



## EFFECT OF AROMATHERAPY ON ANXIETY AMONG PATIENTS UNDERGOING DENTAL EXTRACTIONS

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### Abstract

**Objectives:** Dental anxiety is thought to be a significant barrier to successful treatment completion. Dental procedures are more likely to be difficult, if not impossible, for dentists to accomplish when patients with dental anxiety are more prone to be uncooperative. The essential oils used frequently in aromatherapy come from a variety of sources, including lemon, chamomile, lavender, orange, apple, cedarwood, and bergamot. Applications for aromatherapy include massage, topical products, inhalation, and complementary medicine. The aim of this study was to assess the effects of aromatherapy on dental anxiety among patients undergoing dental extractions.

**Materials and Methods:** This study was a randomized control trial of all cases that were advised for simple extraction in the oral surgery clinic between May 2021 and May 2022. Sample size was chosen to be 100 randomly, they were divided into group A and B. Group A underwent aromatherapy, Group B did not undergo aromatherapy, they were given a set of questions from DASS scale to assess their stress levels before and after aromatherapy with Group A being population with aromatherapy effective and Group B being population ineffective of aromatherapy before undergoing extraction. All the case notes in the department were retrieved and reviewed. Information extracted from the case notes included age, sex, medical history, clinical findings and treatment received. The data was analyzed using SPSS statistical software.

**Results:** In our study, we found that there was a statistical significance between gender and reduced stress on aromatherapy prior to extraction ( $p < 0.05$ ). No statistical significance was noted between age and reduced stress on aromatherapy prior to extraction. Female patients between 30 - 60 years of age were more prevalent with reduced stress on aromatherapy prior to extraction.

**Conclusion:** Within the limits of this study, we concluded that aromatherapy prior to extraction was helpful in reducing stress to some extent, especially in female patients. Further studies on a larger scale are required to find possible associations that would help determine clinical outcomes and to identify the science behind or placebo effect behind aromatherapy to reduce stress.

**Keywords:** Aromatherapy, Essential oils, Extraction, Stress, Placebo.

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## 1. Introduction

Dental anxiety is thought to be a significant barrier to successful treatment completion. Dental procedures are more likely to be difficult, if not impossible, for dentists to accomplish when patients with dental anxiety are more prone to be uncooperative. As a result, dental professionals' ability to work and performance are compromised by dental fear<sup>1</sup>. Since over 6,000 years ago, aromatherapy has been used to boost one's mood or health. It offers both physical and emotional benefits<sup>2</sup>. The application of aromatic substances, such as essential oils, for therapeutic or medicinal purposes is known as aromatherapy<sup>3</sup>. Over forty distinct types of aromatic oils are available, and they are derived from diverse parts of plants, herbs, trees, and flowers for therapeutic uses. These oils are thought to have antiviral, antifungal, and antioxidant effects, as well as variable degrees of antibacterial action<sup>4</sup>. Aromatherapy works by stimulating our sense of smell, and only very little amounts of essential oils are utilized. The olfactory nerve cells in the nasal cavity respond to aroma, delivering impulses to the limbic system, which in turn stimulates the nervous and circulatory systems<sup>5</sup>.

The essential oils used frequently in aromatherapy come from a variety of sources, including lemon, chamomile, lavender, orange, apple, cedarwood, and bergamot<sup>6</sup>. Applications for aromatherapy include massage, topical products, inhalation, and complementary medicine<sup>1</sup>. Essential oils have been utilized to assist people feel less worried while waiting in dentist offices since they have the power to affect psychological states as well.

There has been a striking rise in the use of complementary and alternative medicine (CAM) in recent years<sup>7</sup>. Aromatherapy is one of the nonpharmacological approaches that has long been considered as a frequent method of treating anxiety. According to some, aromatherapy has positive effects on the social, psychological, spiritual, and mental elements. When compared to traditional medications, aromatherapy is said to be quite safe with regard to side effects<sup>8</sup>.

Both pharmaceutical and nonpharmacological approaches are typically used to treat anxiety.

