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EXPLORING AROMATHERAPY FOR THE MANAGEMENT OF DYSMENORRHEA

Sayali T. Deokate*, Mugdha A. Joshi, Muskan S. Gupta, Divya S. Ingawale and Ankit K. Verma

Krishnarao Bhegde Institute of Pharmaceutical Education and Research, Talegaon Dabhade, Pune-410507, India.

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***Corresponding Author**
Sayali T. Deokate
Krishnarao Bhegde Institute of Pharmaceutical Education and Research, Talegaon Dabhade, Pune-410507, India.

ABSTRACT

In recent years, there has been an increasing interest in aromatherapy, a branch of phytotherapy, that utilizes essential oils for health maintenance. Essential oils are mainly applied through inhalation (through the respiratory system or olfactory nerves), topical absorption (through the skin), or ingestion (digestive system). Essential oils are mixtures of many organic compounds, and their chemical composition conditions their biological activity and fragrance. The aroma can be classified into several groups: citrus, herbaceous, camphoraceous, floral, woody, earthy, minty, and spicy. This paper reports a literature on the use of essential oils in inhalation aromatherapy. However, this type of aromatherapy does not cure major illnesses but it is effective at relaxation and stress relief, mood enhancement, balance and well-being, relief of minor discomforts, and boosting the immune, respiratory, and circulatory systems.

INTRODUCTION

Dysmenorrhea is one of the most common gynecologic disorders affecting more than half of menstruating women.[1] It is defined as pelvic pain directly related to menstruation that interferes with daily activities.[2] Dysmenorrhea is classified into two categories: primary dysmenorrhea which is a cramping pain in the lower abdomen occurring just before or during menstruation, when pelvic examination and ovulatory function are normal, and secondary dysmenorrhea, which refers to painful menses when there is an identifiable gynecological pathology such as endometriosis.[3] The prevalence of primary dysmenorrhea is reported in

many studies to vary between 50% and 90%.[4] In an epidemiological study that involved 664 secondary school students from urban and rural areas in Mansoura, Egypt. It was found that about 75% of the students have dysmenorrhea, rated mild at 55.3%, moderate at 30%, and severe at 14.7%.[5] Primary dysmenorrhea starts when adolescents attain their ovulatory cycles, generally within three years of menarche.[3] The etiology of primary dysmenorrhea is not precisely understood; the pain is believed as the result of excessive prostaglandin release, particularly PGF2 α.[6] PGF2 α causes vasoconstriction of uterine blood vessels (uterine ischemia) and increases uterine smooth muscle contraction, and it is the contraction of the ischemic uterus that is likely the cause of dysmenorrhea.[7] Within the Egyptian culture, dysmenorrhea is not acknowledged as a health problem that needs medical or nursing intervention.[8] Egyptian young girls do not prefer to use medication for dysmenorrhea as they believe that it may affect fertility or cause some types of dependence.[9] Consequently, dysmenorrhea is not managed effectively despite its high occurrence.[10] Researchers have investigated different alternative therapies that are effective and safe and can be prescribed by nurses. A variety of alternative methods have been used for the treatment of dysmenorrhea such as acupuncture, Transcutaneous Electronic Nerve Stimulation (TENS), biofeedback, herbal therapy, and complementary medicine.[11–13] Aromatherapy is the most widely used complementary therapy in nursing practice and uses essential oils from fragrant plants to relieve health problems and improve quality of life in general.[14] Essential oils can be used in different ways, including massage, bathing, and inhalation. When essential oils are inhaled, olfactory receptor cells are stimulated and the impulses are transmitted to the emotional centre of the brain, or "limbic system." The properties of the oils, the fragrance, and its effects, determine stimulation of these systems. When used in massage, essential oils are not only inhaled but also absorbed through the skin as well. They penetrate the tissues and find their way into the bloodstream where they are transported to the organs and systems of the body.[15–17] Different oils are thought to act on the body in different ways, having a relaxing, energizing, calming, or uplifting effect. Aromatherapy is inexpensive and safe to relieve dysmenorrhea. Also, it improves blood circulation and reduces spasms compared with conventional therapy.[18,19] However, dysmenorrhea is common; its management has been inadequately addressed. The purpose of this study was to investigate the effect of aromatherapy abdominal massage on alleviating menstrual pain and reducing its duration and excessive menstrual bleeding.

