12.322	6.02	t-test 2.99	0.049 NS
	Female	119	79.33%	8.915	3.876		



Previous Visit to Dentist- The subjects were put into two different groups based on them being first-time dental clinic visitors and non-first-time visitors. Since p-value> 0.05 we conclude there is no significant association between anxiety level and if the patient has visited a dentist before or not. Pearson Correlation coefficient = -0.04. So it can be concluded that stress levels are not really correlated with whether the person has visited a dentist before or not. The strength of the relationship is very weak. (Table-3)(Graph-2)

Table 3- Comparison between Prior visits to the dentist and Anxiety levels

Variable	Categories	Number of Participants	Percent age	Mean MDAS Score	Standard Deviation (SD)	Statistical test	P Value
Prior visits to dentist	Yes	35	23.33%	9.2857	3.24	t-test -0.609	0.544 NS
	No	115	76.67%	9.7217	4.94		



Comparison of Anxiety before and after AV Aids - Modified Dental Anxiety Scale (MDAS) includes subjective reactions of the patients. The scale includes 5 parameters scored 1 to 5 with scores above 19 indicating a highly anxious patient, possibly dentally phobic. Average

MDAS scores in 150 participants were 16.68. The scores reduced to an average of 9.62 after using AV aids as a measure to reduce anxiety in them. On applying statistics using Paired 't' test this reduction in stress is statistically significant with p value <0.0001 and t value of t=14.26, degree of freedom =149. Question wise comparison of Mean MDAS scores was given in Graph 3.

DISCUSSION:

The results of the present study indicate that audio-visual aids are a useful method to alleviate dental anxiety before dental extraction. Distraction is a non pharmacological intervention technique, which can divert a patient's attention away from noxious or unpleasant stimuli, and is applied in clinical practice to reduce pain, anxiety, and fear associated with painful medical procedures.

Background music, televisions, video games, and 2-D and 3-D video glasses for watching films are a few examples of audiovisual aids. Human brain waves can be influenced by suitable music choices; this will lead to deep relaxation and cessation of pain and anxiety. Listening to pleasant music is a non-invasive technique where the patient can relax during a stressful procedure. This reduces the activity of the neuroendocrine and sympathetic nervous systems where there is a combination of relaxation and distraction¹⁷. The use of audio-visual aids can provide patients with a better understanding of the dental extraction procedure, which can help them, feel more comfortable and less anxious during the procedure. Our study findings support the use of audio-visual aids as a psychotherapeutic method to alleviate dental anxiety.

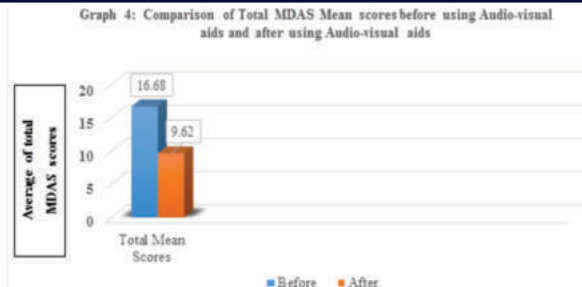
Results from the current study and from many Indian states, including Gujarat and Haryana, show that dental anxiety is more prevalent in the Indian population than it is in Western nations.¹² This may be caused by a variety of reasons, including poor oral health awareness, ignorance of dental treatment procedures, superstitious beliefs about dental treatment, cultural differences, and family members' opinions (who are highly regarded in this society; consequently, any negative dental experiences will affect others' attitudes towards dental therapy). Only 3% of people who took part in the study were found to have dental phobia, which is consistent with prior Indian investigations.^{18,19,20} Dentally phobic individuals were considerably fewer in this population in comparison with industrialized countries like the UK, Turkey, and North Ireland.^{21,22,15}

Comparison between genders to evaluate the prevalence of dental anxiety showed that female subjects were more anxious than their male counterparts, plausible explanation for such observation could be attributed to the fact that women usually admit their fears more readily than men, have a lower tolerance to pain, and exhibit a higher level of neuroticism.^{19,21} It was seen that younger participants were more anxious, and with increasing age, there seems to be a decrease in the level of anxiety; such a trend has been reported widely from several studies,²⁰ but refuted by Thomson et al.²⁰ and Murray et al.²² Decline in anxiety with age could be due to age-dependent cerebral deterioration, factors like extinction or habituation, adaptive resignation towards the inevitable, increased ability to cope with the experience, the aging process itself, more exposure to debilitating diseases, and treatment.^{23,24}

Limitations: The present study had a few limitations. First, the study only included patients between the ages of 18 and 55 years. Second, the study was conducted in a single institution, which may limit the generalizability of the findings. Lastly, the study did not evaluate the long-term effects of audio-visual aids on dental anxiety. To overcome these limitations we propose larger age group studies in a wider population.

CONCLUSION:

As depicted in Graph 4, this study concludes that audio-visual aids are an effective psychotherapeutic method to alleviate dental anxiety before dental extraction. Dentists should identify anxious patients and provide them with appropriate measures to help alleviate their anxiety. The use of audio-visual aids can provide patients with a better understanding of the dental extraction procedure, which can help them feel more comfortable and less anxious during the procedure. This will encourage more and more people to seek dental treatment. Relieving dental anxiety in patients may also have a positive impact on the post-treatment care by the patient which will have better healing outcomes. Further studies are needed to evaluate the long-term effects of audio-visual aids on dental anxiety.



Clinical Significance:

Studying how audio-visual awareness aids impact anxiety in patients undergoing surgical dental extractions has clinical value since they have the ability to enhance patient experience and well-being generally. Patients' anxiety levels can be effectively decreased by using audio-visual aids, such as educational videos about the procedure or calming music, to divert and relax patients. In order to achieve the best possible outcome for both the patient and the dental specialists involved, it is necessary to reduce anxiety. Patients who are less anxious during tooth extractions may cooperate better, have less pain, and be more satisfied with the process overall. Furthermore, minimizing patient difficulties brought on by increased stress might help make a surgical dental extraction more effective and successful.

Conflict of Interest: None

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