

A Comparison of Audio and Audio-Visual Distraction Techniques in Managing Dental Anxiety in Pediatric Patients: A Clinical Study

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ABSTRACT

Background: Pain and fear of pain makes dental treatment very difficult for clinician as well as patients. Minimizing fear and anxiety can help to treat patients more comfortably. Various techniques like audio distraction, audio visual distraction are used to minimize anxiety.

Aim: To compare audio and audio-visual distraction techniques in managing dental anxiety.

Methods: 100 children visiting the Department of Dentistry, UPUMS, Saifai for routine dental care were examined. The selected 100 children were randomly allocated to 2 groups. Group 1: audio distraction and Group 2: audiovisual group.

Results: Venham's anxiety scale was found to be lower in audiovisual distraction group, although the difference was not found to be statistically significant during all the visits. Relatively less increase in pulp rate was also observed in audio visual distraction group in current study.

Conclusion: Audiovisual distraction technique can be

preferred over audio distraction in paediatric patients.

Keywords: Audio Distraction, Audio Visual Distraction, Anxiety.

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INTRODUCTION

Pain is not the sole reason for fear of dentistry. Anxiety or the fear of unknown during dental treatment is a major concern for dentists for a long time. Dental pain and anxiety are unpleasant feelings and emotional experiences, which are associated with real or possible trauma to tissues.¹ A wide variety of technique is available for management of pain and anxiety however because of changing attitude of parents and society; non-aversive techniques like distraction are becoming more popular.²

Various techniques used are talk-show-do, positive reinforcement, nonverbal communication, voice control, and distraction.³⁻⁵

⁵ Distraction is a common technique in the dental practice which diverts the child's attention from what may be perceived as an unpleasant procedure, shifting their focus to engrossing and fascinating distractors.⁶

Distraction can be both audio distraction as well as visual distraction. However the combination of audio and visual i.e. audiovisual technique is even more effective. AD is a simple and low-cost technique that does not interfere with the dental treatment. This technique partially occludes the environment, while allowing child-clinician communication. So in present study we aimed to study a comparison of audio and audio-visual distraction techniques in managing dental anxiety.

AIM

To compare audio and audio-visual distraction techniques in managing dental anxiety

OBJECTIVES

1. To evaluate the effect of audio-visual distraction technique using chair mounted monitor on dental anxiety and pain in children.
2. To evaluate the effect of audio distraction technique on dental anxiety and pain in children.
3. To compare the effect of audio and audio-visual on dental anxiety and pain in children.

MATERIALS AND METHODS

This randomized controlled crossover clinical study was carried out in the Department of Dentistry, UPUMS, Saifai. Ethical committee approval was obtained from the Institutional Ethics Committee. A written informed consent was obtained from the parents of the selected children. The children visiting the Department of Dentistry for routine dental care were screened and 100 children with following inclusion Criteria were included for the present study.

Inclusion Criteria

- Healthy children
- No previous history of dental visit or treatment
- Children in positive and definitely positive category according to Frankl's behavior rating scale
- Children with no anxiety disorders

Exclusion Criteria

- Children suffering from any systemic diseases.
- Children having visual and hearing impairment.
- Physically and mentally challenged children

The selected 100 children were randomly allocated to 2 groups.

Group 1: Audio Distraction

Group 2: Audiovisual Group

The audio and audiovisual distraction was done using the chair mounted monitors playing a clip of child's choice throughout the treatment. Headphones were used in audio group. The dental treatment at all sessions was carried out by same pediatric dentist and each session was limited to half an hour duration.

Assessment of anxiety was done before and after each treatment session using Venham's picture test¹⁰, Venham's rating of clinical anxiety and physiological measures like pulse rate and oxygen saturation using pulse oximeter.¹¹ Assessment of pain perception was done using Wong Baker FACES pain rating scale¹² immediately after completion of the dental treatment in session.

Statistical Analysis

The values obtained during each session was assessed, tabulated and subjected to appropriate statistical analysis.