Conscious sedation or general anesthesia are two popular ways to manage anxiety during dental surgery<sup>9</sup>. Pharmacologic treatment of anxiety can dramatically improve patient outcomes, but it comes with some hazards, necessitates more equipment, and cannot be used on individuals who are allergic to things or using other medications<sup>10</sup>. Various adverse effects are noticeable, including weariness, disorientation, and restlessness. Our team has extensive knowledge and research experience that has translate into high quality publications<sup>11-20</sup>. The aim of this study was to assess the effects of aromatherapy on dental anxiety among patients undergoing dental extractions.

## 2. Materials and Methods

This study was done in Private Dental College, Chennai, TamilNadu. A total of 100 records of patients who had been diagnosed and advised for extraction between July 2021 to Jan 2022 were assessed for this study. The data collection and analysis were done by a single examiner. 100 Patients advised for simple extraction were analyzed, they were divided into group A and B. Group A underwent aromatherapy, Group B did not undergo aromatherapy, and they were given a set of questions from DASS scale before and after aromatherapy to assess difference in stress levels in aromatherapy prior to extraction (Figure 1) and the depression, anxiety and stress levels were graded (Table 1). The patients who had clinical signs and symptoms of caries, periodontal disease was included in the study. Relevant history that revealed predisposing factors and systemic conditions of the patients were also recorded. Other information recorded are the results of the examinations such as the location, number of teeth as well as other lesions seen. A simple random sampling was done to avoid sampling bias. The data collected were tabulated in an excel sheet. Gender, age, and stress levels according to guidelines of DASS scale among Group A and B were recorded. The extracted data was tabulated in MS Excel and analyzed using SPSS 19 Descriptive statistics and chi-square tests were performed with the level of significance at 5% ( $P < 0.05$ ).

Figure 1 depicting DASS scale.

**DASS21** Name: \_\_\_\_\_ Date: \_\_\_\_\_

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Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you **over the past week**. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all  
 1 Applied to me to some degree, or some of the time  
 2 Applied to me to a considerable degree or a good part of time  
 3 Applied to me very much or most of the time

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1 (s)	I found it hard to wind down	0	1	2	3
2 (a)	I was aware of dryness of my mouth	0	1	2	3
3 (d)	I couldn't seem to experience any positive feeling at all	0	1	2	3
4 (a)	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5 (d)	I found it difficult to work up the initiative to do things	0	1	2	3
6 (s)	I tended to over-react to situations	0	1	2	3
7 (a)	I experienced trembling (e.g. in the hands)	0	1	2	3
8 (s)	I felt that I was using a lot of nervous energy	0	1	2	3
9 (a)	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10 (d)	I felt that I had nothing to look forward to	0	1	2	3
11 (s)	I found myself getting agitated	0	1	2	3
12 (s)	I found it difficult to relax	0	1	2	3
13 (d)	I felt down-hearted and blue	0	1	2	3
14 (s)	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15 (a)	I felt I was close to panic	0	1	2	3
16 (d)	I was unable to become enthusiastic about anything	0	1	2	3
17 (d)	I felt I wasn't worth much as a person	0	1	2	3
18 (s)	I felt that I was rather touchy	0	1	2	3
19 (a)	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
20 (a)	I felt scared without any good reason	0	1	2	3
21 (d)	I felt that life was meaningless	0	1	2	3

Table 1 depicting grading for depression, anxiety and stress levels.

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

### 3. Results

The outcomes of this study are depicted in Figures 2 - 8.

