Original Article

# Evaluation of the Impact of Audio-Visual Aids in Reducing Dental Patient Fear in Pakistan

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## Abstract

**Objective:** To assess the use of employing visual information to alleviate dental anxiety in individuals undergoing tooth extraction under local Anesthesia.
**Methodology:** An experimental study was done in three dental institutes of Lahore, University Dental Hospital, Sharif Medical and Dental College and Azra Naheed Dental College. This included a sample size of 80 patients who were divided into two groups of 40 each. The first group was the control group which received verbal information before the extraction of teeth under local anesthesia. The second group was the study group and was shown a video clip containing information about the procedure and non-probability consecutive sampling was carried out. Statistical analyses were performed by using SPSS version 25.
**Results:** Pre-operative anxiety scores in both the groups undergoing extractions revealed the patients were relatively anxious before undergoing dental extraction. A pre-operative comparison drawn between the groups showed the data to be statistically insignificant (p-value=0.222). Verbal communication and the use of audio-visual aid for Group 2 resulted in a decrease in anxiety scores. Group 1 showed a mean anxiety score of 5.4 whereas Group 2 showed 28% reduction in anxiety with a mean of 4.6. The data was found to be statistically significant (p-value<0.001). Similarly a postoperative comparison between the two groups revealed drastic decrease in dental distress and anxiety score for the patients in Group 2 with p<0.001 with the results being statistically significant. Pre-operative and post-operative paired sample statistics of these groups showed 55% reduction postoperatively in Group 2 as compared to Group 1 which showed only 27% reduction in anxiety levels.
**Conclusion:** By showing a tooth extraction video to patients before surgery dentists can reduce the dental anxiety and panic associated with local anesthetic dental extractions.

**Keywords:** Anxiety, Local, Anesthetics, Dental aids, Patients

### Introduction

Anxiety is a multi-system response to an assumed threat or danger. Anxiety can be baseless or rooted in an actual circumstance that causes a stronger response than is often anticipated.[1] Dental anxiety builds up over time and is impacted by a variety of variables. Dental anxiety is a global public health problem spread around the world. It is estimated that about 3-16% of adults suffer from dental phobia.[2] For general dentists treating nervous patients, dental anxiety can be a significant cause of stress.[3] Research has suggested a strong link between avoidance of dental treatment and dental anxiety.[4,5] This fear makes it difficult to receive dental care in the dental chair in a simple and safe manner. For this reason, dental practitioners have tried using different modalities to reduce dental fear and anxiety in their patients. Various noninvasive techniques can be used for the reduction of anxiety in patients. These include creating a pleasant environment, rapport building and a calm atmosphere in the dental office.[6] Pharmacological intervention to decrease anxiety levels in patients advocates the use of nitrous oxide used in conscious sedation along with the use of opioids, benzodiazepines and barbiturates. In some clinical scenarios adult patients require general anesthesia as a means to cope with their dental anxiety.[7] Nonetheless, the use of general anesthesia is associated with potential post-operative complications, including sore throat, bleeding, fever, psychological changes, weakness, sleepiness, nausea, and, vomiting.[8] Tell show do, one of the oldest, simplest, and most reliable techniques are also used as part of anxiety reduction protocol.[9] Modeling is a psychologically-based strategy that enables individuals to learn about their surroundings by watching the behavior of other people utilizing a model either live or recorded. Video modeling is a powerful tool for behavior change. With the advancements in technology a relatively newer technique known as video modeling can now be used in patients to be treated in the dental office. This requires the use of audio-visual aids and video clips that have shown to be of greater benefit while treating pediatric patients but can be used in all patients routinely as well. A study in Saudi Arabia demonstrated a significant decrease in the average anxiety score among patients who viewed a video of the tooth extraction procedure compared to those who received a verbal explanation of the same procedure after the extraction was completed.[10] Despite all these various interventions to manage dental anxiety, such as sedatives, relaxation techniques and communication skills, it still remains a significant problem. Therefore, there is a need to explore and evaluate the effectiveness audio-visual aids in reducing dental anxiety.