Graph 1: Distribution of Group

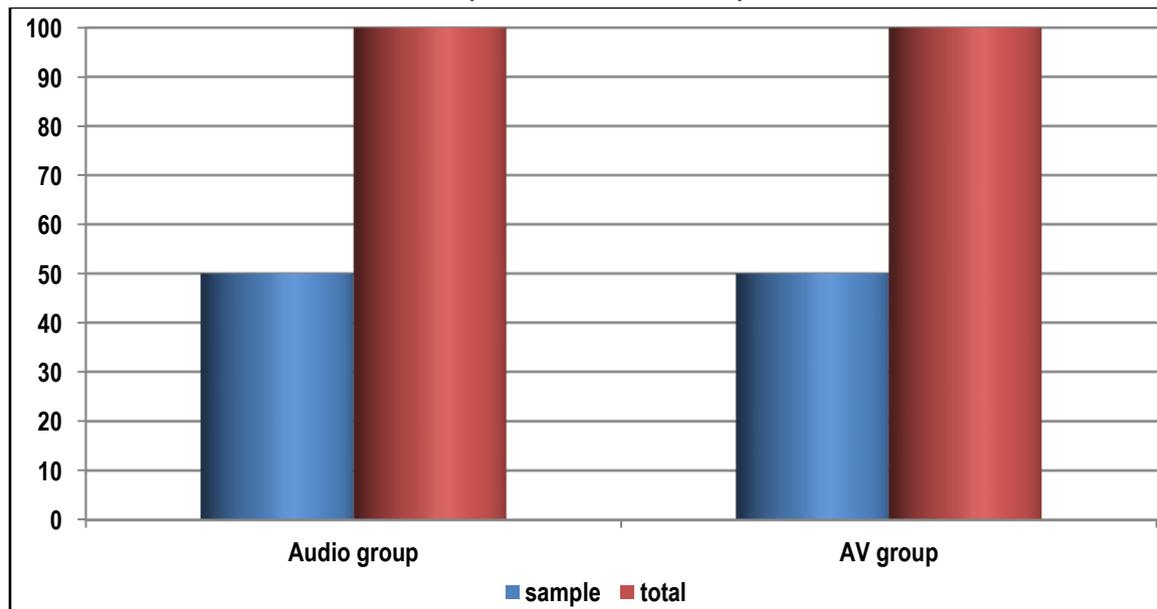


Table 1: Intra and inter group comparison of Venham's anxiety between both groups

Visits	Group A	Group B	p value**
	Mean	Mean	
Screening and prophylaxis	1.3±0.9	1.0±0.7	0.24
Restoration	1.1±0.7	0.9±0.8	0.06
Extraction	1.6±0.9	1.1±0.8	0.27

Table 2: Intra and inter group comparison of pulse rate between both groups

Visits	Group A	Group B	p value**
	Mean	Mean	
Screening and prophylaxis	99.8±5.9	97±6.7	-
Restoration	102.8±4.5	100±4.3	-
Extraction	110.8±7.1	104±5.5	0.01

Table 3: Intra and inter group comparison of oxygen saturation between both groups

Visits	Group A	Group B	p value**
	Mean	Mean	
Screening and prophylaxis	99.8±1.2	98±1.7	-
Restoration	98.1±1.1	98.0±0.5	-
Extraction	97.0±1.3	97.0±0.5	-

RESULTS

A total of 100 children aged between 4 to 10 years were selected for the current study. 100 children were divided in different group based on the type of distraction technique used for the treatment. Group 1 received audio distraction it consisted of 50 patients and group 2 received audiovisual distraction it consisted of 50 patients (Graph 1)

Intergroup comparison between audio group and audiovisual group was made and result showed that there was no statistically significant difference observed between both the groups. However Venham's anxiety scale was found to be lower in audiovisual distraction group, although the difference was not found to be statistically significant during all the visits (Table 1).

Intergroup comparison between audio group and audiovisual group was made and result showed that there was no statistically significant difference in pulse rate was observed between both the groups during first visit and second. However pulse rate was found to be statistically significant during last visits between audio and audiovisual group (Table 2). A continuous increase in pulp rate was observed in consequent visits. However pulse rate was found to be highest during last visit i.e. during extraction.

Intergroup comparison of oxygen saturation between audio group and audiovisual group was made and result showed that there was no statistically significant difference observed between both the groups (Table 3). However there was statistically less increase in Venham's anxiety scale in audiovisual distraction group. At the same time relatively less increase in pulp rate was also observed in audio visual distraction group in current study.

DISCUSSION

Pain and anxiety are two unpleasant feelings and emotional experiences experienced during dental treatment. In order to overcome fear and anxiety clinicians need to reduce distress during dental treatment in children. This distress modalities and are basically divided into two broad categories. The first and commonly used module consists of behavioral techniques includes the tell-show do technique, distraction, inspiration, modeling and hypnotism. The second category of behavior management involves pharmacologic techniques. Distraction is the most effective and easy to use technique. The concept behind application of distraction is that pain perception has a large psychological component in that the amount of attention directed to the noxious stimuli which modulates the perceived pain.¹ Distraction technique involves use of audio distraction as well as audio visual distraction.

In present study we made an attempt to compare the audio and audiovisual distraction technique in 100 patients aged between 4 to 10 years. Studies have suggested that the children of age group 4-8 years are difficult to treat due to variance in their behaviors.^{2,13} Thus we selected 4 to 10 years age group children in present study. Based on the result of our study we found that Venham's anxiety scale was found to be lower in audiovisual distraction group, although the difference was not found to be statistically significant during all the visits. Barreiros D et al meta-analysis demonstrated a lower anxiety level in AD method groups when Modified Child Dental Anxiety Scale was used ($P = 0.02$) with a mean difference (confidence interval) of -8.72 ($-16.7, -1.38$). They concluded that AD method is effective for controlling dental anxiety in children.⁷

Based on the result of our study we found that there was no statistically significant difference in pulse rate between both the groups during first visit and second. However pulse rate was found to be statistically significant during last visits between audio and audiovisual group. A continuous increase in pulp rate was observed in consequent visits. However pulse rate was found to be highest during last visit i.e. during extraction. Similar result was reported by Prabhakar A. et al in their study.²

In present study there was statistically less increase in Venham's anxiety scale in audiovisual distraction group. At the same time relatively less increase in pulp rate was also observed in audio visual distraction group in current study. Kaur R et al in their study compared effectiveness of audio and audiovisual distraction aids and found that children were most relaxed in audiovisual group followed by audio group and were least relaxed in control group during three dental visits. Our results are in agreement with those reported by Kaur et al.