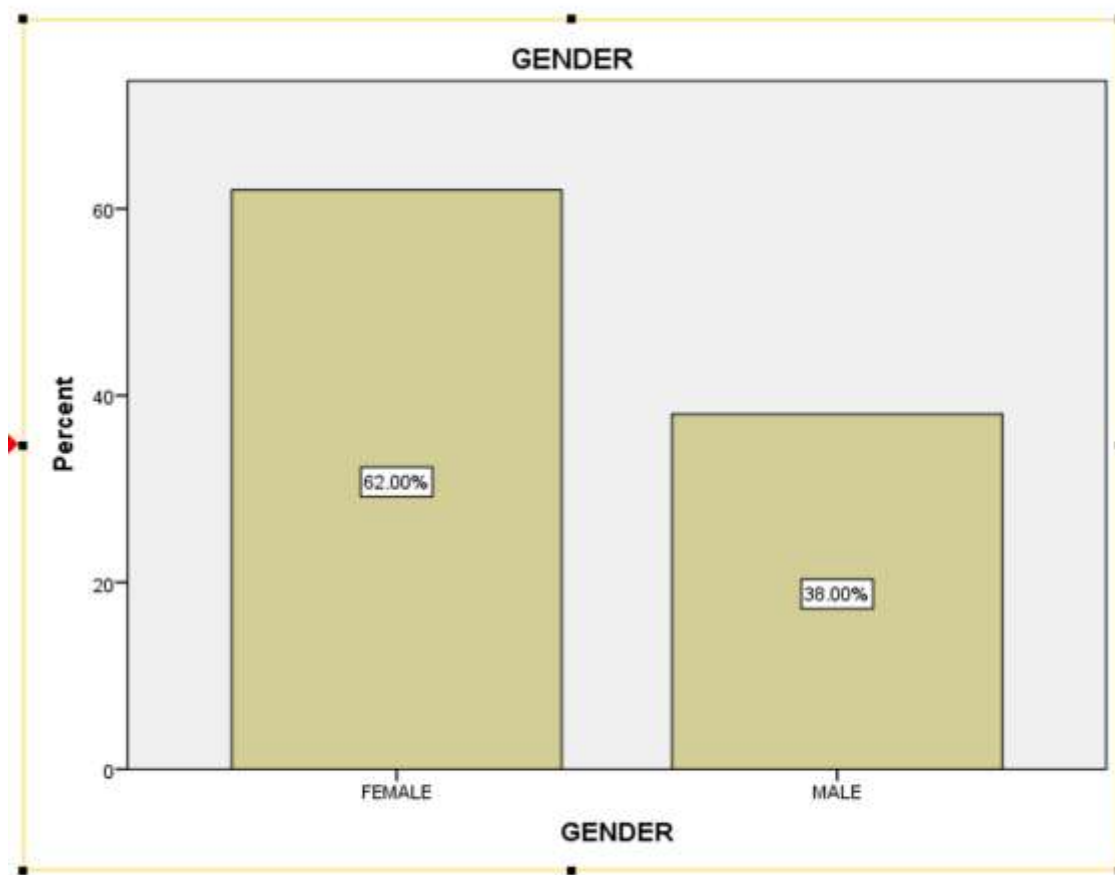


Figure 2: Bar chart showing the gender distribution among patients. 38% of the patients were male, 62% were female. Female were diagnosed more success for aromatherapy than males.