Inhalational aromatherapy

The inhalation route is the most popular and typically associated with aromatherapy.[22] Inhalation of essential oils is a fast, convenient and safe method.[24] Essential oils can be applied in the form of a vapor balm.[23] lipstick-sized nasal inhaler.[20] lamp diffusion method.[25] room sprays (air fresheners).[26] or direct inhalation (a tissue or cotton ball with few drops of essential oil). However, aromatherapy does not cure major illnesses but it is effective at relaxation and stress relief, mood enhancement, balance and well-being, relief of minor discomforts and boosting the immune, respiratory and circulatory systems.[21] This paper reports a literature relating to the use of essential oils in inhalation aromatherapy.

Mood Enhancement, Balance and Well-Being:

The physiological hypothesis proposes that the effects of various aromas on the mood, their physiological effects and effect on behaviour are due to their direct and intrinsic ability to interact and affect the autonomic or central nervous systems.[27] Aromatherapy induced positive feelings during exercise, reduced fatigue during exercise, and improved participants feeling during the recovery period. Aroma has key influence on exercisers feelings, and it can positively influence exercise satisfaction and persistence.[25] Odours like vanillin and citrus fragrances fool the brains glucose level sensors, reducing the subjective feeling of „low energy.[28] Bergamot essential oil aromatherapy can be effective adjunct treatment to improve individual's mental health and wellbeing.[29] Aromatherapy may have particular use in mental health and nursing care home. It has been shown that aromatherapy may improve anxiety and stress-related symptoms as well as agitation associated with dementia.[30] Aromatherapy with lemon balm essential oil is a safe and effective treatment for clinically significant agitation in people with severe dementia with additional benefits for key quality of life parameters.[31] There are many reasons and clinical conditions to integrate the use of essential oils in the early and palliative care of the elderly patients with dementia including Alzheimer's disease.[32]

Relief of minor discomfort.

Labor pain is an indispensable component of the delivery process; however, excessive pain can reduce uterine contractions and delivery progress rate. A study executed to compare the effect of aromatherapy with rose and lavender essential oils on the severity of pain in the first phase of delivery in primiparous women shows that aromatherapy can reduce the severity of labor pain as an uncomplicated non-pharmacological approach.[32] Furthermore,

aromatherapy with lavender essential oil significantly impacts the decrease of patients' pain scores, especially at longer periods of exposure. Even if there are various intervening factors associated with pain, aromatherapy can be a conclusive non-pharmacologic approach to helping mothers after birth.[33] Furthermore, experiments with lavender and rosemary essential oils suggest that aromatherapy may not elicit a direct analgesic effect but instead may alter the affective appraisal of the experience and consequent retrospective evaluation of treatment-related pain.[34] Inhalation of lavender, eucalyptus, rosemary, chamomile, and peppermint essential oil is useful reduction of post-operative pain.[35] Aromatherapy with lavender, orange, and tea tree essential oil reduced some of the complications of hemodialysis, including anxiety, fatigue, pruritus, pain of arteriovenous fistula puncture, sleep quality, depression, stress, and headache. Considering the complications and heavy costs of managing complications in patients undergoing haemodialysis, it appears that aromatherapy can be used as an inexpensive, fast-acting, and effective treatment to reduce complications in hemodialysis patients.[36] Inhalation of lavender oil leads to pain relief in patients after coronary artery bypass surgery.[37] Even if the inhalation of lavender essential oil to reduce anxiety before a scheduled colonoscopy or esophagogastroduodenoscopy did not show effective patients did generally report the lavender scent to be pleasurable.[38] There is a significant effect of deep breathing relaxation techniques with lavender aromatherapy on preoperative patient anxiety.[39] One of the most common surgical complications is nausea. Investigations show that inhalation of 10% and 30% peppermint essential oils are equally effective on the severity of nausea.[40] Aromatherapy treatment with blends of the essential oils of ginger, spearmint, peppermint, and cardamom is promising as an inexpensive, non-invasive treatment for postoperative nausea that can be administered and controlled by patients as needed.[41] However, inhalation of a mixture in equal proportions of lavender, spearmint, peppermint, and ginger has a small non-significant effect in the treatment of postoperative nausea and vomiting in children.[42]

ESSENTIAL OILS USED IN INHALATION AROMATHERAPY

Essential oils can also be classified based on aroma into seven groups: 1) citrus, 2) herbaceous, 3) camphor, 4) floral, 5) woody, 6) earthy, 7) minty and spicy.[49] The most recently used essential oils in inhalation aromatherapy are shown in Table 1, together with aromas and indications for applications.