Yunkun Liu et al (2018)⁸ evaluated the efficacy of audiovisual distraction techniques on the management of dental anxiety in children. Electronic databases (PubMed, Cochrane Central Register of Controlled Trials, and Embase) were searched. They included randomized controlled trials (RCTs), and methodological quality of included trials was assessed using the Cochrane Collaboration's criteria. Information on reported anxiety, pain, behaviors, vital signs (including blood pressure, oxygen saturation, and pulse rate), and children satisfaction was analyzed. Results showed that nine studies were included for a systematic review, and none of them had low risk of bias. Significant differences in anxiety were found. According to the study, a majority of results indicated a significant difference in pain and behavior between the audiovisual and control group. Three studies reported children in the audiovisual group preferred usage of an audiovisual device for future dental visits. No significant differences could be found regarding blood pressure. They concluded that there is some low-quality evidence suggesting that the usage of audiovisual distraction during dental treatment may relieve children's dental anxiety. Guinot Jimeno F. et al in their study found that there was a significant improvement in the global behaviour when children were shown a cartoon film ($P < 0.001$). The authors concluded that use of the audiovisual material used as a method of distraction produces a global improvement in patient behaviour, but not in parental perception of the patient's anxiety, self-reported anxiety, pain or heart rate according to the measurement scales used.⁹ However parental perception was not recorded in our study.

CONCLUSION

Anxiety can fear during dental treatment is an important problem which can results in avoidance of treatment. It equally affects the clinician as behavioral management of pediatric patients is a herculean task faced by the dentist. Based on the result of our study we conclude that audio visual and audio distraction technique can be effectively used to treat children.

REFERENCES

1. Aminabadi N A Erfanparast L et al. The impact of virtual reality distraction on pain and anxiety during dental treatment in 4-6 year-old children: a randomized controlled clinical trial. *J Dent Res Dent Clin Dent Prospect* 2012; 6(4):117-24.

2. Prabhakar A. R., Marwah N., Raju O. S. A comparison between audio and audiovisual distraction techniques in managing anxious pediatric dental patients. *J Indian Soc Pedod Prevent Dent* - December 2007;177-82.
3. Buchanan H, Niven N. Self-report treatment techniques used by dentists to treat dentally anxious children: A preliminary investigation. *Int J Paediatr Dent* 2003;13:9-12.
4. Adair SM, Rockman RA, Schafer TE, Waller JL. Survey of behavior management teaching in pediatric dentistry advanced education programs. *Pediatr Dent* 2004;26:151-8.
5. Roberts JF, Curzon ME, Koch G, Martens LC. Review: Behaviour management techniques in paediatric dentistry. *Eur Arch Paediatr Dent* 2010;11:166-74.
6. Clinical Affairs Committee-Behavior Management Subcommittee, American Academy of Pediatric Dentistry. Guideline on behavior guidance for the pediatric dental patient. *Pediatr Dent* 2015;37:57-70.
7. Barreiros, deOliveira DS et al. Audiovisual distraction methods for anxiety in children during dental treatment: A systematic review and meta-analysis. *J Indian Soc Pedod Prev Dent* 2018;36:2-8.
8. Guinot Jimeno F. et al. Effect of audiovisual distraction on children's behaviour, anxiety and pain in the dental setting *European Journal of Paediatric Dentistry* vol. 15/3-2014
9. Yunkun Liu et al. Effect of audiovisual distraction on the management of dental anxiety in children: A systematic review. *Int J Paediatr Dent*. 2019;29:14-21.
10. Larry L. Venham, Elise Gaulin-Krem A self-report measure of situational anxiety for young children. *pediatric dentistry* 1979;1(2):91-6.
11. Alexander CM, Teller LE, Gross JB: Principles of pulse oximetry: theoretical and practical considerations. *Anesth Analg* 1989; 68:368-76.
12. Wong DL, Hockenberry-Eaton M, Wilson D, Winkelstein ML, Schwartz P. *Wong's Essentials of Pediatric Nursing*, 6th ed. St. Louis: Mosby, Inc., 2001.
13. Asvanund Y, Mitrakul K, Juhong R, Arunakul M. Effect of audiovisual eyeglasses during local anesthesia injections in 5- to 8-year-old children. *Quintessence international*. June 2015 ;46 (6):513-21.
14. 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. *Journal of Indian Society of Pedodontics and Preventive Dentistry*. 2015;33:192-203.

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