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Evaluating the Effect of Previsit Guided Imagery as a Behavior Guidance Tool for Dental Anxiety

Running Title: Evaluating the effect of PGI as a BG for DA

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KEYWORDS
Dental anxiety, fear, cartoon characters, guided imagery.

ABSTRACT:

Background

Guided imagery is a type of focused relaxation or meditation. It is simple and convenient that reduces stress and tension in the mind and soul.

Rational

Guided imagery uses simple phrases on a positive note that are repeated consecutively, that stimulates the pituitary gland to release stress relieving hormones. They serve as chemical messengers to relax the mind and calm the body.

Aim

The present study was aimed to evaluate the effect of pre-visit guided imagery as a behavior guidance tool for dental anxiety

Methodology

A randomized clinical trial was designed, planned and conducted among children

Statistical Analysis

Analysis was computed using Mann Whitney U Test.

Results

A significant difference in anticipatory dental anxiety was found between the two groups ($p < 0.001$) using SPSS software.

Conclusion

Pre-visit guided imagery , when employed as a behavior guidance tool for dental anxiety can be an effective method to manage dentally anxious children.

Introduction

Guided imagery is a programmed sequence of events that guides one towards a relaxed and focused state through directed thoughts and suggestions. It follows simple steps like taking few, slow breaths, relaxing oneself, to think of one's favorite scenery and to stay focused in that same mental picture for a short time

span of about 10 minutes. The benefits of the therapy are enormous the key point is that it relaxes the body and mind totally. Visualization aids in keeping the mind relaxed and peaceful with pleasant thoughts and memories. Soft soothing music in the background adds up to the beneficial effects as it served as an effective audio analgesia. [1]

Patients with acute dental anxiety experience physical and emotional stresses. **Guided** imagery is useful in such situations to improve health care outcomes. It aids these patients by increasing their strength, support and courage. Peretz and Bimstein 1 used imagination as a source of distraction before and during local anesthetic administration..Children were asked to think of their favorite image and concentrate on that image during the dental procedures.[1,2]

Literature has revealed the use of Audio- visual aids as an adjunct towards guided imagery. White noise or audio analgesia served to combat the effects of relaxation. A combination of visualization , guided imagery distraction and audio- visual aids reduced the anxiety perception by distracting the focus away from anxiety provoking factors. [3]

Methodology

Study Design

Target population were children who visited the dental office. The study was a randomized controlled trial. The study was carried out among children who visited the department in Chennai city, over a period of two months

Subjects

Sample size calculation

By keeping an error margin of + or – 5 % and a confidence interval of 95%, the sample size was calculated .40 children participated in the study.

Inclusion criteria.

1. Children who were willing to participate in the study
2. Children within 14 years were included.

Exclusion criteria

1. Children with major debilitating disorders and physically challenged children were excluded from the study.
2. Children with learning disabilities
3. Children with systemic diseases
4. Children with visual and hearing impairements

Sampling Technique

Multi stage sampling technique

Intervention Group

Children were exposed to the modified pre-visit imagery technique.

Non Intervention Group

Children were exposed to the conventional approach using verbal and non verbal communication.

Blinding

Anxiety assessment was conducted by the dentist (Principal Researcher) who was unaware of the group the children belonged to. Both the group code and anxiety score was sealed and sent for analysis at the end of the study.

Data collection

Patient demographics along with dental anxiety status was recorded by way of Venham's Picture Test chart.

Statistical Analysis

Analysis was computed using Mann Whitney U Test. Data were analyzed using SPSS software.

Results

A randomized clinical trial was designed, planned and conducted among children. Total number of school teachers who were recruited were 40. Single evaluator collected the information to prevent dilution of information.

Table 1: Anxiety level comparison – Interventional Group

Age	No of children	Male	Female	Mean- Pre Intervention Anxiety	Mean- Post Intervention Anxiety	Differences between pre and post

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						anxiety means
4	4	2	2	8.25	7	1.25
5	4	0	4	6.5	4	2.5
6	2	0	2	6.5	3.5	3
7	3	3	0	6.66	3	3.66
8	7	4	3	6.42	3.28	3.14
Total	20	9	11			

Table 2: Anxiety level comparison – Non Interventional Group

Age	No of children	Male	Female	Mean- Pre Intervention Anxiety	Mean- Post Intervention Anxiety	Differences between pre and post anxiety means
4	4	3	1	7	6.5	0.5
5	3	2	1	6.66	4.66	2
6	6	4	2	6.33	5	1.33
7	5	3	2	6.	5.6	0.4
8	2	0	2	6.5	4.5	2
Total	20	12	8			

