Original Article

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AUDIO DISTRACTION EFFICACY IN MANAGEMENT OF ANXIOUS PEDIATRIC DENTAL PATIENTS – A CLINICAL STUDY

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ABSTRACT

Aim: The purpose of the present study was to evaluate the efficacy of 'audio distraction' in anxious pediatric dental patients.

Materials and methods: Forty children aged between 4 and 8 years were randomly selected and equally divided into two groups of twenty each. The first group was control group (group A) and the second group was music group (group B). 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, Venham's anxiety rating scale, pulse rate, and oxygen saturation **Results:** 'Audio distraction' was found efficacious in alleviating anxiety of pediatric dental patients.

Conclusion: 'Audio distraction' did decrease the anxiety in pediatric patients to a significant extent.

KEYWORDS: Venham's picture test, Venham's anxiety rating scale, pulse rate, and oxygen saturation

INTRODUCTION

Pediatric patients often respond in a bizarre of ways to the dental treatment offered, they may either readily accept dental treatment or may be extremely fearful, stubbornly resistant or reluctant for any form of treatment. The role of pediatric dentist in managing an anxious child is not only to control the ailment with which the child reports but also to teach the child appropriate means to manage anxiety.[1] Managing the behavior and anxiety of a child so as to become a co-operative patient is critical to the success of dental treatment. Although, traditional techniques may be successful, the attitude of parents and dental professionals towards these techniques is changing.[2] This is the reason why new nonaversive techniques, which are more effective and more acceptable to the parents, are being used. Audio distraction is one such nonaversive technique in which patient listens to music during the dental procedure. Because of its success in medical settings[3] and in adult dental patients[4] many dentists believe that this technique may be successful in management of pediatric dental patients. Most of the studies that have been done are on 7 years or older children. There is need to check the distraction techniques in patients of younger age group who exhibit more disruptive behavior and dental anxiety. There is also a need to measure the physiological response that could be indicative of anxiety levels. Therefore, the purpose of this study is to investigate the effect of music distraction in managing the anxious pediatric dental patients.The success of distraction technique in medical settings and adult patients is well documented but the efficacy of this technique in dental procedures still needs to be investigated elaborately.[1] Aim of the present study was to evaluate the efficacy of audio distraction in anxious pediatric dental patients.

METHODOLOGY

Forty children aged between 4 and 8 years with no previous dental experience were selected for the study. No physically or mentally handicapped children were included in the study. Consent was obtained from the parents prior to the inclusion of the children in the study. Each child had four dental visits, first was the screening visit followed by three treatment visits. The purpose of the screening visit was to check the baseline values of

all the parameters for the patient. Oral prophylaxis was done in second visit followed by cavity preparation and restoration in the third visit and extraction of the decayed teeth in the last visit. The children were randomly divided in to two groups. First group was control group (group A) and the second group was music group. This music group was further divided equally in to two subgroups viz. instrumental music group (group B) and nursery rhymes music group (group C). The choice of the type of music depended upon the patient's selection. The patients in the music group listened to the selected audio presentation through headphones throughout the treatment during all the visits. Child's anxiety level in each visit was assessed using a combination of four measures that is Venham's picture test,[5]Venham's anxiety rating scale,[5] pulse rate and oxygen saturation. Pulse rate and oxygen saturation were measured using pulse oximeter.[6] These attained values were statistically analyzed using one factor An analysis of variance (anova) and Mann-Whitney test. (Table 1)

RESULTS

Self-reported measure of anxiety: Venham's picture test was administered two times to each patient during one visit; once prior to treatment and once after the treatment. anova was completed analyzing the pre and post treatment values for the three groups. There was no significant difference between the three groups but the Venham's scores in each group during different visits were strongly co-related. Anxiety measures: Venham's anxiety rating scale was used to measure the anxiety during all the visits. A significant difference ($P < 0.05$) was observed between the anxiety ratings among groups B and C that is between instrumental music group and nursery rhyme group, the anxiety being more in later (Figure 1). Pulse rate: pulse oximeter was used to evaluate pulse rate during all the four visits. The values of pulse rate were more in the control group (group A) when compared to any of the music groups (groups B and C) but the differences were not statistically significant. A statistically significant ($P < 0.05$) difference was seen between the pulse rates in groups B and C that is between instrumental music group and nursery rhyme group, the anxiety being more in later (Figure 2). Oxygen saturation: pulse oximeter was used to evaluate oxygen saturation during all the four visits. The values of oxygen saturation showed minimal variations during all the visits for all the groups and the results were not statistically significant (Figure 3).