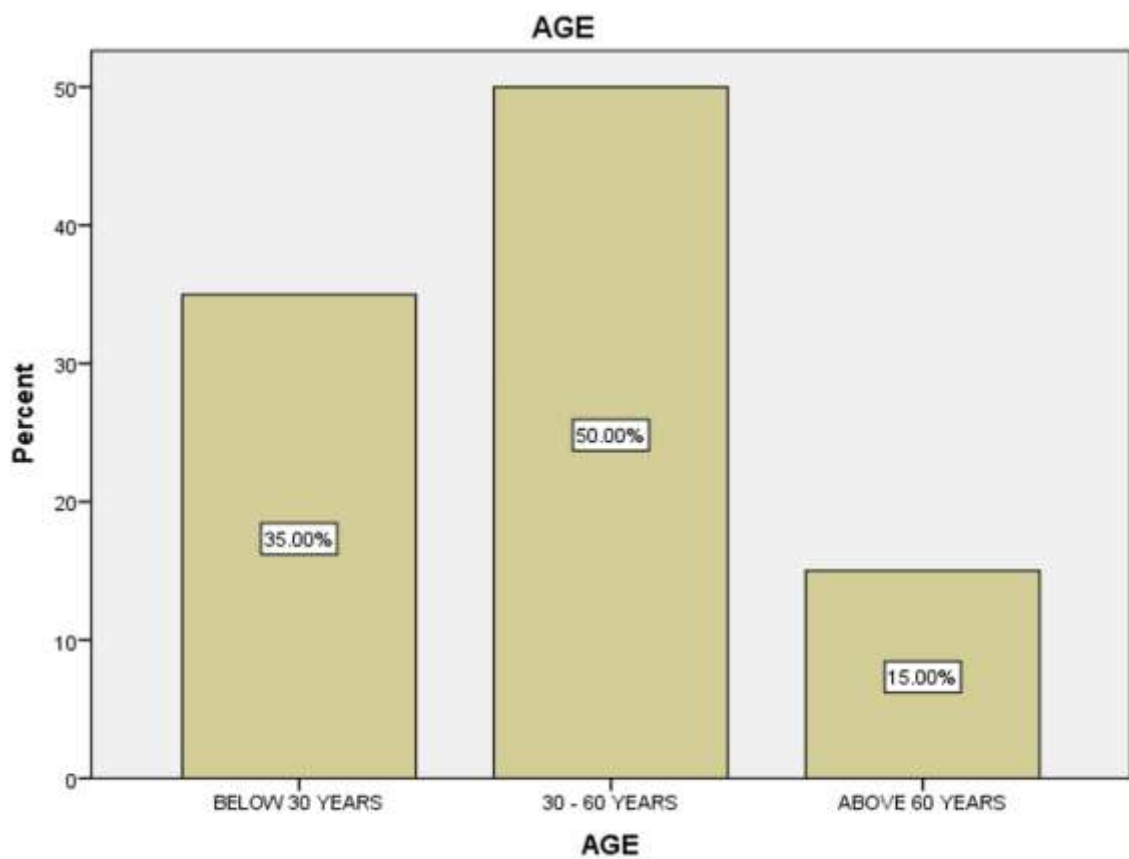


Figure 3: Bar Chart showing the Age distribution among the patients. 35% of patients belonged to the group below 30 years, 50% of patients belonged to the group between 30 - 60 years of age and 15% of patients belonged to the group of above 60 years of age. Patients belonging to the age group of 30-60 years are reported more in number with worked aromatherapy.

