



Lavender Aromatherapy in the Management of Dental Anxiety

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Abstract

Overview: Anxiety in the dental office is a common challenge for the clinicians. Dentophobia is a common cause for reduced motivation and infrequent dental visits for patients with oral diseases. Several techniques to reduce dental anxiety have been in practice since years. This review aims to summarize the potential use of Lavender as an aromatherapeutic agent for dental anxiety management.

Methodology: Articles pertaining to the key words “Lavender”, “Lavender Aromatherapy”, “Dental anxiety management” and “Complementary and Alternative medicine (CAM)” were searched in MEDLINE database of references and abstracts on life sciences and biomedical topics. The findings from the studies were consolidated and inferences were summarized into a review.

Results: Although less in practice, our literature search found that lavender aromatherapy was an effective adjunct to manage current or state anxiety and should be considered as an “on the spot” therapeutic agent in managing dental anxiety.

Conclusion: Within the confines of the review, it could be concluded that lavender aromatherapy is an effective method of managing dental anxiety. Compared to the conventional methods described in the literature, aromatherapy offers the benefit of increased patient compliance and reduced rates of complications associated with such procedures. However further research focussed on the effectiveness of this method should be done for establishing this therapy as an optimal therapy to manage dental anxiety.

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Keywords

Lavender; Lavender Aromatherapy; Dental Anxiety Management; Complementary and Alternative Medicine (CAM)

Introduction

Dental anxiety is a common challenge encountered in the dental office for both the patient and the dental team [1]. It is defined as an ‘Abnormal fear or dread of visiting the dentist for preventive care or therapy and unwarranted anxiety over dental procedures’ [2]. Several methods have been employed for managing anxiety in the dental office and those mainly depend upon the severity of the condition as well as the treatment approaches [1]. It is often recognized as the most common barrier to the successful execution of the dental treatments. Therefore, anxiety affects the efficiency and quality of the dental professionals as well as the patient experience (Fig. 1) Managing dental anxiety has been suggested as one of the most difficult tasks for dental practitioners.

The widely used approach for managing anxiety during dental and medical procedures is the use of conscious sedation or general anesthesia. Although it eases the procedure, they come up with their own disadvantages such as requiring additional equipment, risk associated with the drug used and cannot be applied to the patients with allergies and those taking certain medications [3]. Such side-effects are significantly associated with reduced patient adherence. Another adverse effect of such sedative drugs are, they can cause addiction and drug dependence [4]. All of these reasons can limit their use in dentistry which paves the way for research on other stress reduction protocols with relatively lesser risks associated with its use. Off late, a noticeable increase in the utilization of Complementary and Alternative Medicine (CAM) across the world is documented. One of such methods is Aromatherapy, which has been regarded as an efficient tool in dental anxiety reduction. Aromatherapy is the therapeutic use of essential, aromatic oils, usually combined with therapeutic massage and excitation of the olfactory system, thus inducing relaxation and alleviates certain anxiety symptoms [4]. The history of Lavender (*Lavandula angustifolia*) as a medicinal plant and its properties such as anxiolysis, sedative and calming properties goes back to the era of ayurvedic medicine in ancient India [5].

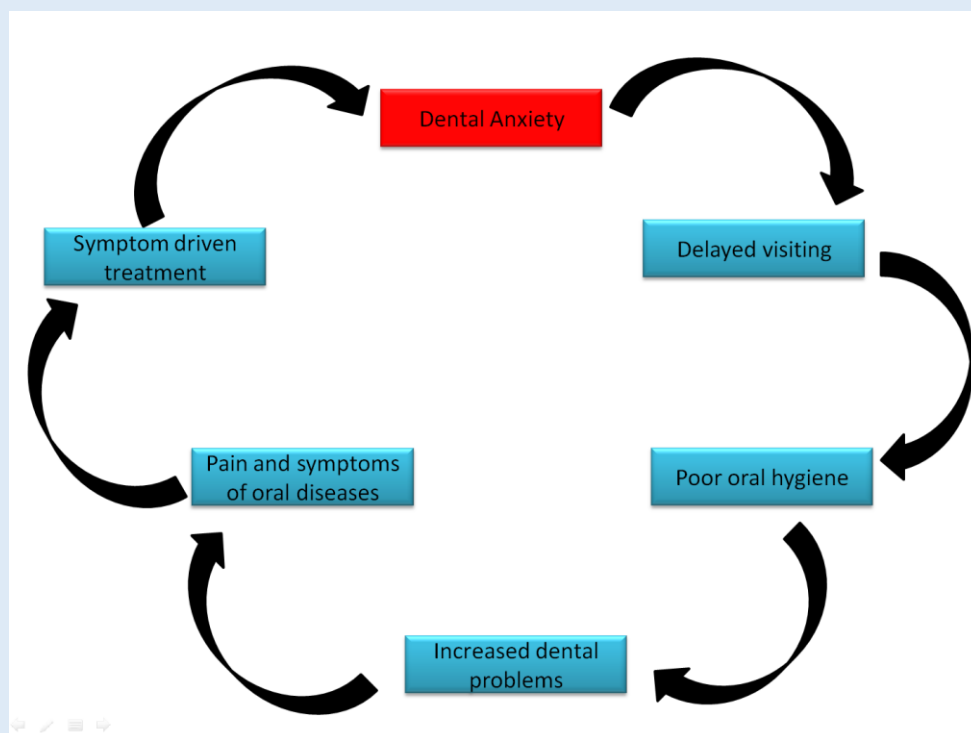


Figure 1: Cycle of dental anxiety and infrequent visits leading to oral problems.

