Comparative Study: Effect of two Alternative Therapies in Management of Postoperative Nausea and Vomiting After Surgery

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Abstract:: Now day the world have shed light on the uses of alternative treatment in managing health problems. It can used in management of post-operative nausea and vomiting (PONV) during their modulation of having an internal cause opioid neuropeptides and neurokinin ligands. Postoperative nausea and vomiting (PONV) is remains a significant, troublesome post anesthetic problem which affecting up to 80% of patients who undergo general and regional anesthesia and within 24 hours of surgery. As result, it delay patient recovery, unanticipated hospital admission, limiting factor in early discharge after ambulatory surgery. Therefore, It increases health care costs and lead to patient dissatisfaction [(1)]. Antiemetic's are only partially effective way in managing the PONV but it can cause adverse effects, like sedation. Furthermore, Even with a new generation of anesthetic drugs and antiemetic, a high number of patients are affected by PONV. It has a multifactor etiology, but there are ways to reduce its occurrence. The greatest health care occupational would concur that better PONV therapy should be cost-influential, self-administered, and reason little to no side influences. One such therapy pattern that appears to have all of this advantage is Alternative therapies as aromatherapy and acupressure have been recommended for the administration of postoperative nausea and vomiting (PONV). It is recognized that this treatment is cheap, non-invasive and usually has the least levels of adverse influences Although it is not a traditionally recognized method, stimulation of acupressure points, specifically P6, has been identified as a potentially effective method of reducing PONV [(2,3,4)]. **Aim of this research:** The target of this research is to investigate the influence of two alternative therapies aroma therapy using (pepper mint oil inhalation) and PC6 acupressure on management of post-operative nausea and vomiting after surgery **Setting:** the study was conducted in the recovery rooms of general surgeries at Alexandria Main University Hospital. **Subjects:** They comprised a convenience sample of 66 patients who undergoing general surgeries. Patient was classified into three groups. study and control groups (n=22 in each group). **Tool:** One tool was used for data collection to collect the necessary data related to the effect of oil pepper mint oil, acupressure on management of post-operative nausea and vomiting after surgeries. the tool consist of assessment and observational form and it were designed by the researcher based on the review of literature. The tool included four parts: Demographic/Medical Data, Risk factors for PONV, Nausea and vomiting events data and finally Patient satisfaction. **Results:** the results of the current study showed the nausea mean score for patients who managed by peppermint oil and acupressure groups. after 30 minutes of the post-intervention it was observed that the mean score of nausea for patient inhaled peppermint oils group are 3.86±2.3and 3.09 ± 2.02 in acupressure group which were statistically significant p = 0.003 in comparing the two groups. **Conclusion:** It was concluded that using of alternative therapies pepper mint oil is effective in management postoperative nausea and vomiting while as using pepper mint oil is more effective than acupressure in management postoperative nausea and vomiting after surgeries**. Recommendations:** using peppermint oil or acupressure in management of post-operative nausea and vomiting after all surgeries than pharmacological treatment, Continuing education for nursing staff through in-services training program to improve their knowledge and skills about the alternative therapies other than administering prescribed medication.

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1. Introduction

Post-operative nausea and vomiting (PONV) is a one of the most common distressing complications which occur separately or in combination after surgery. As wound dehiscence, bleeding, aspiration of gastric contents, dehydration, electrolyte disturbances [(4)], delayed post-anesthesia care unit (PACU) discharge, unanticipated hospital admission and increase in the cost of healthcare [(5)]. Nausea is the subjective sensation of an urge to vomit, in the absence of expulsive muscular movements; when severe, it is associated with increased salivary secretion, vasomotor disturbances, and sweating. Which may occur without the presence of vomiting, but not all vomiting is preceded by nausea. Vomiting or emesis is the forcible expulsion through the mouth

of the gastric contents. Moreover, PONV may take place in single or multiple episodes, which is classified as either early, occurring up to 2 to 6 hours after surgery, or late, occurring up to 24 or 48 hours after surgery [6,7].

On the other hand, PONV remains a complex and incompletely understood physiologic function where both central and peripheral nerve pathways converge upon trigger zones. In general, the mechanism of nausea and vomiting are a natural reflex, which include the safeguard of the body versus absorbed toxins and showed that the existence of emetogenic situations. The vomiting center, determined in the brainstem, a short distance away to the nucleus tractus solitarius, monitoring the coordinated concatenation of respiratory and gastrointestinal happening that leads to vomiting. Moreover, its center is encouraged via the chemoreceptor trigger zone CTZ which, intermediate the emetogenic influence of the anesthetic drugs and the opioids (8,9).