There is limited research available on the use of audio-visual aids in the population of Pakistan. The study aims to fill this research gap by providing evidence-based recommendations for the use of audio-visual aids in dental anxiety management in Pakistan.

**Methodology**

The experimental study was carried out at the Department of Oral and Maxillofacial Surgery of University Dental Hospital affiliated with University of Lahore, Sharif Medical and Dental College, and Azra Naheed Dental College. The study was approved by the Ethical Review Board and an ethical letter was obtained from the ethical committee (Ref: ANDC/RAC/114/26/22). The study included patients visiting the oral and maxillofacial department for tooth extraction from January 2022 to April 2022. The patients underwent a thorough screening process, which included thorough review of their medical and dental history, a physical examination of the oral cavity and any necessary radiographic imaging. Most teeth were extracted due to periodontal disease, orthodontic reasons, grossly carious teeth or tooth decay accompanied by a dental abscess. The inclusion criteria inlcluded patients between the ages of 17 and 60 Simple extraction of less than or equal to two teeth patients who were able to understand and cooperate with the protocol's conditions and were willing to provide proper informed consent in writing, patients who reported to the department with mobile teeth requiring extractions of multiple teeth or for third molar/surgical extractions having a language barrier were excluded from the study. A total of 80 patients were divided into two groups, each group comprising 40 patients. Group 1 was the control group in which verbal information was given to these patients before extraction of teeth under local anesthesia. Group 2 was the experimental group in which a video clip containing information regarding the procedure was shown to the patients. The recorded video showed dental surgeon who cordially welcomed the patient took informed consent from the patient, explained the dental injection and tooth extraction procedure and encouraged them to take deep breaths while administering local anesthesia. The patient was urged to indicate by raising their hand if they felt any discomfort during the process so that more local anesthesia could be administered to ease the discomfort. The dentist extracted the tooth painlessly and gave post extraction instructions to the patient. Based on this anxiety scores were assessed pre-operatively, following verbal information or showing video, and post-operatively. The patients' anxiety levels were recorded on conventional 10 mm visual analogue scales (VAS), which were labeled at the endpoints with "no anxiety" (0 mm) and "severe anxiety" (10 mm) (Figure 1). Each patient was evaluated at three stages: preoperatively, after verbal information or recorded video, and postoperatively.

Selected operators were trained on the same criteria to carry out the procedure. The method of extraction was the same in all cases, performed under local anesthesia. Extraction was made as painless as possible. All patients were given post-extraction guidelines after the procedure and were prescribed appropriate drugs.

The sample size was calculated using Cochrane's equation.

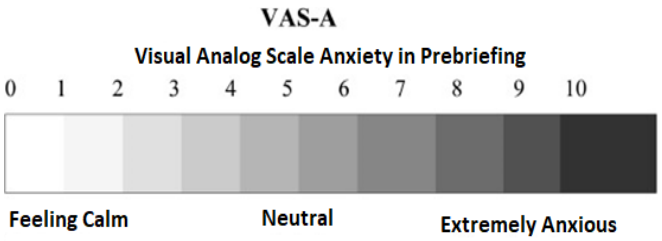


**Figure 1.** Visual Analog Scale

Statistical analyses was performed using the Statistical Package for Social Sciences (IBM®SPSS ®Statistics) Version 25. Descriptive analysis was presented in the form of mean, percentage and frequency. Independent and paired sample T-tests were performed to compare the results of control and experimental groups. A p-value of less than 0.001 was considered significant.