Flowers of several species of lavender are known for their wide therapeutic use for centuries. The major components of lavender oil are linalool, 1,8-cineole, linalyl acetate, β -ocimene, terpinen-4-ol and camphor [6]. Among them the main components are linalool, a sedative agent which is found to affect gamma-amino butyric acid receptors of the central nervous system and linalyl acetate, a narcotic agent [7]. Therefore, aromatherapy has the ability to alter the state of mind of the patient in the dental office. Contrary to pharmacotherapy, there are no major side effects reported with aromatherapy [8].

Conventional Methods of Anxiety Management in a Dental Office

Dental anxiety has been conventionally treated with a wide array of techniques. Least invasive techniques are preferred as this will further increase the patient's compliance for the treatment. Starting first with non-pharmacological management methods such as communicating with the patient, management of behaviour and administration of local anaesthesia for pain control. Once the clinician finds that these techniques have not been effective, a shift to the pharmacological interventions such as inhalation sedation (nitrous oxide), intravenous sedation and general anaesthesia may be considered (Fig. 2) [9].

Literature evidence suggests that dental anxiety has been managed by psycho-therapeutic approaches, pharmacological interventions, or a combination of both the methods, depending

up on the experience and skills of the clinician, degree of anxiety, patient characteristics, and clinical scenario. A clinician can then decide the type of intervention to be used based on these factors. Response to behavioural and cognitive therapy is not immediate, requiring multiple sessions to maintain an initial and consistent treatment response.

Mild to moderately anxious patients often benefit from psychological interventions. However, occasional use of anxiolytic drugs or conscious sedation may be necessary. These therapies are particularly effective on a long-term basis with positive effects on the patients approach towards the dentists and the treatment. This also enables them to seek dental care in future which is the prime goal of dental practice. Patients who are extremely anxious or phobic, most often require combined anxiety management approaches. Pharmacological management of anxiety involves greater risk to the patient and hence, it is mandatory that the dentist and the team follow proper guidelines, be well trained and sufficiently equipped with adequate facilities before incorporating such techniques in the operator [10].

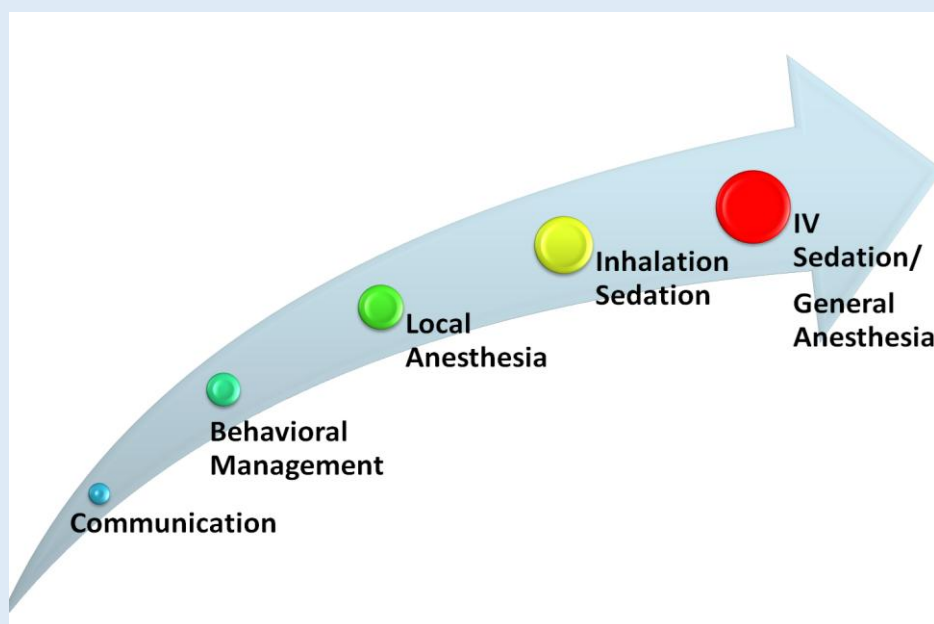


Figure 2: Spectrum of anxiety management in dentistry.