There are many causative factors are influencing in occurrence of Post-operative nausea and vomiting which include: type of anesthesia, interventions anesthesia agent, surgical operations and postoperative conditions. Initially, the intravenous anesthetic agents are associated with differing degrees of nausea events, such as Thiopentone, Methohexitone, and nitrous oxide are fully recognized to reason PONV. As in patients undergoing gynecological an established, nitrous oxide plus oxygen reason considerable extra PONV compared with oxygen alone. However, it is during that nitrous oxide may be due to PONV during an immediate action on central opioid receptors and/or during gut insufflation and compression on the middle ear. Moreover, the older volatile factors, such as cyclopropane, or isoflurane, enflurane and halothane were associated with a very high incidence of PONV (4,6,10). Although nowadays there are Newer agents, like Propofol has less emetogenic effect after surgery. Hooper et al illustrated that patients who undergoing day situation surgery long-practiced low PONV when propofol utilized for the induction and conservation of anesthesia than when utilized for induction only, followed by conservation with inhalational factors. While, it does not have direct antiemetic properties. it is usually agreed that this factor is answerable for several degrees of vomiting [11].

Furthermore, The anesthetic technique influence the danger of PONV. Spinal anesthesia is usually connected with lower vomiting than general anesthesia, as emetogenic opioids and volatile factors are not utilized, on the condition that involvements are recognized to reason PONV such as abnormally low blood pressure and the highest prevent is avoided [4]. Peripheral regional anesthesia is the lowest emetogenic anesthetic mechanism to cause PONV[12]. Also, medications used in anesthesia as opioids which are utilized extensively previously, through and next anesthesia to increase the influences of the anesthetic factors and to observation pain. Opioids encourage sickness and vomiting by work on the chemoreceptor move region in the part postrema AP. The happening of vomiting is markedly great in ambulatory patients, the proposition that opioids also change vestibular sensitivity. Pretreatment with opioids leads to a great happening of PONV, as does they are utilized in balanced anesthesia to decrease volatile factor needs there a strong relationship between emesis and dose of opioid (13). Some research has observed that sickness and emesis are concerning opioid dose, while others have established a greater happening of emesis and sickness with excessive doses of opioids [14].

Moreover, there are several post factors can causes PONV as Postoperative pain, as particularly visceral and pelvic pain, Also, the patient movement early post-operative is a common trigger for nausea. Furthermore, the treatment of postoperative pain with opioids can causes PONV which can sensitize the vestibular system and the incorporation of opioid pain observation and postoperative movement is particularly emetogenic. Also, There are other factors can effect on the PONV are Postoperative hypotension, hypoxemia, and the early intake of fluids and food postoperatively (12,14).

Finally, there are certain types of surgery carry a greater risk of PONV. In adults, high incidences of PONV are found in intraabdominal surgery, significant gynecological, laparoscopic, orthopedic and ENT surgery (3). The surgical an established connection with the lowest happening of PONV as in adults and children, are peripheral and superficial partial surgery. However, as PONV are great happening next intra-abdominal surgery, may be caused to energizing of vagal afferents through bowel manipulation. Vagal afferents on the gut and peritoneum may also be triggered when the peritoneal cavity is puffed with carbon dioxide through laparoscopy. Bat ear and middle ear operations are the established great connected with PONV in adult ENT surgery. Energizing of the auriculo-temporal section of the facial nerve through bat ear surgery may be due to PONV, as could energizing of the labyrinthine passages through middle ear surgery. Nausea next this kind of surgery tends to happen later 2-8 h rather than directly postoperatively. Many patients have squints repaired as a day status step and thus have to cope with vomiting in the convalescence room or in any place. The emetogenicity of this step is due to by energizing of the coulometric reversal through drag on the extra-ocular muscles or as an outcome of apparent image deformation secondary to the serious

rectification of apparent axes alignment. It is value observation that not all ophthalmological surgery is connected with like great happening of PONV lower happening are notify later intra-ocular and non-squint extra-ocular surgery. This high happening is may be a reason for the irritant influence of blood on chemoreceptors and nociceptors in the esophagus, and energizing of the trigeminal nerve through surgery [12-15].

