



Evaluation of Effectiveness of Aromatherapy in Managing Anxious Paediatric Dental Patient: An In-Vivo study

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Abstract

Aim: To evaluate the effectiveness of aromatherapy in the reduction of dental anxiety of pediatric dental patients.

Methodology: Present In-Vivo study was conducted to evaluate the effect of aromatherapy on child anxiety during dental treatment. A total of 40 children, aged 6-10 years, attending for their first dental visit were included as study participants. Samples were randomly divided into two groups (Control group: Treatment in normal dental set-up, Experimental group: Treatment under aroma). Venham's picture scale (VPS) was used to assess anxiety. The data were entered over a spreadsheet, and statistical analysis was performed using SPSS software version 16 (IBM, Chicago, United States).

Result: The post-exposure mean scores of Venham's picture scale (VPS) were lower in the experimental group.

Conclusion: Aromatherapy is an effective alternative therapy that can be practiced in dentistry for anxious pediatric dental patients as it reduces anxiety while not affecting pain.

Keywords: Anxiety, Aromatherapy, Venham's picture scale.

Introduction

Dental anxiety is prevalent in 5% to 20% of children in various countries, which can increase the pain sensation.[1] Dental anxiety has been defined as an “abnormal fear or dread of visiting the dentist for preventive care or therapy and unwarranted anxiety over dental procedures” and can have physiological, cognitive, and behavioral consequences. Dental anxiety also affects the working lives of dental professionals. [2,3] Dealing with anxious patients leads to increased tension that may potentially compromise performance. Increased time per visit may be required. Managing dental anxiety has been suggested as one of the most difficult tasks for dental practitioners. [4,5,6]

Anxiety is managed with either pharmacological or non-pharmacological methods. A common method of pharmacologic management of anxiety is through conscious sedation or general anesthesia. This method is associated with some risks, requires additional equipment, cannot be applied to patients with allergies to other medications, and has many side effects. [7]

A new and alternative way to reduce anxiety levels in dental clinics is the use of aromatherapy. Aromatherapy uses plant materials and aromatic plant oils, including essential oils and other aroma compounds for improving psychological or physical well-being. [8]

It is a type of complementary medicine in which the volatile oil of plants is used to promote the level of physical, spiritual, psychological, and physiological health. Aromatherapy is used in several forms including massage, inhalation, compresses, baths, or topical application. Inhalation and massage are the most widely used forms, especially in medical practices. [9,10]

It involves the inhalation of scented oils, volatile molecules of the oil, which reach the lungs and rapidly diffuse into the blood, causing brain activation through the systemic circulation. However, these molecules also bind to olfactory receptors, creating an electrophysiological response, which reaches the brain. Neocortex activation is expected to occur by this response, which has an effect on the perception of odors and reaches the limbic system regions including the amygdala and hypothalamus, the areas where the levels of hormone and emotions are controlled. [11,12] Hence, the aim of the study was to evaluate the anxiety level in children under aromatherapy.

Material and Methods

Present In-Vivo study was conducted to evaluate the effect of aromatherapy on child anxiety during the dental procedure after obtaining ethical clearance from the scientific committee.

A total of 40 children, aged 6-10 years, attending for their first dental visit were included as study participants. Informed consent was obtained from the children’s guardians/parents prior to their participation.

Inclusion criteria

- Children aged between 6-10 years
- Children requiring restoration in mandibular molars
- Children who have sound physical, psychological, and mental health.
- Children with no history of a previous dental visit.
- Children with no history of allergies or other medical ailments.

Exclusion criteria

- Children showing uncooperative behaviour
- Children with a previous dental visit
- Children with common cold and allergy were excluded from this study

Study samples were randomly divided study participants into two groups.

Group I (Control) - Treatment is done under normal clinical set-up

Group II (Experimental) - exposed to aromatherapy (lemongrass oil)

All patients enrolled in the experimental group were seated in a clinical setup with aromatherapy whereas treatment in the control group was done in a normal clinical setup. All caries were removed with help of a spoon excavator and arotor. After the excavation, the caries cavity was restored with glass ionomer cement. The anxiety of the child was assessed by Venham's picture test. **(Figure no 1)**

All participants who arrived for their first dental visit were asked to fill out a questionnaire comprising demographic information and the purpose of a dental visit. Psychometric assessment of dental anxiety was done based on the "Venham's picture test". Each child was asked to point out the figure that represents their state of mind the most. A score of 1 was recorded for each distressed figure selected by the patient and the scores are summed up. Thus, the score can vary between 0 and 8. Higher scores indicate high anxiety. After the completion of the procedure again postoperative anxiety was again assessed by Venham's picture test. The data were entered over a spreadsheet, and statistical analysis was performed using SPSS software version 16 (IBM, Chicago, United States).



