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

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Abstract

Aim*: To evaluate the effect of the Virtual Distraction Technique on the anxiety of pediatric patients during dental treatment.*

Materials and Method: *In the present study 40 children of 6-12 years were randomly selected and equally divided into two groups of 20 each. The first group was the Control group (Group A) and the second group was the Virtual reality distraction group (Group B). The dental procedure employed was the restoration of any tooth in the maxillary/mandibular arch for both groups. The children included in the Virtual reality group were allowed to watch video presentations throughout the treatment procedure. The anxiety of the child was measured by using Venham's picture test.*

Result and Conclusion: *It was observed from the study that the Virtual reality distraction was effective in reducing the anxiety of pediatric dental patients.*

Keywords: *Dental Anxiety, Distraction, Virtual reality distraction, VPT.*

Introduction

Dental anxiety among pediatric patients is a great challenge posed to every dentist in everyday dental practice. The child's uncooperative behavior may restrain the effective delivery of dental care that may compromise the quality of treatment provided. **(**1**)**

AAPD has outlined a series of behavior management techniques to deal with the problem, ranging from voice control to distraction, to physical restraint. When all else fails, sedation with drugs such as nitrous oxide has been advocated. **(**2**)** Behaviour management techniques are meant to reduce the need for excessive and potentially unsafe use of medications. There is evidence to indicate that integration of good behavioral techniques leads to better results, lessened drug requirements, greater patient safety and reduced side effects. **(**3**)**

Although to manage anxious children, many management techniques are successful, but the attitude of the parents and dental professionals towards aversive techniques is changing and because of litigation concerns, the popularity of non-aversive techniques like a distraction is becoming high among the dental professional to make cognitive orientation and promote the coping ability for a positive dental response. “Distraction” is a tactic designed to divert patient attention away from their current behavior to focus their interest on something else. **(**4,5**)**

In recent years, there has been an increase in behavioral research in virtual reality (VR) and the virtual world. VR refers to a human-computer interface that enables the user to interact dynamically with the computer-generated environment. In contrast to the less complex audiovisual (A/V) distraction, VR uses sophisticated systems, such as head-mounted, wide field of view; three-dimensional head-mount displays (HMDs) and motion sensing systems that measure the user’s head and hand positions. This application may be superior to traditional distraction because it offers more immersive images due to the occlusive headsets that project the images right in front of the eyes of the user and, depending on the model used, block out real-world (visual, auditory, or both) stimuli. **(**6**)**

The present study is designed to evaluate the effect of Virtual reality distraction on the anxiety of pediatric patients during dental treatment.

Material and Method

Source of data: This study was a prospective randomized single-blind clinical trial that was carried out in the Department of Pedodontics and Preventive Dentistry from December 2019 to February 2020. The target population was the subjects visiting the outpatient department requiring restoration of any tooth in the maxillary/ mandibular arch.

It was performed on 40 children aged between 6-12 years. The children visiting the outpatient department were examined and those who met the inclusion and exclusion criteria were selected for the study.

Inclusion criteria

1. Children having their first dental visit
2. Children between 6 to 12 years of age
3. The patient requiring restoration of any tooth in the 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 or auditory defect.
4. Mentally or physically challenged child.
5. Children with a learning disability.

Methodology

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

Group A: Control group (n = 20) and Group B: Virtual reality distraction group (n = 20). The dental procedure employed was restoration. The patients in the Virtual reality distraction group watch an audiovisual presentation by VR box 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 baseline value, the child was engaged to watch and listen to the audiovisual preparation throughout the 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 a child's

anxiety was measured using Venham's picture: a scale for measuring self-reported anxiety in children. **(Figure 2)**

Figure 1: Virtual reality distraction

Figure 2: Venham's picture test

Result

A total number of 40 children, 22 boys and 18 girls participated in the study and were randomly allocated in the study between the control group (without distraction) and audio distraction groups.

Venham's picture test was used to measure the anxiety of the child. VPT was administered two times to each patient during one visit; once before 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 the control group was increased (6.50 ± 0.30) after the completion of restoration as compared to starting 3.15 (± 0.45) of the procedure whereas the mean VPT score in the audio group was decreased (1.25 ± 0.50) after the completion of restoration as compared to starting (5.05 ± 0.60) of the procedure. **(Table no. 1)**

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

Table no. 1: Change in VPT in control group and a Virtual reality group

Group	**Pre-operative VPT Score**	**Post-Operative VPT Score**	**Difference**	***P* value**
Group I Control Group	3.15± 0.45	6.50 ± 0.30	3.35 ± 0.15	*P*< 0.05
Group II Audio Group	5.05 ± 0.60	1.25 ± 0.50	-3.80 ± 0.10	*P*<0.05

Discussion

Anxiety in patients still poses a significant problem for the practice of dentistry, so detecting and assessing dental anxiety among child patients with some valid method of measurement is necessary. So the aim of the present study was to evaluate the role of virtual reality distraction in the management of anxious pediatric dental patients during restorative procedures.

Venham's picture test, 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 chairside. **(**7,8**)**

As per the observations made in the present study, the maximum level of anxiety was apparent during the restorative procedure in the control group. But in the Virtual reality group, the anxiety level was shown to be reduced, confirming the physiologic relaxation due to distraction. The choice of audiovisual preparation was left to the child because playing familiar preparation might have helped the child gain control over the unpleasant stimulus and give them a feeling of being in a familiar environment as done in a previous study. **(**9**)**

Conclusion

In the present study it was observed that Virtual reality distraction was effective in reducing anxiety in pediatric dental patients.

References

1.Naithani M, Viswanath D. “Child's dental anxiety: Management by audio and audio-Visual distraction technique - A comparative study”. Univ Res J Dent. 2014;4:101-7.

2.Aartman IHA, van Everdingen T, Hoogstraten J, Schuurs AHB. “Appraisal of Behavioral Measurement Techniques for Assessing Dental Anxiety and Fear in Children: A Review”. J Psychopathol Behav Assess. 1996;18(2):153-71.

3.Foreman PA. “Practical patient management: The integrated approach”. [4]Anesth Prog. 1988;35(1):19-25

4.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.

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.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.

7.Venham L, Bengston D, and Cipes M: “Children's Response to Sequential Dental Visits”; J Dent Res. May 1977; 454-459

8.Venham L, Murray P andGaulin-Kremer “E Personality Factors Affecting the Preschool Child's Response to Dental Stress” J Dent Res 1979, 58.2046 – 2051.

9.Marwah N, Prabhakar AR, Raju OS. “Music distraction: Its efficacy in management of anxious pediatric dental patients”. J Ind Soc Pedod Prev Dent December 2005;168-70.