



## EFFECT OF AUDIO DISTRACTION ON ANXIETY OF PEDIATRIC DENTAL PATIENTS- A CLINICAL STUDY

### Dental Sciences

**Sai Abhishiktha  
Cherukuri**

BDS, Mamata Dental College, Khammam, Telangana, India.

**Arwinder Kaur  
Sekhon\***

BDS, Genesis Institute of Dental Sciences and Research Ferozepur, Punjab, India.  
\*Corresponding Author

### ABSTRACT

**Aim:** The aim and objective of this study was to evaluate effectiveness audio distraction management of anxious pediatric dental patient.

**Material and Method:** A total of 30 children aged 6–10 years were enrolled in the study and randomly allocated into two groups. They were divided into two groups; each group having 15 patients each. Group I – Control group (Treatment under normal set-up) and Group II – Audio distraction group (Child listen the audio preparation during the course of treatment.) Once the child was engrossed in the audio preparation, the treatment was started. Topical anesthetic agent was applied to the injection site local anesthesia was administered, followed by pulp therapy or extraction. Subjects in the control group received similar procedures without the use of audio distraction. The evaluation of anxiety was done by Facial image scale. Scores obtained on the basis Facial image scale was compared, evaluated, and tabulated.

**Results:** Results shows that audio distraction was found to be effective in alleviating anxiety of pediatric patients.

**Conclusion:** The conclusion derived from the present study was that audio distraction was effective in reducing anxiety of pediatric dental patients.

### KEYWORDS

Dental anxiety, Audio distraction, Facial image scale

### INTRODUCTION

Anxiety is an emotion similar to fear but arising without any objective source of danger. The fear and anxiety in children during the dental visit could not only affect the quality of the outcome of treatment but also the attitude of a child toward the dental profession.<sup>1</sup>

A variety of strategies have been explored for managing dental anxiety. Since 1990, the American Academy of Pediatric Dentistry has periodically reviewed the scientific evidence and developed guidelines for managing the behaviors of pediatric patients. In recent years, research in the dental operatory has proven the value of psychological techniques in preparing children for and managing children during dental treatment. Research published in both psychological and dental literature has demonstrated the efficacy of a variety of non invasive techniques.<sup>2</sup>

Although to manage anxious children many management techniques are successful, but the attitude of the parents and dental professionals towards aversive techniques is changing<sup>3</sup> and because of litigation concerns, the popularity of nonaversive techniques like distraction becoming high among the dental professional to make cognitive orientation and promote coping ability for a positive dental response. "Distraction" is a tactic designed to divert a patient attention away from their current behavior to focus their interest in something else. It is a behavioural strategy useful in helping patients cope with brief stress.<sup>4</sup> Distractors are stimuli that may gain some control over a patient's responding that is incompatible with disruptive behaviour. Different means of distraction includes video games, and sound, watching video and television, pictures, cartoons and audiotaped stories etc.<sup>5</sup> So, The purpose of present study is to evaluate the effect of music distraction in managing the anxious pediatric dental patients.

### MATERIALS AND METHOD

The present prospective randomized single blind clinical trial was planned in the department of Pedodontics and Preventive Dentistry, to evaluate the effectiveness of audio and audiovisual distraction technique in management of pediatric dental patients.

It was performed on the 30 children aged between 6-10 years. The children visiting the outpatient department were examined and those who met to the inclusion and exclusion criteria were selected for the study.

### INCLUSION CRITERIA

1. Children having first dental visit
2. Children between 6 to 10 years of age
3. Patient requiring pulp therapy under local anesthesia or extraction under local anesthesia
4. Children showing Frankel's Behavior Rating Scale score of 3 and 4.

5. Children with no relevant medical conditions.

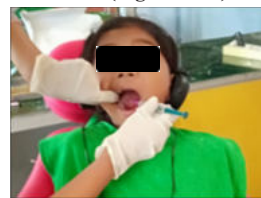
### EXCLUSION CRITERIA

1. Children with previous dental experience.
2. Children showing Frankel's Behaviour Rating Scale Score 1 or 2.
3. Children with any visual defect.
4. Children with any auditory defect.
5. Mentally or physically challenged child.
6. Children with learning disability.

Further the children were randomly divided into 2 equal groups of 15 children each

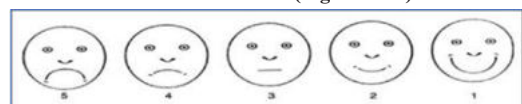
- 1st group: Control group- In the control group, treatment was done under normal set-up operatory
- 2nd group - Music group in the music group, each child listened to audio presentation through headphones.

The choice of the type of music depended on the patient's selection. The patient in the music group listened to the selected audio presentation through headphones through-out the treatment procedures during all the visits. (Figure no. 1)



**Figure no 1: Audio Distraction**

Once the child was engrossed in the audio preparation, the treatment was started. Topical anesthetic agent was applied to the injection site local anesthesia was administered, followed by pulp therapy or extraction. Subjects in the control group received similar procedures without the use of audio distraction. The evaluation of anxiety was done by Facial image scale. It is a projective self support measure of anxiety consisting series of pictures ranging from very happy to very unhappy faces. The child was asked to choose picture which looks like the way child was feeling during the treatment. Score ranges from 1-5. This test was conducted two times during each visit, once prior to the treatment and once after the treatment. (Figure no. 2)



**Figure no. 2: Facial Image Scale**

The data were entered over a spreadsheet, and statistical analysis was performed using SPSS software version 17 (IBM, Chicago, United States).