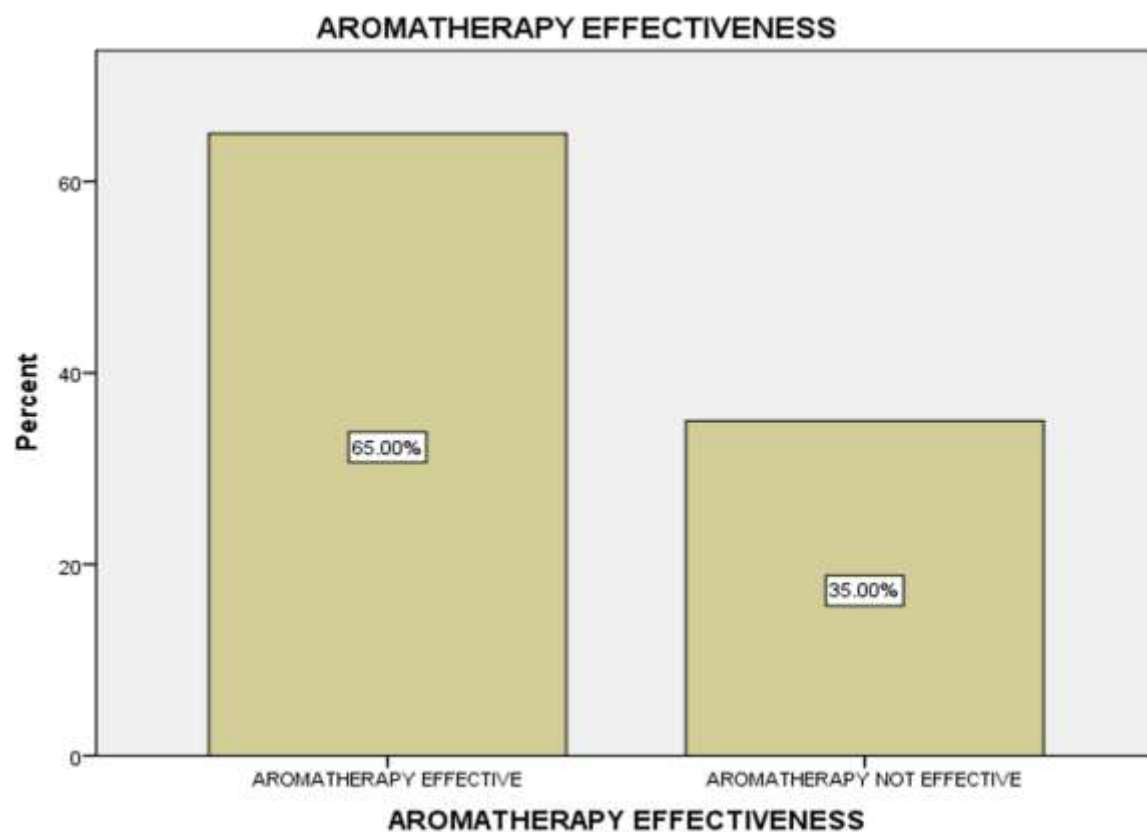


Figure 4: Bar chart showing the aromatherapy distribution among patients. 65% of the patients were aromatherapy worked patients, 35% patients for whom aromatherapy did not work. Aromatherapy seems to work in reducing stress prior to extraction.

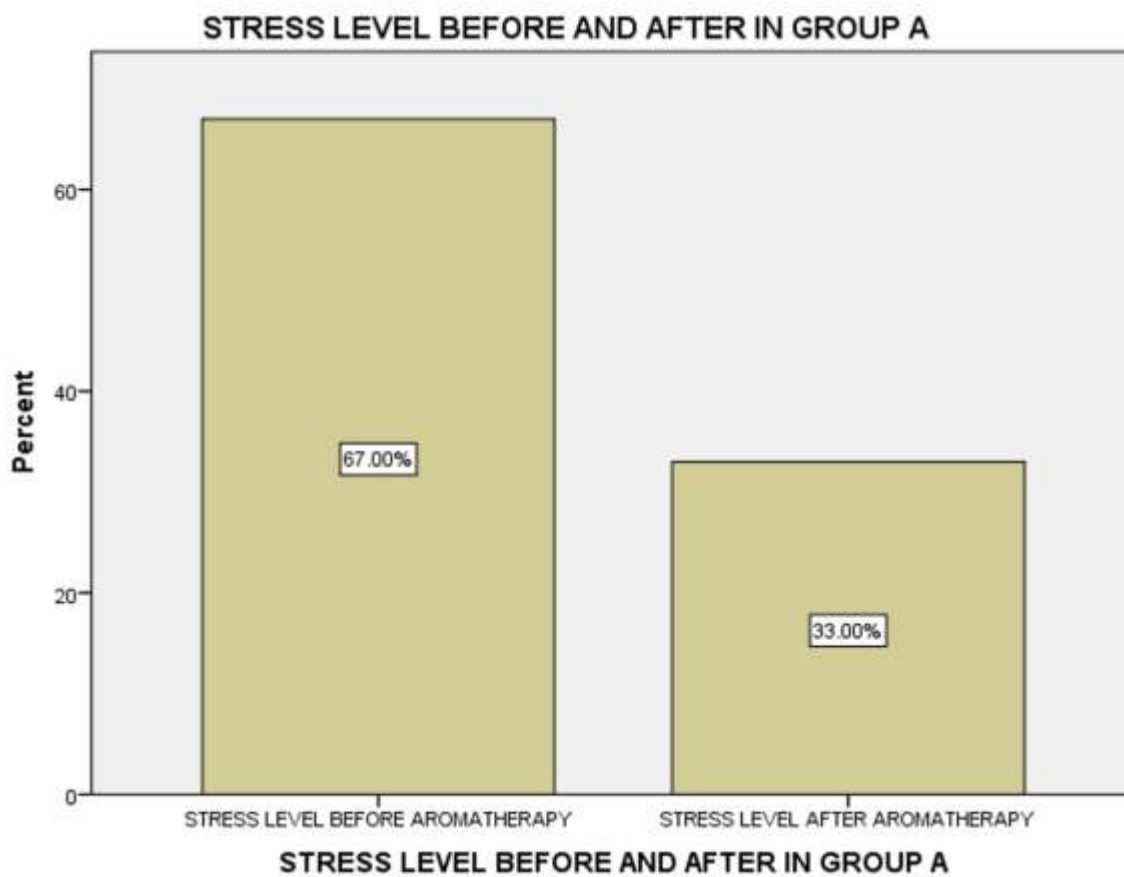


Figure 5: Bar chart showing the stress levels before and after aromatherapy in group A distribution among patients. **p**

67% of the patient stress levels before aromatherapy, 33% patients stress levels after aromatherapy. Aromatherapy seems to work in reducing stress prior to extraction.