Lavender Aromatherapy and its Effects on Anxiety Reduction

It is well known that odours have the capability to alter the mood and emotional state of human beings. Folk medicine and aromatherapy have acknowledged the psychological and physiological effects of essential oils for a long time [11]. At a dental office, the ambience plays a key role in the initiation of dental anxiety. Furthermore, an array of emotions can be elicited by smells from the dental operator that could lead to an increased state of dental anxiety. These anxiety provoking smells such as eugenol, blood etc. can be masked by

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introducing pleasing, ambient odours of aromatic essential oils into the dental environment. Inhaling the fragrance of the aromatic essential oils have a relaxing effect and improves mood due to their potential anxiolytic properties. In our review of the different studies, we have come to a consensus that aromatherapy is more efficient in managing mild to moderate anxiety rather than severe anxiety [10]. Although there isn't sufficient data to comprehend the exact mechanism of action for the reduction of anxiety by the aromatic essential oils, Lavender (*Lavender angustifolia*) has been cited by different studies to act postsynaptically, by modulating the activity of cyclic Adenosine Monophosphate (cAMP). Sedation has been associated with a reduction in cAMP activity. The anxiolytic effects of lavender essential oil is associated with one of its major constituents linalool, that acts by means of autonomic deactivation to lower physiological arousal levels without affecting mood ratings [3].

It can be inferred that emotional changes caused by the inhalation of aromatic essential oils like lavender are induced by means of olfactory stimulation as it is evidenced by neuroimaging studies that olfactory processing is linked directly to the amygdala, a part of the limbic system of the brain that regulates emotion [3]. Taking into consideration, the work on the effects of cannabis on behaviour showing that there exists a causal relationship between cAMP reduction and relaxation and also an association of sedation with reduction in cAMP activity, the effectiveness of lavender as an anxiolytic agent would lie in its potential to promote relaxation through the autonomic nervous system [2]. The inhalation of lavender essential oil in healthy individuals is documented to have significantly reduced the salivary cortisol levels, salivary chromogranin, and serum cortisol. Increased blood flow, decreased galvanic skin conductance and systolic blood pressure have also been recorded [10].

Studies conducted have shown that the inhalation of lavender essential oil (*Lavandula angustifolia*) in a dental office is an effective means of reducing current state anxiety, but has no effect on future anxiety-provoking thoughts. In this sense, lavender should be perceived as a means of 'on-the-spot' reduction of anxiety and not so much as an anxiety treatment [2].

Modes of Usage of Lavender Essential Oil

Lavender essential oils are commercially available (Fig. 3 and 4) and there are three most commonly used ways of administering lavender essential oil.

- Oral
- Inhalation
- Topical

Oral Administration

Silexan, an oral preparation of lavender essential oil administered in the dosage of 80 mg daily for six weeks has shown a reduction in the state of Generalized Anxiety Disorder (GAD) response by at least 50% in the HAM-A total score between the baseline and the end of week 6 similar to the effect of traditional anxiolytic drugs such as lorazepam and paroxetine [6,12]. The advantage with the use of silexan is that it has no potential for abuse and causes no hangover like symptoms associated with the use traditional anxiolytic drugs.



Figure 3: Orally administered lavender extract.

Inhalation

The ambient odour of lavender essential oil circulated in the dental office with the use of a candle warmer in the patient waiting area at the dilution of 1:1 concentration of Lavender essential oil and water for a time period of 15 minutes has shown a decrease in state anxiety [3]. Considering that there were no reports of adverse effects caused by the inhalation of lavender essential oil, it is a safe and effective means of state anxiety reduction. In a study conducted by Kritsidima et al., it was indicated that lavender fragrance reduces state anxiety as measured by STAI-6. But, it had no effect on decreasing dental anxiety regarding future dental visits, as recorded by the MDAS [2]. Hence, it can be understood that the inhalation essential oil of lavender can be used as an ‘on the spot’ method of dental anxiety reduction.



Figure 4: Commercially available Lavender essential oil preparations.

Drawbacks and Potential Hazards

Although the use of lavender inhalation aromatherapy has very few to no reports of adverse reactions, studies have shown reports of prepubertal gynaecomastia upon repeated exposure to lavender [13]. In a study conducted by H. Woelk, S. Schläfke, comparing the effects of lorazepam and silexan in reduction of anxiety, it was found that 20 of the 40 patients treated with silexan suffered from 26 adverse events. In the silexan group, a causal relationship to the study medication could not be ruled out for 11 adverse events in 10 patients. Nine of the eleven adverse events were gastrointestinal namely, nausea: 4 adverse events, eructation/ breath odour: 3 adverse events and dyspepsia: 2 adverse events [6].

Conclusion

Within the confines of this review it could be concluded that lavender aromatherapy is an effective method of managing state anxiety at a dental office and can be considered as an ‘on the spot’ management technique. Compared to the conventional methods described in the literature, aromatherapy offers the benefit of increased patient compliance and reduced rates of complications associated with such procedures. However, further research focussed on the effectiveness of this method, will enhance our understanding of aromatherapy as an optimal remedy to manage dental anxiety.

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