**Results**

The mean age of Group 1 was 35.8 years, while the mean age of Group 2 was greater at 38.4 years. In terms of gender, Group 1 had 18 participants who were male (54.5%) and 22 participants who were female (46.8%), while Group 2 had 15 participants who were male (45.5%) and 25 participants who were female (53.2%). With 33 participants (55%) in Group 1 and 27 participants (35%) in Group 2, the majority of participants in both categories had one tooth involved. Two teeth were implicated in the remaining participants in Group 1 (45%), while 13 people (65%) in Group 2 had two teeth involved (Table-1). Pre-operative anxiety scores in both the groups undergoing extractions revealed the patients were relatively anxious before undergoing dental extraction. The mean dental fear and anxiety scores (6.1 for Group 1 and 6.4 for group 2) did not significantly differ from one another prior to surgery (Table 2) A pre-operative comparison drawn between the groups showed the data to be statistically insignificant (p-value=0.222). Verbal communication and the use of audiovisual aid for Group 2 resulted in a decrease in anxiety score (Table 2). Group 1 showed a mean anxiety score of 5.4 whereas group 2 showed a 28% reduction in anxiety with a mean being 4.6. The data was found to be statistically significant (p-value<0.001) (Table 3). Similarly, a postoperative comparison drawn between the two groups also revealed a drastic decrease in dental distress and anxiety score for the patients in Group 2 with a mean anxiety score of 4.5, and the p-value showing a 55% reduction postoperatively as compared to group 1 which showed only 27% reduction in anxiety levels postoperatively and a mean anxiety score of 2.9. (Table 4)

**Table 1.** Patient Characteristics

| Demographic | | Group 1 | Group 2 |
|---|---|---|---|
| Age | Mean | 35.78 | 38.45 |
| | Age | 17-60 | 17-60 |
| | | n (%) | n (%) |
| Gender | Male | 18 (54.5%) | 15 (45.5) |
| | Female | 22 (46.8%) | 25 (53.2%) |
| Teeth | 1 | 33 (55%) | 27 (35%) |
| | 2 | 7 (45%) | 13 (65%) |

**Table 2.** Pre-operative Comparison of Anxiety Score between Groups

| Group | n | Mean | SD-Value | P-Value |
|---|---|---|---|---|
| 1 | 40 | 6.1250 | 1.01748 | 0.222 |
| 2 | 40 | 6.4000 | 0.968169 | |

**Table 3**. Comparison of Anxiety Score after Verbal/Audio

Visual Explanation

| Group | n | Mean | SD-Value | P-Value |
|---|---|---|---|---|
| 1 | 40 | 5.4000 | 0.84124 | <0.001 |
| 2 | 40 | 4.6000 | 1.05733 | |

**Table 4.** Post-operative Comparison of Anxiety Score between Groups

| Group | n | Mean | SD-Value | P-Value |
|---|---|---|---|---|
| 1 | 40 | 4.5250 | 0.90547 | <0.001 |
| 2 | 40 | 2.9520 | 1.04728 | |

## Discussion

Dental anxiety affects not only the patients but also the dentists in general. Dentists acknowledge that treating worried patients is a substantial source of concern. Many studies have been conducted around the world to evaluate the use of audio-visual assistance in the alleviation of dental fear and anxiety. In Taibah University College of Dentistry. A study conducted by Ghazal et al. showed a 28% reduction in anxiety in patients given verbal instructions and 48% anxiety reduction among the patients who were given audio-visual information before the start of the procedure. This study was like ours in the respect that evaluation method used for anxiety was the same.[11] Another study conducted in Peshawar by Karim et al. using verbal communication as a form of anxiety reduction protocol showed a 15% decrease in anxiety.[12] This finding is similar to the one in our study which showed that verbal counseling alone resulted in a 33% decrease in anxiety in patients prior to dental extractions under local anesthesia. Daoker et al. conducted a study on the effect of audio-visual aid on anxiety levels of patients during the first appointment concluding that audio-visual system is beneficial for reducing anxiety for adults and children undergoing dental procedures.[13] Similar to this, a study conducted in India by Dhanraj et al. El concluded that audiovisual aid is an effective tool for reducing anxiety in patients before starting dental treatment.[14] It is also worth noting here that the use of audiovisual aids in the reduction of dental anxiety serves as an effective means of management in patients of all ages. The reason for this may be because different individuals conceive information differently depending on their learning capacity. Some learn and understand better through text some through audio/visual aids some through active participation.[15]

## Limitations

This study has a few limitations. Our research included only 80 participants, which was insufficient to draw definitive conclusions about the efficacy of using visual aids to alleviate dental anxiety. The study was conducted in three dental institutes in Lahore, which limits its generalizability to other populations or settings. Other variables that might affect anxiety levels, such as pain, prior dental experiences, or personality characteristics, were not evaluated in the research. The research relied on self-reported measures of anxiety, which may not accurately depict the participants' actual anxiety level.