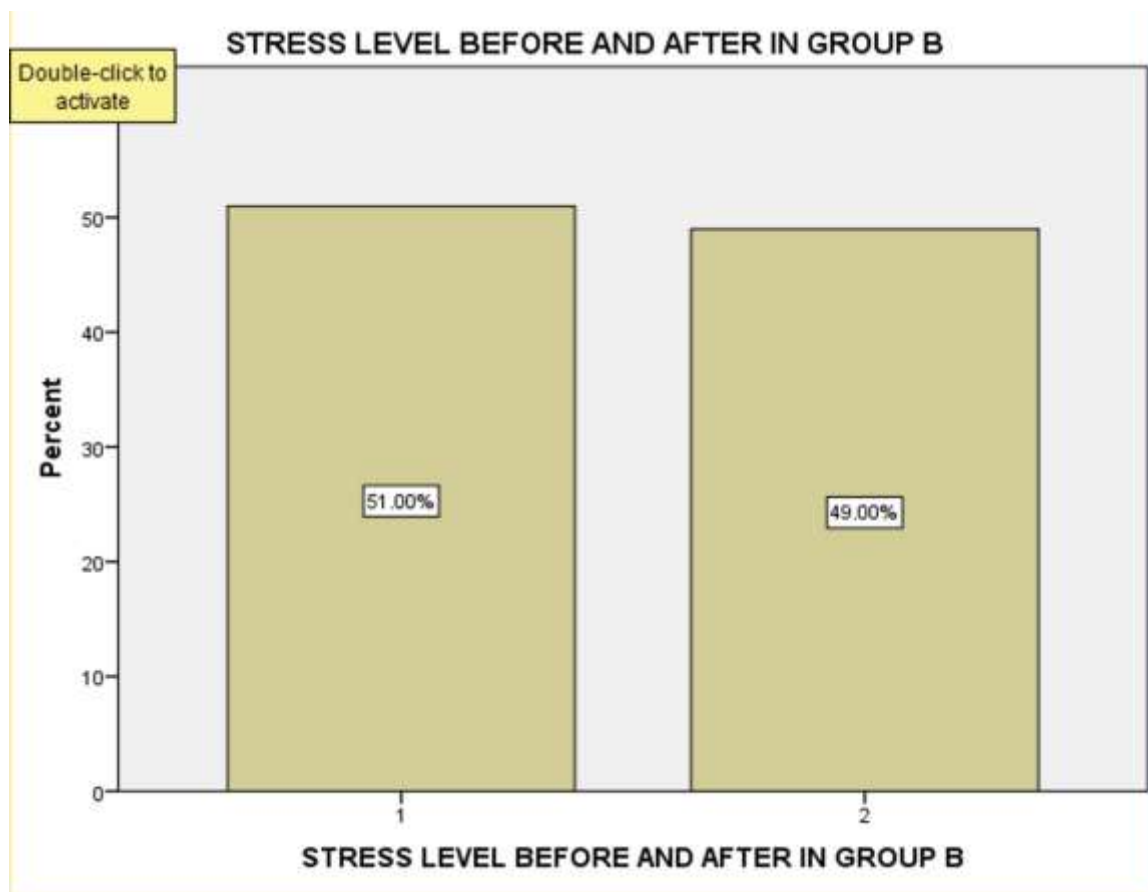


Figure 6: Bar chart showing the stress levels before and after aromatherapy in group B distribution among patients.

51% of the patients' stress levels before surgery, 49% patients stress levels after aromatherapy in the test group. Aromatherapy seems to work in reducing stress prior to extraction.