Table 1: Plants used in aromatherapy.

Latin Name	Common Name	Odor and flavour	Aromatherapy
Anthemis nobilis	Roman Chamomile	Sweet herbal green cognac spicy woody	Anxiolytic.[43] Analgetic (treating earache, menstrual pains).[44] Against depression.[44]
Boswellia sp.	Frankincense	balsamic, earthy, sweet, honey-like and woody aroma	Relieve stress and anxiety.[45] Decreases pain intensity during labour.[46] Eases breathing, for treatment of asthma.[47] Anti-depressant.[49]
Citrus aurantium var. Amara	Bitter orange peel	characteristic fruity, pleasant aroma	Better sleep quality.[50] Treats sore throat.[44] Decreases pain intensity during labor.[46] Treat anxiety and stress.[45] Acts as a sedative and a relaxant.[44]
Citrus aurantium var. Amara	Bitter Orange Flower (Neroli)	sweet, fresh and floral odour	Sedative, soothing, calming, and motor relaxant.[48] Anxiolytic and antidepressant.[48] Promotes a positive mood.[45]
Citrus bergamia	Bergamot	fresh, with hints of citrus and spice	Positive feelings.[45] Against psychological stress and anxiety.[53] Against migraine.[44] To treat anxiety and depression.[45]
Citrus limon	Lemon	distinctive lemony aroma	Anxiolytic.[43] Antidepressant.[20]
Citrus sinensis	Orange	sweet citrus fragrance	Anxiolytic.[43] Against migraine.[44] Decreases pain intensity during labor.[46]
Cupressus sempervirens	Cypress	fresh wood scent similar to pine fragrance	For treatment of asthma.[45]
Eucalyptus sp.	Eucalyptus	strong aromatic, camphoraceous	Helps ease nasal congestion.[20] Common cold symptoms

		scent	of the upper respiratory tract with persisting mucus.[57] Treatment of catarrh and asthma.[57] Against migraine.[45]
Foeniculum vulgare	Fennel	herbal, anise-tinged scent	Bronchitis.[45]
Hyssopus officinalis	hyssop	warm aromatic sharp camphoraceous scent	Against allergy.[45] Sedative.[58]
Jasminum officinale	Jasmine	sweet, exotic and richly floral scent	Relaxation.[58] Decreases pain intensity during labor.[46]
Lavandula angustifolia	Lavender	characteristic odor and sweet floral aroma	Attenuates behavioral and psychological symptoms of dementia in patients with Alzheimer's disease.[54] Post-operative pain relives.[37] Reduces procedural stress.[38] Against migraine.[44] Decrease stress and anxiety.[55] Decreases pain intensity during labor.[46]
Lavandula latifolia	Spike Lavender	strong camphoraceous odor	Pain reliever (headache).[56] Relaxation and stress relief.[56] Nose and throat infections.[56]
Matricaria recutita	German chamomile	sweet herbaceous odor and bitter aromatic flavour	Decreases stress and anxiety.[55] Decreases pain intensity during labor.[46] Busts the immune system.[45]
Melissa officinalis	Lemon balm	fresh, herbaceous odor with a typical lemon citronella note	Attenuates behavioral and psychological symptoms of dementia in patients with Alzheimer's disease.[54] Treatment for the management of agitation in severe dementia.[30]

