

Effectiveness of Audio Distraction Technique in Management of Anxious of Pediatric Dental Patients- A Randomized Control Trial

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Aim: To evaluate the effect of Audio distraction on anxiety of pediatric patients during dental treatment.

Material and method: In present study 50 children of 4-8 years were randomly selected and equally divided into two groups of 25 each. The first group was control group (group A) and the second group was audio distraction group (group B). The dental procedure employed was restoration of any tooth in maxillary/mandibular arch for both the groups. The children included in music group were allowed to hear audio presentation throughout the treatment procedure. Anxiety was measured by using Venham's picture test.

Result and Conclusion: In present study it was found that the Audio distraction was effective in alleviating anxiety of pediatric dental patients.

Keywords: Dental Anxiety, Audio Distraction, VPT

Introduction: A young child's emotional and behavioural response to dental treatment is a matter of serious concern to pediatric dentists and researchers. The child's fearful or uncooperative behavior may impede the efficient delivery of dental care and compromise the quality of treatment provided. If not adequately resolved, a persistent negative response pattern may emerge which functions as a barrier to routine dental care.¹

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 behaviours of pediatric patients.² American Academy of Pediatric Dentistry (AAPD) has described basic concepts as basic behavior guidance such as communication, tell show do, voice control, nonverbal communication, positive reinforcement, distraction and parental absence/presence, and advanced behavior guidance such as protective stabilization, sedation, and general anesthesia.³

One such non aversive modality to manage a child appropriately in dental clinic is distraction. The disruptive behavior of few pediatric dental patients' can be controlled by diverting their attention and engaging them in alternative activities like watching TV, playing video games, or listening to audio taped music.⁴

The present study is designed to evaluate the effect of 'music distraction' or 'audio distraction' on anxiety of pediatric patients during dental treatment

Material and Method:

Source of data: This study was a prospective randomized single blind clinical trial which was carried out in Department of Pedodontics and Preventive Dentistry. The target population was the subjects visiting to outpatient department requiring restoration of any tooth in maxillary/ mandibular arch.

It was performed on the 50 children aged between 4-8 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 4 to 8 years of age
3. Patient requiring restoration of any tooth in maxillary/ mandibular arch.
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 Behavior 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.

Methodology

The selected children for the study were randomly divided into two groups which were as follows:

Group A: Control group ($n = 25$) and Group B: Audio group ($n = 25$). The dental procedure employed was restoration. The choice of the type of music was left over patients' will and selection. The patients in the audio group listened to the selected audio presentation by head phones throughout the treatment procedure (**Figure 1**). Subjects in the control group received similar procedures without the use of audio distraction. Children were seated on the dental chair to acclimatize themselves with the dental setup. The level of anxiety was assessed before starting the procedure. After recording the base line value, child was engaged to listen to the audio preparation or watch the audiovisual preparation through-out treatment procedure according to the group in which he/she was enrolled. Then the cavity was prepared and restored with glass ionomer cement. The level of child's anxiety was measured using Venham's picture: a scale for measuring self reported anxiety in children. The data were entered over a spreadsheet, and statistical analysis was performed using SPSS software version 17 (IBM, Chicago, United States).



Figure no 1: Audio distraction



Figure no 2: Venham's Picture Test

Result: A total number of 50 children, 28 boys and 22 girls participated in the study and were randomly allocated in the study between control group (without distraction) and audio distraction groups.

Venham's picture test was used to measure the anxiety of child. VPT 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.

The mean VPT score in control group was increased (6.08 ± 0.90) after the completion of restoration as compared to starting $4.01 (\pm 0.85)$ of the procedure whereas the mean VPT score in audio group was decreased (1.50 ± 0.50) after the completion of restoration as compared to starting (4.44 ± 0.70) of the procedure. (**Table no. 1**)

It was observed that the level of anxiety was reduced in Audio group; whereas level of anxiety was increased after the completion of the procedure in control group.

Table no. 1: Change in VPT in control group and audio group				
Group	Pre operative VPT Score	Post Operative VPT Score	Difference	P value
Group I Control Group	4.01 ± 0.85	6.08 ± 0.90	2.07 ± 0.80	$P < 0.05$
Group II Audio Group	4.44 ± 0.70	1.50 ± 0.50	-2.94 ± 0.60	$P < 0.05$

Discussion: The aim of the present study was to evaluate the role of ‘audio distraction’ in management of anxious pediatric dental patients during restorative procedure.

Gardner and Licklander first introduced audio analgesia in dental operation for the first time in 1959 (Gardner et al 1959).⁵

The age group of the patients selected in the present study belonged to 4–8 years as children show disruptive or negative behavior in this age group and are difficult to manage. Venham’s picture test for measuring self reported anxiety. VPT is one of the most commonly used picture scale. It is a self report measure that permits measurement of the state of anxiety of children when visiting a dentist. VPT is considered as one of the reliable measures of self-reported anxiety in children.⁶ The observations from the study indicated that VPT gave statistically conclusive results and picture test was very effective measure of judging emotional state of child at chair side.

As per the observations made in the present study in the audio 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.⁷

Corah NL et al (1979)⁸ and Baghdadi ZD et al.(2000)⁹ 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.⁹ Music distraction may be helpful as an adjunct along with other behavior management techniques therefore further research in this field is necessary along with other non aversive techniques.

Result of our study in accordance to study conducted by Singh D et al (2014)⁴ Sivakumar N et al. (2010)¹⁰; Prabhakar AR et al. (2007)¹¹; Marwah N et al. (2005)⁷, who found that music distraction is an effective means of stress reduction in anxious pediatric dental patients.

Conclusion: In present study it was found that Audio distraction did decrease the anxiety in pediatric patients to a significant extent; moreover patients had an overwhelming response to music presentation.

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Conflict of interest – The authors declare that they have no conflict of interest.

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