### RESULT:

A total number of 30 children, 13 boys and 17 girls participated in the study and were randomly allocated in the study between control group (without distraction) and audio distraction groups.

Facial image scale was used to measure the anxiety of child. Facial image scale was administered two times to each patient during one visit; once prior to treatment and once after the treatment. t- test was completed analyzing the pre and post treatment values for the two groups.

On evaluation it was found that the mean anxiety score in the audio distraction group ( $2.01 \pm 0.50$ ) was lower than that of the control group ( $4.15 \pm 0.85$ ). (Table 1)

Group	Mean Anxiety Score	P Value
Group I- Control group	$4.15 \pm 0.85$	$P < 0.05$
Group II - Audio distraction group	$2.01 \pm 0.50$	

T-test was used to determine the differences in mean anxiety scores between the groups. The result obtained was statistically significant with  $P < 0.05$ , suggesting audio distraction group was more managing pediatric dental patients.

### DISCUSSION:

Pediatric patients have aberrant reciprocation to the dental treatment rendered. Hence, it is extremely important to manage anxiety of children which affects dental procedures and its outcome.<sup>6</sup> Investigators have researched on mechanisms by which music has proved to decrease the anxiety. The Gate Control Theory of Pain, proposed by Ronald Melzack and Patrick Wall, states that pain signals are transmitted from the place of injury, via nerve receptors in spinal cord, to receive pain information in brain.<sup>7</sup> Music is believed to send enough competing sensory inputs from the brain to cause the brainstem to signal some of the gates shut, hence reducing the amount of pain that the patient listening to the music perceives.<sup>8</sup>

The aim of the present study was to evaluate the efficacy of audio distraction using Facial Image Scale for anxious paediatric dental patients. Facial Image Scale, which was used in this study, is one of the reliable measures of self-portrayed anxiety in children. It is very effective in measuring the emotional state of the child at the chair side.

As per the observations made in the present study in the music group the anxiety level was shown to be reduced, confirming the physiologic relaxation due to music distraction. The choice of music was left to the patients because playing familiar music which might have helped the child gain control over the unpleasant stimulus and give them a feeling of being in familiar environment as done in a previous study.<sup>9</sup>

Corah NL et al (1979)<sup>10</sup> and Baghdadi ZD et al.(2000)<sup>11</sup> found that the reduction in anxiety can be attributed to two reasons,

1. A child listening to music tends to close his/ her eyes to concentrate on the audio presentation, there by screening out the sight of dental treatment.
2. The sound of music will eliminate the unpleasant sounds in dental clinic like the sound of Air rotor hand-piece.

These above two advantages coupled with the effect of music will reduce the anxiety and provide relaxation and also help the dentist to effectively manage the anxious patient.<sup>9</sup> Music distraction may be helpful as an adjunct along with other behaviour management techniques therefore further research in this field is necessary along with other non aversive techniques.

### CONCLUSION:

The conclusion derived from the present study was that audio distraction was effective in reducing anxiety of pediatric dental patients. Further studies are warranted to better explore the results of this study,

### REFERENCES

1. Tiwari N, Tiwari S, Thakur R, Agrawal N, Shashikiran ND, Singla S. Evaluation of

- treatment related fear using a newly developed fear scale for children: "Fear assessment picture scale" and its association with physiological response. *Contemp Clin Dent* 2015;6:327-31.
2. Chaturvedi S, Walimbe H, Karekar P, Nalawade H, Nankar M, Nene K. Comparative evaluation of anxiety level during the conventional dental procedures with and without audiovisual distraction eyeglasses in pediatric dental patients. *J Int Oral Health* 2016;8(11):1016-1022.
3. Lahmann C, Schoen R, Henningsen P, Ronel J, Muehlbacher M, Loew T, *et al.* Brief relaxation versus music distraction in the treatment of dental anxiety: A randomized controlled clinical trial. *J Am Dent Assoc* 2008;139:317-24.
4. Aminabadi NA, Farahani RM, Balayi Gajan E. The efficacy of distraction and counterstimulation in the reduction of pain reaction to intraoral injection by pediatric patients. *J Contemp Dent Pract* 2008;9:33-40.
5. Kaur R, Jindal R, Dua R, Mahajan S, Sethi K, Garg S. Comparative evaluation of the effectiveness of audio and audiovisual distraction aids in the management of anxious pediatric dental patients. *J Indian Soc Pedod Prev Dent* 2015;33:192-203.
6. Bansal A, Jain S, Tyagi P, Jain A. Effect of virtual reality headset using smart phone device on pain and anxiety levels during local anesthetic injection in children with 6-10 years of age. *Indian J Res.* 2018;7(6):47-50.
7. Melzack R, Wall PD. Pain mechanisms: a new theory. *Science.* 1965 Nov 19;150(3699):971-9.
8. Navit S, Johri N, Khan SA, Singh RK, Chadha D, Navit P, Sharma A, Bahuguna R. Effectiveness and comparison of various audio distraction aids in management of anxious dental paediatric patients. *Journal of clinical and diagnostic research: JCDR.* 2015 Dec;9(12):ZC05.
9. Marwah N, Prabhakar A. R and Raju O. S – Music Distraction: its efficacy in management of anxious pediatric dental patients. *J IndSocPedodPrev Dent* December 2005 p 168 – 170.
10. Corah NL, Gale EN, Illig SJ. The use of relaxation and distraction to reduce psychological stress during dental procedures. *J Am Dent Assoc* 1979;98:390-4
11. Baghdadi ZD. Evaluation of audio analgesia for restorative care in children treated using EDA; *J ClinPed Dent* 2000;25:9-12.