Mentha piperita	Peppermint	minty type odor that's cool and refreshing	Cold and flu symptoms.[44] Against migraine.[44] Decreases pain intensity during labor.[46] Treat exhaustion.[45] Against nausea.[40]
Myrtus communis	myrtle	herbaceous, camphorated odor	Alleviates the symptoms of whooping cough, bronchitis and other respiratory infections.[44]
Ocimum basilicum	Basil	warm, spicy-sweet aroma	Against migraine.[44] To treat anxiety and depression.[45]
Pelargonium spp	Rose-scented geranium	strongly rose-scented	Anxiolytic.[43] Decreases pain intensity during labor.[46]
Pogostemon cablin	Patchouli	musky, sweet, spicy aroma	Against migraine.[44]
Rosa damascena	Rose	typical rose odor	Anxiolytic.[43] Decreases pain intensity during labor.[46] Tachycardia.[45] Anti-depressant.[49]
Rosmarinus officinalis	Rosemary	strong, warm, woody, balsamic aroma	Treats low blood pressure and.[44] Bronchitis.[45]
Salvia sclarea	Clary sage	musky, warm, herbaceous scent bears a similarity to hay, with an amber note	Anxiolytic.[43] Regulating menstrual cycle.[44] Controlling high blood pressure.[44] Against panic.[45]
Santalum album	Sandalwood	sweet, balsamic and woody scent	Anxiolytic.[43] Sedative-hypnotic effects.[49]
Syzygium aromaticum	Clove	strong, pungent, and spicy odour	Decreases pain intensity during labour.[46]

MATERIAL AND METHODS

Fifty-five high school girls with menstrual pain were recruited from the city of Daejeon in Korea through bulletin boards and flyer advertising to participate in aromatherapy massage sessions. Volunteers were eligible to participate in the study if their menstrual pain was measured at six or more points on a ten-centimetre Visual Analogue Scale (VAS) and if they

had no systemic disease or disease of the genital organs. The subjects were assigned to a treatment group to receive aromatherapy massage (n = 32) and a control group to receive acetaminophen (n = 23) according to their preferences. Ten participants dropped out of the aromatherapy massage group because of taking analgesics (8 with anxiety about pain; 2 with no effect of aromatherapy massage). No one dropped out of the control group. The experimental protocol was approved by the Review Board of the University hospital. The outcome measures were the pain level as measured with a VAS before intervention and twenty-four hours afterward. Subjects in the treatment group received one ten-minute abdominal massage using essential oils: clary sage, marjoram, cinnamon, ginger, and geranium in a 1: 1: 0.5: 1.5: 1.5 ratio, diluted in almond oil with a final concentration of 5%. Subjects in the control group received no additional treatment. Data were analyzed using Sigma Stat (Systat Software, CA) and SPSS (SPSS Inc, Chicago, IL). Since the data were not normally distributed, the results are presented as medians and interquartile ranges (IQRs). All outcomes were compared using the nonparametric Mann-Whitney U test between groups. Multiple regression analyses were used to estimate the effects and the validity of the hypothesis. The change score of pain (twenty-four hours after intervention minus baseline) was regressed on the baseline score. This study used a true experimental design with a randomized pretest-posttest design, which compares subjects before and after being given essential oils for menstrual pain. Inclusion and exclusion criteria was in table 1.

Inclusion	**Exclusion**
Medium-serve pain scale	Mild menstrual pain
Menstrual pain the first day, the second and the third day.	Students who have asthma and allergies to the aromatherapy oils.
’t experience sense of smell and allergic to scents.	
Not using a pain reliever on the market during therapy.	
Students at stikes Hang Tuah Tanjungpinang	

The study was conducted on female students of Stikes Hang Tuah Tanjungpinang who experienced menstrual pain in April-July 2019. The implementation phase included the following steps: Preparation step, first step, the researcher prepares essential oils. Essential oil for therapy is put into a roll-on bottle as much as 8 ml and given a label of each bottles. The Implementation step was the treatment group I and treatment group II carried out massage effleurage for 3 minutes calculated from the beginning of the massage at minutes 5,10,15 and minutes 25 then measured the pain scale using the Numeric Rating Scale (NRS)

0-10. Final Step. Data was collected by measuring the scale of the respondent's pain before being given therapy (pretest) and after being given therapy (posttest). Furthermore, researchers conducted data analysis using statistical methods then ended with the preparation of the final report and presentation of research results.

CONCLUSION

Essential oils in aromatherapy are mainly applied through inhalation. In this case, through the respiratory system or olfactory nerves they are able to optimize the mood or otherwise benefit the state of mind adversely affected by life factors and the subsequent effects of the illnesses like anxiety, depression and stress, as well as physical disorders associated with immune system dysfunction. Essential oils can also be classified based on aroma into seven groups: citrus, herbaceous, camphorous, floral, woody, earthy, minty and spicy.

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