Researchers stated that there are many risk factors can increase incidence of PONV in high risk group patients. There is three various denomination of danger agents for postoperative nausea and emesis either patient-specific or personal, anesthetic, and surgical agents. These may interact with and potentiate each other therefore that the effective danger for some patients to improve PONV probably as great several agents, like the option of drug or anesthetic gas, can be adjusted. However several like length or kind of surgery may on opportunity be able to adjust generality danger agents cannot [12.14].

Moreover, Apfel (2012) [16] Stated that, there were independent risk factors affect directly and cause the PONV as Patient age. Who reported that. Patient down age 3 years old practice the lowest happening of PONV. Unhappily, patients among ages 3 and 50 years old are generality at danger. But happily, PONV typically lower next to the age of 50, although older patients afford spinal surgery or common alteration have a larger happening of PONV that's could be explained in due to reduced ability to clear these medications and length of anesthesia duration. Then, Gender, researchers illustrated that, Female gender is highly risk factor for PONV with an 3times more than men, which indicates that begin a female patients are on average three times more likely than men patients to suffer from PONV (9). The reason may due to hormonal factors (15,18). Also, obese patients have highly happening of PONV. One of the causes utilized to demonstrate this connection is that adipose tissue works as a reservoir for inhaled anesthetic factors, extend the duration of their half-lives therefore that the drugs persist in an activity to be allowed into the bloodstream through the revivification phase then, Decreased gastric motility Any condition connected with late gastric evacuation like gastrointestinal obstruction, pyloric stenosis, diabetes, and pregnancy excess the likelihood of PONV [17].

Mary H. Tinsley (2012) [19], illustrated that, patients who have history of motion sickness or prior PONV have established pathway for nerve impulses for vomiting. And the patients who have history of either movement nausea or PONV is approved to have a decreased threshold of tolerance, treatment growing their danger of future episodes of PONV by two to three-fold. Finally, the smokers have a highly incidence of PONV twice than non-smokers patient's. One of the most commonly believed theories to explain that is due to the presence of polycyclic aromatic hydrocarbons in cigarette smoke induce cytochrome P450 enzymes, thereby its increasing the metabolism of emetogenic volatile anesthetics which induce nausea and vomiting. in versus to this another researcher Pierre et al indicate that smoking of tobacco causing apparent protective action for PONV [17,18].

Early and influential administration of PONV is critically paramount for preventing complications which could happen in the form of dehydration or electrolyte disturbances that lead to cardiac dysrhythmias, wound disruption, esophageal tears, gastric herniation, fatigue, and changes in intraocular pressure that can impair vision. Pulmonary involvements which are usually may be caused to aspiration, it generally appears in patients who wake up quietly from anesthesia or are incapable to save their airway. The early management of nausea and vomiting will provide more patient contentment and protected, become better execution results, and decreasing medical costs (20). Current management for PONV classified into two main categories the pharmacological and non-pharmacological methods.

Pharmacological treatment is a one of the universally approved methods to treat PONV is by administering antiemetic medications. Their selection is dependent on efficacy, cost, safety, and ease of dosing. Antiemetic medications are generally grouped according to the receptor upon which they exert their effect. Receptors that are known to interact with antiemetics are the four main neurotransmitters; histamine, acetylcholine, serotonin, and dopamine. Infact, none of the available antiemetic's is entirely effective for preventing PONV, especially in high-risk patients. Some common antiemetics currently being used are scopolamine (anticholinergic), Compazine and Reglan (antidopaminergics), Decadron (corticosteroid), and (5-HT) 5-hydroxytryptamine serotonin receptor antagonists (e.g. odansetron and granisetron). Antihistamines such as diphenhydramine (Benadryl), promethazine (Phenergan) and dimenhydrinate (Dramamine) have also proven to be effective (21), Moreover, Several studies reported that, The greatest popular method utilized to prohibit or decrease the seriousness of PONV is to manage an intravenous (IV) antiemetic factor that prevents emetogenic neurotransmitters at the level of the chemoreceptor move region [22]. Antiemetics have been shown to have many adverse effects including dry mouth, extra pyramidal effects, dystonic effects, restlessness, hypotension, sedation and QT prolongation in ECG tracings[9]. Most healthcare professionals would agree that the best PONV treatment should be cost effective, self-administered

and no side effects [23].

