

# Inhalational aromatherapy for post-operative pain: The disturbed evidence

Yasser Ali Kamal

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## ABSTRACT

Analgesic therapy is the standard approach for postoperative pain which have some adverse effects. Integrative medicine can provide pain therapy without annoying side effects. The inhalational aromatherapy (AT) with essential

oils has been widely applied for pain management. Application of AT in management of postoperative pain is challenging with doubtful results. There is insufficient evidence about the safety and efficacy of inhalational AT for pain reduction after surgery. To obtain conclusive results, researchers should conduct large-scale studies, consider the multifactorial aspects of pain and understand the different mechanisms of essential oils.

**Key Words:** Integrative therapy; Aromatherapy; Pain; Surgery

Pain is common after surgical procedures. Analgesic medications and techniques are safe and effective in management of postoperative pain. However, analgesics have some adverse effects, which may interfere with wound healing and prolong the length of hospital stay.

The need for pain therapy without annoying side effects opens the green light for the integrative medicine. Aromatherapy (AT) is a complementary therapy relies on the use of essential oils extracted from flowers and plants. The most frequently used therapeutic extracts for AT include lavender, eucalyptus, rosemary, chamomile, and peppermint. The essential oils can be used topically or inhaled through a humidifier or by soaking gauze (1). The aroma of lavender contains linalool and linalyl acetate which can stimulate parasympathetic system, with narcotic effects of linalyl acetate and sedative effect of linalool. These proprieties support the wide use of lavender essential oil in AT as sedative, antidepressant, antispasmodic, antibacterial, and local anesthetic (2).

The clinical use of AT for pain management targets cancer pain, headache, migraine, childbirth and postoperative pain. The available meta-analysis found a significant positive effect of AT in reducing pain associated with variable medical conditions, with no reported adverse effects and cost-effectiveness benefit in comparison to standard pain management (1). However, the results of this meta-analysis are limited by the small sample size of the included studies, which indicates the need for more research.

The reasons of patient satisfaction after holistic pain management are multifactorial and remain unclear. In addition to clinical and physiologic factors, other emotional, cultural, and cognitive considerations have been determined to affect the results of AT for pain management.

Doubtful results of lavender essential oil in reduction of pain have been reported, which may be explained partly by a placebo effect contributed to the reduced perception of pain, particularly with information about lavender effect, lavender odor and slower breathing (3). The variation in the proprieties of various types of lavender oil should be considered in the evaluation of its safety and efficacy because of the possible differences in their chemical composition (4). Another point of debate is the use of uncommon essential oils from wild plants with no examination of its toxicological issues which may result in further problems during the clinical application (5). Moreover, the patient demographic characteristics particularly age and gender should be matched in the studies of AT efficacy, as it may affect the threshold of pain.

The perioperative use of essential oils is primarily for reduction of anxiety and postoperative nausea and vomiting. A controversy remains about the use of AT as the sole therapy to reduce surgical pain or as adjuvant to conventional therapy. Further postoperative advantages of essential oils related to its

cytotoxic activity and antimicrobial properties encourage the use AT for reduction of postoperative pain (6,7). However, a recent systematic review of nine randomized-controlled trials found no sufficient evidence regarding the efficacy of AT when it had been used as non-pharmacologic approach to reduce postoperative pain intensity (7).

From a perspective of a cardiac surgeon, little data is available evaluating the efficacy of lavender essential oil in the management of pain after cardiac surgery. Addition of non-pharmacological methods to the standard analgesic therapy for pain control after cardiac surgery appears helpful to reduce the required amount of opioids and its unwanted side effects. Although lavender essential oil inhalation could effectively reduce anxiety, blood pressure and heart rate in patients undergoing open-heart surgery, the available few trials demonstrated no effect of lavender essential oil on reducing the postoperative pain (8,9).

A recent randomized controlled trial suggested the efficacy of cold application and aromatherapy with lavender oil in reducing pain and anxiety associated with chest tube removal after coronary artery bypass grafting (CABG) (10). However, the routine or stand-alone use of AT for pain reduction could not be recommended before larger scale trials.

In conclusion, the use of inhalational AT for reduction of pain in medical practice aims to improve outcomes obtained by the standard approaches of management and to reduce the hazards of pharmacological methods. However, AT can be a part of the medicine group, but it being the sole mode of therapy does not sound to be very effective. For management of postoperative pain, AT remains at its beginning with insufficient evidence about the associated safety and efficacy. There is a tremendous pain post operation and to just overcome with help of AT, first will be a very slow process and secondly the pain will be unbearable as the patient would feel it when taking the therapy too. But using AT as a part along with medication can serve the purpose.

A vast research has to be first conducted to see if AT can alleviate pain. Also AT has many good effects externals, like relaxing the mind, reducing BP, but as far as pain is considered it is very unpredictable. Also, not all patients would be happy with aroma or don't prefer AT as they are allergic or have headaches. In that case the pain in such patients can only be treated through medication. For the future large-scale studies, researches should consider the multifactorial aspects of pain and the different mechanisms underlying the effect of essential oils.

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Department of Cardiothoracic Surgery, Minia University Hospital, El-Minia, Egypt

Correspondence: Yasser Ali Kamal, Department of Cardiothoracic Surgery, Minia University Hospital, El-Minia, 61519, Egypt, Telephone +00201123234736, e-mail: yaser\_ali\_kamal@yahoo.com

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