



Investigating the effects of inhaling ginger essence on post-nephrectomy nausea and vomiting



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ABSTRACT

Objective: There is a knowledge gap regarding the effects of ginger essence on postoperative nausea and vomiting. This study aimed to evaluate the effect of ginger essence on post-nephrectomy nausea and vomiting.

Design: A randomized controlled trial was conducted.

Setting: This study was conducted from third April to first October 2014 in Labbafinejad hospital, Tehran, Iran. Totally, 120 nephrectomy patients were randomly allocated to either the treatment or the control groups. After nephrectomy, we applied two drops of ginger essence to a 2 × 2-inch gauze that was attached to the patients' collars in the treatment group to allow patients to inhale the evaporated essence along with the air room and then repeated every 30 min for two hours. The control group was similarly treated with normal saline. Nausea was assessed using a visual analogue scale every 30 min for two hours and at the sixth hour after surgery. The paired- and independent-samples *t* and repeated measures analysis of variance tests were used for data analysis.

Results: The means nausea intensity were in the treatment and the control groups were 7.09 ± 1.59 and 7.40 ± 1.71 at thirty minutes after surgery (P value >0.05). However, the mean nausea intensity in the treatment group at the four subsequent times were significantly lower than the control group (P value <0.001). The numbers of vomiting episodes at two and six hours after the surgery were 0.88 ± 0.78 and 2.58 ± 1.35 , in the treatment group and 4.80 ± 1.87 and 2.58 ± 1.35 in the control group. The differences between the two groups regarding the numbers of vomiting episodes were statistically significant (P value <0.001).

Conclusion: Inhaling ginger essence has positive effect on postoperative nausea and vomiting. Using ginger essence for managing postoperative nausea and vomiting is recommended.

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1. Introduction

Nausea and vomiting are among the most common postoperative complications¹ with a prevalence rate of 20–30%.² Surgical patients are at risk of having nausea and vomiting until 24 h after surgery. According to McCracken et al. (2008), 70–80% of patients who undergo surgery experience severe nausea and vomiting. Patients who experience postoperative nausea and vomiting (PONV) describe it as one of the most stressful complications of surgery and prefer postoperative pain to it.²

Poor management of PONV postpones hospital discharge, increases healthcare costs, and reduces patient satisfaction.¹ More-

over, it causes dehydration and electrolyte imbalance, increases blood pressure, imposes strain on incision sutures, heightens the risk of aspiration in patients with anesthesia-induced impaired airway reflexes, causes bleeding from cutaneous flaps, and prolongs hospital stay.^{2,3}

There are many medications for managing PONV. The most commonly medications are metoclopramide and droperidol. However, because of complications such as fatigue, restlessness, disorientation, extrapyramidal signs, cardiovascular complications, sudden drop in blood pressure, and drowsiness, these medications should be used cautiously.⁴ Despite their great effectiveness, synthetic compounds generally have numerous adverse effects.⁵ Accordingly, alternative and complementary remedies – such as acupressure, acupuncture, hypnosis, and aromatherapy – have been taken into account and are currently used for managing PONV. These remedies are simple to use, inexpensive, non-invasive, cost-

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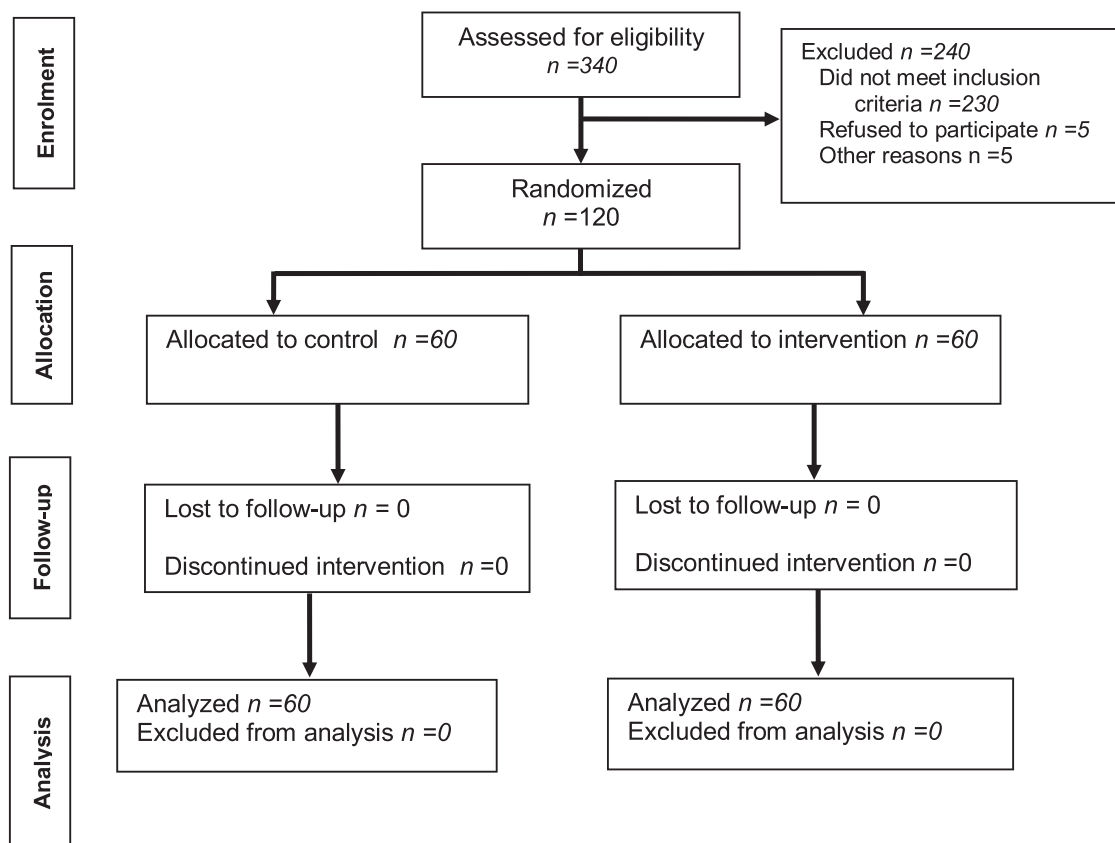