Non pharmacological management, Nurses play an important role in reduce prevent and, management PONV. nurses should have adequate knowledge and skills to prevent the symptoms or to assist patients who develop PONV in its management (24). This care would be through applying the nursing interventions in the guide of nursing process. Those Interventions start with assessment for the patient's previous experiences and expectations of nausea and vomiting, including causes and interventions used, prevention of unpleasant sights, odors, and sounds in the environment. Also, there are several signs that accompany the feelings of nausea. A patient usually has excessive salivation, dilated pupils, tachypnea, swallowing, pallor, sweating, and tachycardia. If the patient's nausea worsens, retching usually occurs and the tachycardia may change to bradycardia. Finally Administer the prescribed antiemetic's as needed [25-27]. Nurses have an important role in reducing side effect of administered medication thus they should be familiar with any potential side effects or interactions before administration. Despite the limited efficacy of treatment with antiemetics the nurses had prompted efforts to develop new solutions, which have led to the use of alternative management such as acupressure and non-pharmacological strategies [21]

Alternative therapy has been used since centuries ago by nurses in managing nausea and vomiting. Definition the treatments of health are any medical system, training or output that are not part of traditional medical care. the expression "alternative" application when the treatment fully substitutes the traditional therapy [28].

Aromatherapy is the use of essential oils as ginger, oil of peppermint, and isopropyl alcohol 70%. for therapeutic or medical purposes. These essential oils utilized to the patient's body during inhalation or topical methods, or rarely ingestion. Moreover, It utilizes essential concentrates extracted from plants, namely Essential Oils (EO), which had contained natural compounds and strongly volatile distinguish by a high flavor and produced as secondary metabolites of essential plants. Definition of essential oils is materials with unique chemical characteristics may be caused to the properties of start prepared from many materials. Meanwhile, synthetic products are namely "essences" and work in a limited methods in the body by the actuality they have a special chemical composition, while the essential oils work more comprehensively The role of an essential oil in the body will determine by on the passage by which the molecules are managed, which can happen during inhalation, ingestion or cutaneous passages. There is fairly heated debate as to how aromatherapy should be used [29].

Furthermore, Inhalation of aromatherapy can be done through many ways by direct and indirect method to provide the desired effect, the direct inhalation of tissue or cotton ball by putting one to five drops of essential oil on a facial tissue or cotton ball and inhale for 5 to 10 minutes These may result in strong physiological, emotional, and psychological reactions that prevent or minimize PONV by influencing the release of neurotransmitters that activate the chemotaxis trigger zone as essential oil [20].

Peppermint oil is an essential oil which can be defined as an odorous, volatile substance, present within an aromatic plant matter which has several uses directly through dietary supplements and skin preparations which is consider likely to be safe for most adults. While as it could cause side influences like heartburn and it may be acting with confirmed medications and, like more essential oils. Moreover, peppermint oil can be toxic and even deadly at an extravagant mouthful; also, it has a choleretic influence and is contraindicated in patients with cholelithiasis or cholecystitis, interstitial nephritis and acute renal failure. Peppermint oil is comparatively contraindicated in patients with hiatal hernia or considerable gastroesophageal reflux disease for the reason that its influence on the lowest esophageal sphincter can lead to exacerbation of symptoms [20.21.30].

National Institute of Health (NIH) founded that the use of peppermint oil will reduce nausea in patient receiving chemotherapy [31]. Other research has demonstrated that peppermint oil antagonizes the sensory receptors involved in emesis. Concomitantly, clinical research has demonstrated its effect on the gastrointestinal tract when taken orally [32]. Peppermint oil relaxes the tone of gastrointestinal tract sphincters and aids the passage of gas. moreover, this supplements are in addition utilized by several people for the following situations sickness, emesis, convulsions of the upper gastrointestinal tract and bile channels, diarrhea, bacterial excessive growth of the small intestine, infection respiration system, and sinus. Menthol is the active component in peppermint oil, which prevents calcium channels of smooth muscle. Recently, it was reported that peppermint oil solution is highly effective and has few side effects as an antispasmodic agent [33].

