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Effect of inhalation aromatherapy with lavender essential oil on stress and vital signs in patients undergoing coronary artery bypass surgery: A single-blinded randomized clinical trial

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Received 7 August 2013; received in revised form 5 October 2014; accepted 2 December 2014

Available online 11 December 2014

KEYWORDS

Aromatherapy;
Coronary artery
bypass;
Lavender;
Mental stress;
Vital signs

Summary

Objectives: At present, aromatherapy is used widely in medical research. This study aimed to investigate the effects of inhalation aromatherapy using lavender essential oil to reduce mental stress and improve the vital signs of patients after coronary artery bypass surgery (CABG).

Design: A single-blinded randomized controlled trial was conducted with 60 patients who had undergone CABG in a 2-day intervention that targeted stress reduction.

Participants: Sixty subjects following coronary artery bypass surgery in two aromatherapy and control groups.

Setting: The study was conducted in Ekbatan Therapeutic and Educational Center, Hamadan, Iran, in 2013.

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<http://dx.doi.org/10.1016/j.ctim.2014.12.001>

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Interventions: On the second and third days after surgery, the aromatherapy group patients received two drops of 2% lavender essential oil for 20 min and the control group received two drops of distilled water as a placebo.

Main outcome measures: The primary outcome was mental stress, which was measured before and after the intervention using the DASS-21 questionnaire. The secondary outcomes were vital signs, including the heart rate, respiratory rate, and systolic and diastolic blood pressure, which were measured before and after the intervention.

Results: The individual characteristics of the aromatherapy and control groups were the same. There were no significant difference in the mean mental stress scores and vital signs of the aromatherapy and control groups on the second or third days after surgery.

Conclusion: Inhalation aromatherapy with lavender essential oil had no significant effects on mental stress and vital signs in patients following CABG, except the systolic blood pressure.

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Background

Coronary artery bypass surgery (CABG) is a common form of treatment for patients with coronary stenosis and over 73 million CABGs are performed annually in the United States alone.¹ Despite the technical success of open heart surgery, patients who undergo CABG usually suffer from major postoperative adverse events, including gastrointestinal bleeding, dysrhythmia, cardiologic shock, pain, delirium, severe stress, and vital sign changes.^{2–4}

CABG is reported to be associated with pre- and post-operative mental stress, which may impair coronary circulation, and thus there is an increased risk of angina pectoris and myocardial infarction.⁵ Many factors may increase mental stress in patients admitted to intensive care units (ICUs), including pain, sleep disorders, and being away from home and work.⁶ Stress can cause tachypnea, increased blood pressure, hypothermia, arterial vasoconstriction, and decreased tissue perfusion via stimulation of the sympathetic response.⁷ Mental stress and changes in vital signs may increase postoperative pain and analgesic usage indirectly, as well as decreasing resistance to infection, prolonging postoperative wound healing,⁸ and increasing the duration of hospitalization.⁹ Sedative medications are used frequently to decrease mental stress in patients following CABG, which is usually associated with adverse effects such as sedation and respiratory depression.¹⁰

Nonpharmacological approaches, which are classified as supplementary therapies, are safer than pharmacological approaches and they have less adverse effects.¹¹ In general, aromatherapy is used via massage, inhalation, and baths with herbal and mineral substances. The use of aromatherapy has increased substantially in recent years compared with other medical approaches.^{11,12} Aromatherapy is a technique where essential oils are used for inhalation,¹³ which can decrease pain, mental stress, and depression, and improve the vital signs.^{14–16}

Lavender essential oil is an essential oil that is used widely in aromatherapy, where its properties include sedative, antidepressant, antispasmodic, antibacterial, and local anesthetic effects. It can also be used to relieve migraines and insomnia.^{17,18} Studies of the benefits of the aroma of lavender have shown that linalool and linalyl acetate from this plant can stimulate the parasympathetic system. In addition, linalyl acetate has narcotic effects and linalool

acts as a sedative.^{11,19} This herb improves the heart function and it is a circulatory stimulant with beneficial effects on coronary blood flow.⁵ Studies have shown that the inhalation of lavender in aromatherapy is effective for reducing stress, depression, anxiety, and pain, as well as improving the vital signs in women who experienced Caesarean sections and volunteers who underwent needle insertions.^{14,15,20,21}

CABG is a common approach for coronary stenosis treatment but it is usually associated with mental stress and impaired vital signs, thereby demonstrating the importance of stress reduction strategies and stable vital signs in patients. Intensive care nurses have important roles in the assessment of stress and changes in the vital signs, as well as the implementation of appropriate measures and the evaluation of therapeutic effects. Thus, this study aimed to investigate the effects of inhalation aromatherapy using lavender oil in reducing mental stress and improving the vital signs of patients after CABG.

Methods

Design

A single-blinded randomized controlled trial was conducted with 60 patients following CABG, where the group assignments occurred in parallel.

Participants

All patients participated voluntarily in the study and gave their written informed consent. This study was conducted at Ekbatan Therapeutic and Educational Center, Hamadan, Iran, during 2013. The overall study process was approved by the Research Ethics Committee of Hamadan University of Medical Sciences and the protocol was registered by the Iranian Registry of Clinical Trials (No. 201203299014N9).

Patients who had undergone CABG were included if they met the following criteria in terms of the absence of: (a) chronic respiratory disease; (b) addiction to alcohol or narcotic substances; (c) history of head trauma or convulsion; (d) impaired sense of smell; or (f) using anti-anxiety drugs. Patients were excluded if they had: (a) eczema or allergies to plants; (b) impaired consciousness; (c) intubation for more than 24 h; or (d) hemodynamic instability. The details

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