Fig. 1. The study flow diagram.

effective, and widely acceptable to patients and have no serious side effects or drug interactions. Accordingly, they are considered as good alternatives for managing PONV.⁶

Herbal medicine, as one of the complementary and alternative remedies, has been practiced in many communities since thousands of years ago. According to the World Health Organization, about 80% of the world population – mainly in underdeveloped countries – currently uses herbal preparations for managing their medical problems.⁷

One of the medicinal plants is ginger (*Zingiber officinale*). Ginger has been used as a medication in China, ancient Greek, Rome, and the Arab world from antiquity.⁸ It is an aromatic plant which is rich in oily essences. Drug preparations of ginger include capsule, essence, and syrup. Ginger rhizome is the root of the *Z. officinale*. It contains different biologically active compounds. The main pharmacologic effects of ginger are related to its active ingredients such as gingerol and shagoal. These ingredients have antiemetic, antipyretic, antitussive, and anti-inflammatory effects and relieve gastrointestinal distress. Gingerol and shagoal limit gastric contractions and increase the mobility of the gastrointestinal tract. Moreover, these ingredients are serotonin blocker agents and have scavenging effects on free radicals that induce vomiting.⁹

Several studies have demonstrated the antiemetic effects of ginger. Ozgoli et al. found that ginger capsule decreased the intensity of pregnancy-induced nausea and vomiting.¹⁰ Jenabi and Mohamm-Alizadeh reported that ginger capsule was more effective than vitamin B6 in relieving pregnant women's morning sickness.¹¹ Moreover, Ebrahimi et al. and Ghanbari et al. found that ginger capsule significantly reduced chemotherapy-induced nausea and vomiting.^{12,13} Apariman et al. noted that ginger capsule had positive effects on PONV following gynecological laparoscopy.³ Montazeri also indicated the effectiveness of ginger capsule in man-

aging PONV after orthopedic, abdominal, urologic, ear, nose, and throat surgeries.¹⁴ However, Leopold et al. and Vousooghian and Amini found that ginger capsule had no significant effects on PONV after gynecological surgeries.^{15,17} Modares et al. also found that compared with ginger, chamomile capsule was more effective in relieving pregnancy-induced nausea and vomiting.¹⁶

Previous studies mainly investigated the effects of ginger capsule. We could find only one study regarding the effectiveness of ginger essence.¹⁸ In this study, Hunt et al. found that compared with isopropyl alcohol and normal saline, ginger essence was more effective in reducing PONV after gynecological and gastrointestinal surgeries.¹⁸ Given the existing gap, we conducted this study to evaluate the effect of ginger essence on post-nephrectomy nausea and vomiting.

2. Methods

From third April to first October 2014, this randomized controlled trial study was conducted on a convenience sample of 120 patients who had referred to the Labbafinejad teaching hospital located in Tehran, Iran. The inclusion criteria were having an age of 18 years or older, being able to read and write Persian, having no known hearing or balance impairments, having no sensitivity to ginger, having no history of asthma, allergy, respiratory problems, motion sickness, olfactory problems, being at class II of American Society of Anesthesiologists physical status classification, and having received neither anything by mouth for at least eight hours, no chemotherapy agent since 14–48 h before surgery, nor any antiemetic agent since 24 h before surgery. The exclusion criteria included choosing to withdraw from the study, developing any type of sensitivity to ginger, having intolerance to ginger aroma, and developing acute hemodynamic instability. We used

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