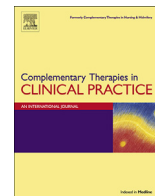




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Effect of inhalation aromatherapy with lavender essence on pain associated with intravenous catheter insertion in preschool children: A quasi-experimental study



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ABSTRACT

Objective: The aim of this study was to assess the effect of inhalation aromatherapy with lavender essence on the pain severity of intravenous catheter insertion in hospitalized preschool children.

Method: A quasi-experimental study involving 60 participants using convenience sampling were assigned to control (n = 30) and aromatherapy (n = 30) groups. Children in the aromatherapy group inhaled 5 drops of the essence, while children in the control group inhaled 5 drops of distilled water, 20 min before venipuncture. Pain severity was measured using OUCHER scale 10 min after catheterization.

Results: Mean of pain severity between the aromatherapy and control groups demonstrated a significant difference immediately (P = 0.002) and 5 (P = 0.001) and 10 min (P = 0.01) after intravenous catheter insertion. Mean of pain severity in the three assessed time points had significant differences in aromatherapy and control groups (P = 0.001).

Conclusion: Aromatherapy with Lavender essence helped to reduce pain severity of intravenous catheter insertion in children.

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1. Introduction

Pain is defined as an unpleasant emotional-sensory experience in relation to actual or potential damage that can range from mild,

localized discomfort to agony [1]. In the past, pain was assessed as a symptom and as a means for recognizing diseases. Nowadays, it is considered as a separate nursing diagnosis, which requires special attention and treatment in nursing practice and education [2–4]. American Pain Society (APS) described the importance of pain and defined it as the fifth vital sign. The decade of 2001–2010 was named as the “pain control” decade [5]. The importance of pain control in children is typically less considered because of ignorance of physiological effects, burden of disease, and socio-professional reflections [6].

Pain in children by stimulating the sympathetic nervous system

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What is already known about the topic?

Lavender is used in aromatherapy with anti-bacterial, anti-fungal, anti-bloating, muscle relaxant and analgesic effects. However, aromatherapy with Lavender has pain relief effects but this effect still has not been confirmed completely. Most previous studies have been conducted on the adults in compare to few studies on the children.

What this paper adds?

Inhalation aromatherapy with Lavender essence could reduce pain severity of venous catheter insertion in hospitalized preschool children. Inhalation aromatherapy could be applied as a feasible, safe and inexpensive method to reduce pain severity of intravenous catheter insertion by nurses, physicians, and other members of treatment teams.

causes changes such as increase in blood pressure, heart rate, and respiratory rate; restlessness; insomnia; nutritional problems; and delay in recovery [2]. Moreover, pain creates negative mood conditions such as stress, anxiety, low self-esteem, isolation, and fear in children [7]. Furthermore, pain could create negative reflections in children and their parents such as distrust, fear of medical personnel, and a lack of cooperation with nurses and physicians to perform therapeutic and care procedures [8]. In addition, pain also has negative and unpleasant effects on parents such as depression and guilty feeling due to an inability to prevent pain and a distrust to the healthcare system [7].

More than 90% of children experience pain during a variety of therapeutic and care procedures in the hospitals and therapeutic and educational centers as well [9]. In most cases, injection and intravenous catheter insertion are important, common and essential, yet painful procedures, which are the basis of treatment and diagnosis in children [10].

Most children consider injection and intravenous catheter insertion procedures to be stressful [11], painful, annoying, and scary [12]. Preschool children, aged 3–6 years, often react more severely to injection and intravenous catheter insertion compared to other age groups of children. According to the preoperational stage of Piaget's cognitive development theory, preschool children start to imagination about pain due to a lack of clear understanding of pain and its causes [13], and based on Erikson's psychosocial development theory, they consider pain as a punishment or a consequence of their own actions [14]. However, preschool children may perceive pain, and the body suffers serious damages due to their limited imagination regarding their bodies [7,15].