Figure no 1: Venham's picture test

Result

Self-reported measure of anxiety: Venham's picture scale was administered two times to each patient: Prior to each treatment session and immediately following the treatment on subsequent visits.

A total of 40 subjects was included in the present in-vivo study. Forty children with a mean age of 8.4 years participated in the study. This included 26 male and 14 female children. **(Table no.1)**

VPS scale was used to measure the anxiety level. A t-test was used to determine the statistical significance. It was found that the mean anxiety level in the experimental group reduced postoperatively (0.60 ± 0.26) as compared to the preoperative level (1.90 ± 0.23) which was found to be statistically significant ($P < 0.05$). In the control group, no statistically significant differences were seen between pre and post-treatment mean anxiety levels. **(Table no.2)**

Table no. 1 Distribution of sample		
Group	Mean age	Total
Control group	8.6 ± 0.6	20
Experimental group	8.2 ± 0.2	20
Overall Mean age	8.4 ± 0.4	40

Table no. 2 Mean VPS		
Group	Mean VPS	P value
Control group	Pre treatment 1.88 ± 0.25	P ≥ 0.05
	Post treatment 1.55 ± 0.30	
Experimental group	Pre treatment 1.90 ± 0.23	P < 0.05
	Post treatment 0.60 ± 0.26	

Discussion

In pediatric dentistry, restorative is the common invasive procedure, which triggers dental anxiety and fear in children. [13] Anxious and fearful children experience the pain of higher intensity and longer duration. Hence, the main focus of research is to reduce these emotions. To accomplish this, pediatric dentists employ many behavior guidance techniques, either non-pharmacological or pharmacological. [14,15] The pharmacological anxiolytic drugs, such as benzodiazepines, have been associated with unwanted sedative and withdrawal effects; and the possibility of addiction is another adverse effect. [16,17]

Aromatherapy is one among the proposed, and this has the added clinical advantage of being non-invasive and inexpensive. This therapy uses essential oils which are scented, volatile liquid substances removed from plants using steam or pressure. [18]

The present study assessed the effects of aromatherapy using as a strategy for anxiety management among children who had their first dental visit. Children in the age group of 6-10 years undergoing their first dental visit were assessed. Aromatherapy is a treatment method that uses certain aroma stimuli

media derived from certain aromatic plant oils, including essential oils and other aroma compounds. Previous studies have shown that aromatherapy can reduce a person's anxiety level. [19]

Venham's picture test was employed in the present study to evaluate anxiety. Venham's picture test measures the state of dental anxiety, which is easy to administer and score. It consists of eight cards with pictures of children in various dental situations. Each card has two figures, one in which a child appears happy and another one in which he/she looks distressed. Children would be asked how they feel about visiting the dentist, to point out the figure they liked the most and scored accordingly. [20]

The results of this study revealed that the anxiety reduction effect due to essential oil aromatherapy was significant compared to the anxiety level seen in the control group. This can be attributed to the fact that essential oil contains neroli as the main component, which is extensively used in aromatherapy to relieve chronic depression. Inhaling the aroma of neroli essential oil is thought to transmit messages to the part of the brain (limbic system) that controls emotions, which in turn influences the nervous system thereby causing stress alleviation and enhanced mood. [21]

Aromatherapy was found to be very effective in reducing the anxiety levels of the children compared to the controls. Levels of anxiety reduction in the aromatherapy group were following the studies of Lehrner et al., Kritsidima et al. in elder dental patients waiting for a dental procedure. Result of our study is in accordance to the study conducted by James J et al.²² and Nirmala K et al. [23]

Conclusion

Aromatherapy is an effective alternative therapy that can be practiced in dentistry for anxious pediatric dental patients as it reduces anxiety while not affecting pain. It is a non-pharmacological method contributing to traditional clinical procedures.

Aromatherapy had a positive impact on dental anxiety children undergoing an invasive dental procedure.

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