Table 3: Difference of means between pre and post intervention anxiety according to age and gender

	Study Group	**Conventional Group**	**Study Group**	**Conventional Group**
Mann Whitney	**25.000**	**50.000**	**35.000**	**50.000**
Wilcoxon	**80.000**	**105. 000**	**90.000**	**105. 000**
Z	**-2.517**	**. 000**	**-1.510**	**. 000**
Asym sig -2 tailed	**0.012**	**1.000**	**0.131**	**1.000**
Exact sig	**0.063**	**1.000**	**0.280**	**1.000**

Table 4: Difference of means between 1st and 2nd visit anxiety level in both the groups

	N	**Mean**	**Std Deviation**	**P Value**
Intervention Group	**20**	**1.7500**	**0.44426**	**0.00**
Non Intervention Group	**20**	**1. 0000**	**0.00000**	

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Results based on the Anxiety level comparison – Interventional Group

Table 1 In our study depicts the Anxiety level comparison for the Interventional Group

In the intervention group maximum reduction of anxiety was in the 7-8 year olds with mean difference of 3.66 and 3.14. Minimum reduction of anxiety was in the 4-5 year olds with mean difference of 1.25 and 2.5.

Table 2 In our study depicts the Anxiety level comparison for the non Interventional Group

In the non intervention group maximum reduction of anxiety was in the 5 and 8 year olds with mean difference of 2. Minimum reduction of anxiety was in the 4-7 year olds with mean difference of 0. 5 and 0.4.

Table 3 revealed non –significant results

Table 4 revealed significant results in the Interventional Group with P value of < 0.05

Discussion

Guided imagery therapy is based on distraction techniques. Computer graphics, games and virtual reality have influenced patients largely in many anxiety prone dental procedures. They have out standing psychological effects. The present study was aimed to evaluate the effect of pre-visit guided imagery as a behavior guidance tool for dental anxiety on a group of 40 children. Our study revealed significant results in the Interventional Group with P value of < 0.05.

A study by Yu –Chen Ko et al [1]was done using guided imagery to relieve the anxiety of pre-school children undergoing dental procedures. Negative experiences in the dental clinics can induce anxiety in patients. When behavior guidance methods are important alternatives to general anesthesia, they can be tried to control dentally anxious children. The study was a randomized trial with two groups. Guided imagery used in this study was meant to establish a rapport with the dentist. The child was asked to imagine having a ride in a space craft. Anxiety levels were assessed and measured. Results revealed that guided imagery had no significant effects on anxiety levels.

Another study was done by Laura Vagnoli et al [2] on relaxation where guided imagery reduces perioperative anxiety and pain in children. It was a randomized study. Several studies have shown the efficacy of psychological interventions in reducing perioperative anxiety in children undergoing surgery. It aims to investigate the effectiveness of a specific non-pharmacological technique, the relaxation guided imagery in reducing pain in 60 children. The scale used was Yale Preoperative Anxiety Scale and FLACC Scale. Results showed statistically significant differences between groups.

A study by Cristina Alvarez- Garcia et al [3]was done to assess the effects of preoperative guided imagery interventions on preoperative anxiety and post operative pain. It was a meta analysis. Preoperative anxiety and post operative pain are common problems in patients undergoing surgery. The aim is to analyze the effect of using guided imagery prior to surgery in children. A total of 1101 records were identified, of which 21 were included in qualitative analysis. Preoperative guided imagery interventions on preoperative anxiety and post operative pain, was (d=3.71 and d= 0.24) respectively. Study concluded that the use of guided imagery was safe, effective and easy.

Another study was done by Eric A Gonzales et al [4,16,17] to assess the effects of guided imagery on post-operative outcomes in patients undergoing surgical procedures. It was a randomized single blind study. 44 patients were scheduled for procedures. Anxiety and pain level were documented. Both the groups had 28 minutes of privacy, during which the experimental group received a compact disk version of guided imagery. Data was collected and sent for analysis. The study concluded that the use of guided imagery reduced post operative pain considerably.

A study was done by Cris Anne et al [5, 18,19] to assess the anxiety management strategies in reducing anxiety levels among pediatric dental patients. Dental anxiety is the main reason why patients avoid and cancel dental appointments. There are different anxiety management strategies in reducing anxiety levels on pediatric patients. This study compared the different anxiety management strategies. Clinicians used non-pharmacological strategies like guided imagery, distraction, tell , show ,do, modeling and positive reinforcement to manage anxious dental patients. Pulse oximeter was used to measure the anxiety level. Data collection was done. The study concluded that tell, show, do was effective.