Pain control and management are the most important issues of basic needs, human rights, and nursing care in children. Pain is relieved by pharmacological and non-pharmacological methods including complementary therapies [16,17]. Many drug compounds used for relieving pain have limitations and side effects such as lidocaine spray, which can cause allergic reactions, systemic absorption, and potential cardiac dysrhythmia [18–20]. In contrast, the non-pharmacological methods are low-risk, feasible, and accessible and present a cost-benefit to the field of nursing as well. Complementary therapies include many methods such as distraction, body relaxation, music therapy, and aromatherapy [21,22].

The use of aromatherapy to relieve pain has grown substantially in recent years compared with other supplementary therapies [23,24]. Aromatherapy is used via massage and inhalation therapies and baths with herbal essence oil and mineral substances [25]. The use of aromatherapy has been introduced as a part of holistic

nursing in England [26].

Inhalational aromatherapy is a technique in which essence oils are used for inhalation, which may decrease pain, mental stress, and depression, and improve vital signs [24]. The aromatherapy effect starts by absorbing aroma molecules through the nasal mucosa. Then aroma molecules convert to nervous signals in the olfactory bulb, amygdala, and the limbic system and produce therapeutic effects by causing the release of a variety of neurotransmitters such as enkephalin, endorphins, and serotonin [27].

Lavender (*Lavandula Angustifolia*) is one of the essence oils used in aromatherapy; it is an aromatic plant that belongs to the Lamiales family and exhibits anti-bacterial, anti-fungal, anti-bloating, muscle relaxant, and analgesic effects [28]. The Lavender essence oil is used safely in children [29,30]. Lavender essence oil is widely used in aromatherapy for its antispasmodic, sedative, and anesthetic effects [31]. Linalyl acetate and Linalool of Lavender essence stimulate the parasympathetic system by reducing heart rate, respiratory rate, and blood pressure and consequently acts as a narcotic and sedative [32].

Some studies have shown the effect of aromatherapy with lavender on pain relief [33,34], while other studies show that aromatherapy with lavender does not have a pain-relieving effect [30,35]. It appears that more studies are needed to obtain a conclusive finding in this regard. However, most previous studies have been conducted on adults, with few studies on the children. The purpose of this study was to assess the effect of inhalation aromatherapy with Lavender essence on pain severity of intravenous catheter insertion in preschool children hospitalized at the Besat educational hospital.

2. Material and methods

A quasi-experimental study was conducted using convenience sampling of 60 preschool children in both aromatherapy and control groups. This study was done in two phases within four months in the pediatric ward of Besat educational hospital of Hamadan University of Medical Sciences during June to September of 2015. The overall study process was approved by the Research Ethics Committee of Hamadan University of Medical Sciences (UMSHA.AC.1394, 20).

Preschool children who had required intravenous catheter insertion were included if they had not previously undergone intravenous catheter insertion during hospitalization and met the following criteria in terms of the absence of: (a) mental, verbal, or visual disability; (b) asthma, allergy, dermatitis, epilepsy, convalescent, and migraine according to physician's diagnosis; (c) or the presence of chronic or acute pain. Preschool children were excluded if they had: (a) any kind of allergy to aromatherapy; or (b) any kind of problem with the intravenous catheter insertion. The details of the study were explained to the preschool children and their parents, and their informed consent was obtained in writing the day before the intervention.

Based on a single-blind clinical trial conducted in 2011 by Vosoughi and et al. [36] the sample size needed in our study was estimated to be 36 subjects in each group (totally 72) with P at 0.05 and 90% power. The sampling was performed in two phases. Each phase was done during a two-month period, because of the need for blind sampling. In the first phase, the children were assigned to the control group, and in the second phase, they were assigned to the aromatherapy group. Follow-up losses occurred due to the discharge of patients in the control (n = 2) group during the study. The intervention was discontinued in some subjects in the aromatherapy group (n = 5) due to the intolerance of aromatherapy and (n = 1) due to change in physician order. In the control group, the study was discontinued (n = 4) because of a lack of cooperation.

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