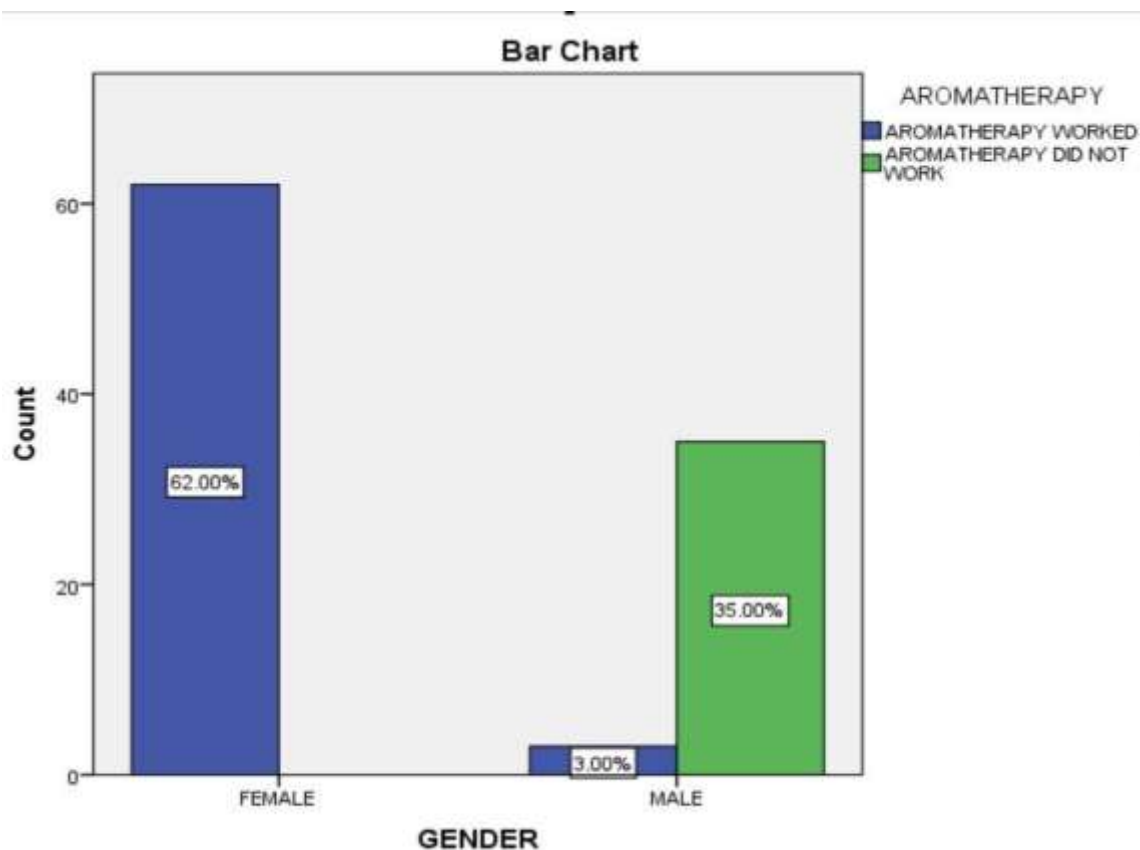


Figure 7: Bar chart depicts the association between aromatherapy in reducing stress and gender. X axis represents gender distribution, Y axis represents number of patients underwent aromatherapy prior to extraction. Chi Square test was done and was found to be statistically not significant (Pearson Chi square=2.863, P value=0.581(>0.05)). Aromatherapy worked in almost all female patients rather than Male patient.