## Conclusion

To conclude, it can be stated that using audiovisual aid effectively can encourage patients to undergo dental treatment. Preoperatively showing a tooth extraction film to patients helps minimize dental fear and anxiety related to local anesthetic dental extractions. Audiovisual aids can be of tremendous help to counsel patients and reduce their stress. Accordingly, audiovisual equipment is highly suggested for all dental facilities and institutions to have in order to better handle patients and educate them.

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**Conflict of interest**: All authors declare no conflict of interest.

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## References

1. Schnittker J. Unnerved: Anxiety, Social Change, and the Transformation of Modern Mental Health.

2. Zegan G, Anistoraeid, cernei er, toma v,sodor a, carausu em. Assessment of patient anxiety before dental treatment. Romanian Journal of Oral Rehabilitation. 2019 Jan;11(1):76-82.

3. Murray E, Kutzer Y, Lusher J. Dentists' experiences of dentally anxious patients in a specialist setting: An interpretative phenomenological analysis. Journal of health psychology. 2019 Mar;24(3):288-98.

4. Aardal V, Evensen KB, Willumsen T, Hervik Bull V. The complexity of dental anxiety and its association with oral health related quality of life: An exploratory study. European Journal of Oral Sciences. 2023 Feb;131(1):e12907.

5. Fahim A, Mahmood R, Haider I, Luqman M, Ikhlaq I, Mahmood T, et al. Association between clinical oral health status and perceived oral health in different age groups. PeerJ. 2022 Oct 3;10:e14152.

6. James J, Retnakumari N, Vadakkepurayil K, Thekkeveetil AK, Tom A. Effectiveness of aromatherapy and music distraction in managing pediatric dental anxiety: a comparative study. International Journal of Clinical Pediatric Dentistry. 2021 Mar;14(2):249

7. Willumsen T, Agdal ML, Hauge MS, Storå B. Psychological Prevention and Management of Dental Anxiety. Oral Health Psychology: Psychological Aspects Related to Dentistry: Springer April; 2022. p. 179-94.

8. Movahed R, Ivory JW, Delatour F. Complications Associated with Maxillomandibular Advancement. Management of Obstructive Sleep Apnea: An Evidence-Based, Multidisciplinary Textbook. April; 2021:515-44.

9. Shetty V, Suresh LR, Hegde AM. Effect of virtual reality distraction on pain and anxiety during dental treatment in 5 to 8 year old children. Journal of Clinical Pediatric Dentistry. 2019;43(2):97-102.

10. Abbasi H, Saqib M, Jouhar R, Lal A, Ahmed N, Ahmed MA, et al. The efficacy of little lovely dentist, dental song, and tell-show-do techniques in alleviating dental anxiety in paediatric patients: a clinical trial. BioMed research international. 2021 May 23;2021:1-7.

11. Gazal G, Tola AW, Fareed WM, Alnazzawi AA, Zafar MS. A randomized control trial comparing the visual and verbal communication methods for reducing fear and anxiety during tooth extraction. The Saudi Dental Journal. 2016 Apr 1;28(2):80-5.

12. Karim N, Maqsood F, Khan K. Pre and Post-Operative Dental Pain and Anxiety in Patients Undergoing Routine Dental Extraction, Peshawar. Journal of Gandhara Medical and Dental Science. 2020 Jul 22;7(1):22-9.

13. Daokar S, Pophli S, Pawar K, Wahane K, Tambake R, Late L. Effect of audio and audiovisual aids on anxiety level of patients during first appointment of root canal treatment: An in vivo study. International Journal of Scientific Study. 2018;6(5):121-6.

14. Kavarthapu A, Sharmila H, Reddy S. To compare the efficacy of alternative techniques in reduction of stress during dental extraction. Journal of Advanced Pharmacy Education & Research| Apr-Jun. 2017;7(2)

15. Fahim A, Rehman S, Fayyaz F, Javed M, Alam MA, Rana S, et al. Identification of Preferred learning style of medical and dental students using VARK questionnaire. BioMed Research International. 2021 Oct 18;2021.