	Venham's anxiety scale	Pulse rate	Oxygen saturation
Group A	1.0 ± 0.5	103.6 ± 5.4	95.7 ± 2.4
Group B	1.0 ± 0.2	100.6 ± 2.4	96.6 ± 2.2
Group C	1.2 ± 0.5	102.6 ± 3.4	95.0 ± 2.3
A vs B	P = 0.36, NS	P = 0.10, NS	P = 0.16, NS
A vs C	P = 0.12, NS	P = 0.50, NS	P = 0.24, NS
B vs C	P < 0.05, S	P < 0.05, S	P = 0.12, NS

Table 1: Venham's picture test

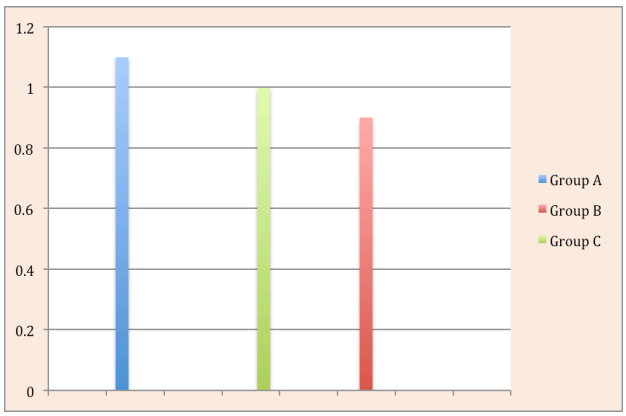

Figure 1: Venham's Anxiety Scale

DISCUSSION

The aim of this study was to evaluate the efficacy of music distraction in management of anxious pediatric dental patients.Venham's picture test, which is used in this study, is the most reliable measure of self-reported anxiety in children.[7] Venham's anxiety rating scale is also an effective

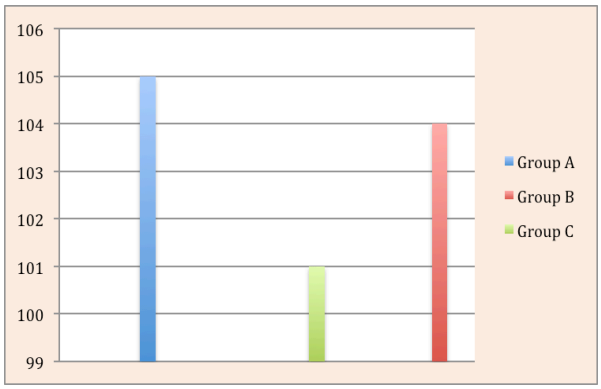

Figure 2 : Pulse Rate

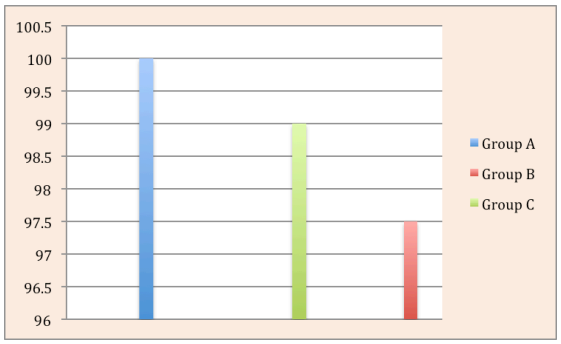

Figure 3: Oxygen Saturation

means of assessing anxiety in children.[7] Since, pulse rate is a direct measure of physiologic arousal and its increase is attributed to stress during dental procedure and therefore pulse rate is an index of patience response to dental stimuli.[6]The observations from this study indicated that Venham's picture test gave statistically inconclusive results, but the picture test was a very effective measure of the emotional state of the child at the chair side. This observation was similar to the earlier observations made by Venham et al. in 1977 and Alwin *et al* in 1991. The observations from this study indicate that pulse rate in the music groups especially in the instrumental music group was lower as compared to the control group thereby confirming the physiologic relaxation aspect of music. This indicates that audio distraction did result in reduction of anxiety in pediatric dental patients although the effect was not much significant. These results are consistent with several previous studies that also found the music distraction technique of use. [8,9] In contrast our results contradicted a few studies that showed no effect of music distraction.[10,11] It is possible that our results differ because of different methods and techniques, which we have used. The choice of music in our study was left to the patient as indicated by Klein and Winkelstein[12] because playing familiar songs will help child gain control over the unpleasant stimulus and give them a feeling of being in the familiar environment, whereas in other studies the choice of music was not given to the child. The music presentation in our study was used for the entire procedure whereas it was used only for a few minutes in other studies. Reduction in anxiety can be attributed to two reasons. First, a child listening to music will tend to close his eyes to concentrate on the audio presentation thereby screening out the sight of dental treatment.[9] Second, the sound of music will eliminate unpleasant dental sounds like the sound of hand piece[13] and these two advantages coupled with the effect of music will provide relaxation[13] and allow the dentist to effectively manage the anxious patient. Although, we do confer that music did reduce anxiety to some extent but not very significantly. Music distraction may be helpful as an adjunct along with other techniques therefore further research needs to be done in this field using other nonaversive techniques and newer strategies should be devised to manage anxious pediatric patient.

CONCLUSION

Following conclusions were drawn from the study:

1.Audio distraction technique did decrease the anxiety level in the pediatric patients although not to a very significant level.

2.Instrumental music was the music of choice.

3.Despite lack of any relief from pain the patients had an overwhelming positive response to the music presentation and wanted to hear it at their subsequent visits.

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