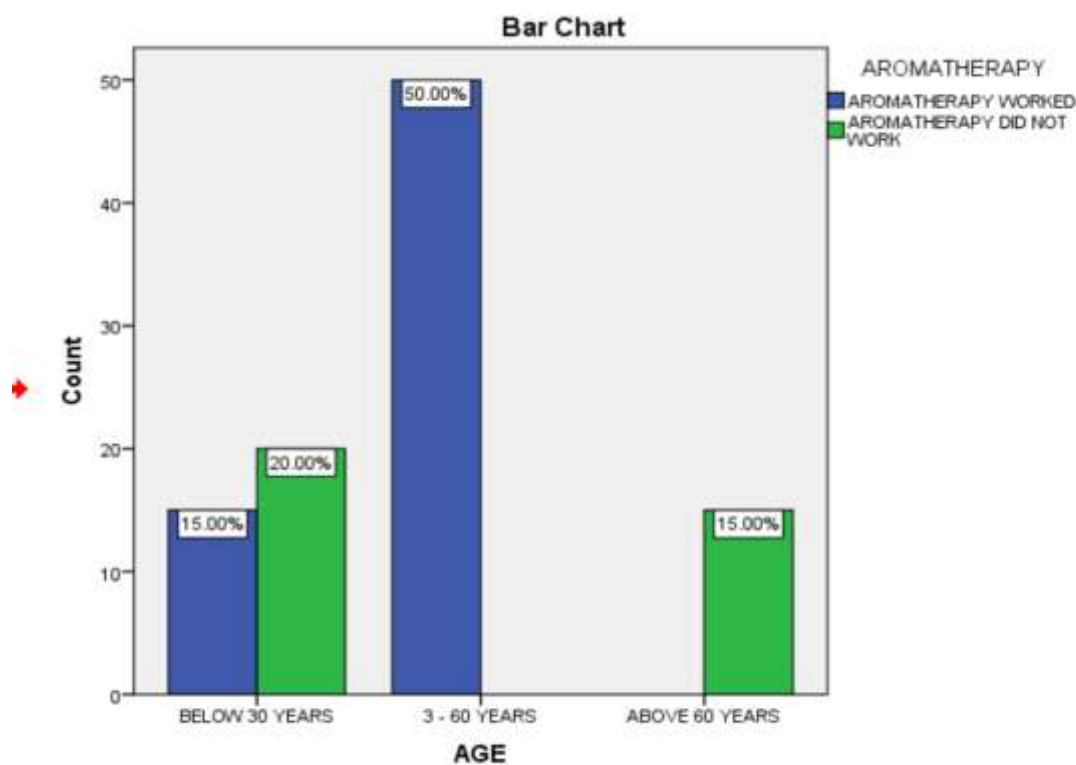


Figure 8: Bar chart depicts the association between aromatherapy in reducing stress and age.

X axis represents age distribution, Y axis represents number of patients who underwent aromatherapy prior to extraction. Chi Square test was done and was found to be statistically not significant (Pearson Chi square=2.863, P value=0.581(>0.05). Aromatherapy worked maximum in patients in the age group between 30 - 60 years of age.

#### 4. Discussion

It is well accepted that smells have the ability to influence people's emotional states. This study uses the dental office waiting area, which is a common source of great anxiety for patients. Patients who were exposed to lavender essential oil had lower levels of anxiety, which supported the idea that natural essential oils have sedative properties and increased their use in dental settings (11-14).

It is not known how essential oils affect our emotions or how they work. For instance, the postsynaptic action of lavender essential oil has been proven, and it is proposed that it affects the activity of cyclic adenosine monophosphate (c AMP) <sup>21</sup>. Sedation is linked to a decrease in cAMP activity, and anxiety levels for the lavender group declined with age while remaining stable in the control group. The findings of this investigation were comparable to those of Akbay Oba et al study <sup>22</sup>.

The use of aromatic oils for therapeutic purposes can be traced back to Chinese and ancient Egyptian societies. Aromatherapy can help with lung congestion, disinfection, and other psychological benefits in addition to giving an ambient odour. The olfactory system, which is associated to the sense of smell, is stimulated by scent inhalation. Through the mouth or nose, molecules enter the body and proceed to the lungs and other parts of the body. As aromas enter the brain, they have an impact on the limbic system, which is connected to memory, stress, emotions, breathing, and hormonal balance. This is one way that aromatherapy can affect the entire body in a subtle but holistic way <sup>23</sup>.

In both groups, women demonstrated a significantly lower level of anxiety than men, which is consistent with research by Toet et al <sup>24</sup> and Marchand and Arsenault <sup>25</sup>. This study supports the conventional use of essential oils in modifying emotional states and supports the use of lavender scent in dental settings as a low cost, straightforward intervention for reducing dental patient anxiety. Lavender is an effective means of reducing current anxiety levels and should be perceived as a means of "on-the-spot" reduction of anxiety <sup>24</sup>. As we did not include a control odor, the scent might have simply masked odors in the dental surgery that patients associate with dentistry. Since the study was conducted on a small sample, future work should consider including a control odor condition.

#### 5. Conclusion

This study showed a higher prevalence of dental extraction among patients presenting at Oral and Maxillofacial Surgery Clinic having reported that about one out of every five patients had advised for extraction. Inhalation aromatherapy had positive effects on reducing anxiety in patients before the surgery which is recommended as a new and easy alternative to reduce anxiety in the patients before treatment. It was found to be more effective in females and of age between 30 to 60 years. Also understanding the pathophysiology, careful examination or placebo effect and determining the underlying causes will assist immensely in the management.

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