A study was done by Fatimah Yousef Al Zamzami et al [6, 20,21] to assess the effect of using guided imagery as a distraction method during dental procedures. Dental procedures usually need pharmacological management. Guided imagery is based on distraction is recently used. They reduce pain and anxiety without the side effects of drugs. These kinds of therapies have become popular. Computer games and graphics along with virtual reality have become popular. The advantages have encouraged researchers to explore this field.

A study was done by Devapriya et al [7, 22, 23] to assess the strategies to manage patients with dental anxiety and phobia. Formulating evidence based therapies for patients is essential in order to avoid stress. The initial interaction can reveal the presence of dental anxiety and phobia. In such situations subjective evaluation by interviews and objective evaluation of measure of pulse rate, blood pressure, pulse oximetry, finger temperature and galvanic skin responses can enhance diagnosis and enable categorization as mild, moderate or as highly anxious dental phobics. Psychotherapeutic interventions are either behaviorally or cognitively oriented. Pharmacologically they are managed by either sedation or general anesthesia. Cognitive strategies aim to alter and restructure the negative emotions. Cognitive behavior therapy is a combination of behavior and cognitive therapy and is most commonly accepted.

A review was done by Leah I. Stein Duker et al[8, 24,25] to assess the relationship between dental fear , anxiety, sensory over responsivity and oral health behaviors and outcome.188 articles were included. The results provide supporting evidence for the relation between DFA and general anxiety, fear, sensory over responsivity, poor oral health and behavior management problems which is valuable.

A study was done by Andrea Cunningham et al [9] to assess the use of virtual reality or dental smart phone applications as interventions for management of pediatric dental anxiety. It was a systematic review. Virtual reality has been used in medicine both as a distraction tool and as an acclimatization tool to prepare for a procedure. Those who were subjected to the technology experienced decreased anxiety. Searches were made at eight electronic databases like the Cochrane Oral Health Group Trial Registry for Controlled Trials(Central), Medline (Pubmed), Embase, PsycINFO, CINAHL, Scopus and Web of Science. Further searches reference cross-checks were performed to identify studies that were not discovered online. Systematic reviews and randomized control trials have demonstrated the use of VR both pre and post operatively. Hence VR is a promising tool in dentistry.

A study was done by Kavita Dhinsa et al [10] to assess and compare dental anxiety by measuring physiological, psychological and immune responses in Pediatric patients undergoing non- invasive dental treatment. Dental anxiety was checked using salivary biomarkers (salivary cortisol, salivary alpha amylase, salivary immunoglobulin – Ig A) and hemodynamic parameters using CDAS. Sample size estimated was 60. Samples were analysed using ELISA and immunoturbidity method. Results showed a marked increase in new patients. Hence the study was useful.

A study was done by Wavdhane et al [11] to assess the causes, complications and management for dental anxiety. It was a review. Anxiety related to the dental environment is a problem faced by children world wide. Anxiety is a normal emotional state and individuals defend themselves against a variety of threats.

A study was done by Ankita Yadhav et al [12] to assess the child’s dental anxiety by using child’s drawings as an indicator to measure dental anxiety. It was a cross-sectional study. Results were compared with pulse oximeter readings and VPT scores. Results showed a positive correlation.(p value = 0.140)

A study was done by Sahithi et al [13] to assess the effectiveness of child centered distraction in the management of a child’s dental anxiety during invasive dental procedures. Distraction is the technique of diverting the patients attention from an unpleasant procedure. It is of two types- active and passive. The study was conducted on a group of 60 children. They were divided into 3 groups of 20 each. Group 1- mobile video games, Group 2- mobile virtual reality, Group 3- mobile cartoons. Anxiety was assessed using physiological measures. Samples were analyzed using ANOVA, Kruskal Wallis and Wilcoxan Sign Rank test. Results showed anxiety reduction in Group 1.

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A study was done by Schneider [14] to assess the effectiveness of mental imagery in dentistry. Dental anxiety is a prevalent problem with marked physical, psychological and public health implications. Based on cognitive theory and evidence, we hypothesized that vivid sensory image based cognitions play a role in dental anxiety. A quantitative online survey -306 and qualitative semi structured interviews – N=18 was done. Results showed that such studies aimed at reducing intrusive memories.

This best practice provides health care personnel, parents and others with information for predicting and guiding behavior in children during dental procedures. Successful treatment depends on effective communication and developing customized behavior guidance plans. It uses pharmacological and non – pharmacological options. It must include consent forms, pain assessment, behavior documentation, preventive and behavior guidance options. The document was developed through a collaborative effort of the AAPD council on Clinical Affairs to offer information. [15]

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