The action of peppermint oil inhalation is stimulating the sense of smell nerves which, in turn, have an immediate connect to the Limbic System, which had control for emotions, feelings and motivational impulses. The "olfactory memory" outcomes from a consistency olfactory process, a specific flavor connect it with any remembrance cause to happen by the Limbic System (34). The fact that the

physiological technicality of action of volatile oils, and thus of Aromatherapy, is not well determined, it is concluded that these molecules produce a system competent of emission neurotransmitters motivation, like encephalin and endorphins, which produce an analgesic influence and output a sense of wellness and recuperation. More studies showed that olfactory excitation outputs directly alternatives in physiological measurements like complete blood picture, muscle stress, body temperature, blood flow, electro-dermal activities, and cerebral activities. when volatile oils reach the circulatory and nervous systems all body systems can be influenced once. The much various molecules in every essential oil work as olfactory excitants that travel via the nose to the olfactory bulb, and from there nerve impulses travel to the limbic system of the brain [33,35].

Acupressure is another alternative therapy used for managing PONV. It is an ancient form of massage key pressure points to relieve symptoms, that is one of the therapy methods utilized in Traditional Chinese Medicine. The target of this therapy to stimulates the body's circulatory, lymphatic and hormonal systems. It also helps the function of the immune system and the body's natural ability to heal itself. Also, it encourage the movement of qi by uses finger pressure to mobilize chi (or life force energy) at specific spots on the body. during the 14 channels inside the body. These are the same energy meridians and acupoints as those purposed with acupuncture (34). Chinese Medicine theory cases that the continuous flow of qi during these channels is fundamental for a person to save their health. If this energy flow is prevented, the body can no longer preserve the equilibrium that is necessary to preserve high power and transact with health cases. Furthermore, Acupressure demand application of bodily stress on trigger points/acupoints/particular stress points which are the point relative to the surface of the skin and are the situation over the meridians. Which are the channels within the human body which assists to maintain Qi and thus, the stability of health condition? Every meridian is linked to different organs and tissues of the human body. Activation of a particular point on meridian by stress simplify pain decrease at the local site and also decrease the pain from other portions of the body [36]. It is a stress point, hand-mediated power healing mechanism which estimates beneficial planning for the administration of multiple symptoms, straight with useful bodily refreshing, contentment, and cost. Definition acupressure is a manually operated, needle-free, non-invasive, can be much influential in helping with nausea and emesis after surgery or cost-influential and non-pharmacological involvement to elevate patients' comfortable. without harmful side effects [37.38].

Majholm et al. studied the utilize of acupressure practical at the P6 acupoint, existing two cuns (4 cm) proximal to the transverse crease among the tendons of the carpi radialis and palmaris longus. The results showed that the wristbands to have no antiemetic influence versus placebo. Moreover, the result observed that the moderate side influence in a third of the search sample, called redness, tenderness, and swelling [40]. Turgot et al. illustrated that the addition of suitable findings in female patients undergoing gynecological procedures. The results observed that a statistically considerable decrease in PONV with the supplement of bilaterally utilized acupressure wristbands. The method of decreasing PONV may be additional practical than either APu or EAPu due to the lowest amount of period needful to therapy every patient, with no special practicing necessary for wristband implementation [41].

Nowadays clinical alternative therapy is used as part of nursing care in Switzerland, Germany, Australia, Canada, and, more recently, the United States. Nurses are obliged under a Code of Professional Nursing to practice competently and safely within their scope of knowledge. Many nurses place themselves at risk of practicing outside these boundaries if they include aromatherapy (peppermint oil), acupressure into their practice without undergoing appropriate training and working within the guidelines of their employer. There is a general consensus for a minimum level of training for nurses who use aromatherapy (peppermint oil) although authorities vary as to what the minimum should be. One recommendation is that nurses obtain written permission from their employer prior to offering and using alternative therapy as acupressure or aromatherapy (peppermint oil inhalation [42].

There are numerous implications for nurses wishing to incorporate alternative therapy as acupressure or peppermint oil into their training comprehensive the significance of sufficient practicing; originality of evidence-based guidelines; and authorization from the employer, therapy doctor, and the patient. These agents will become strong nurses to job within their scope of training, in a competent and safe method (34,43,44). The nursing process of uses of peppermint oil or acupressure begins with obtaining consent for use of aromatics and collecting pertinent information. Assessment of the patient, the physical environment, and the team of caregivers defines the healing environment. Along with review of the medical and nursing histories, allergies, vital signs, and laboratory values, subjective data are relevant, such as how to offer treatment. The plan of therapy may include direct inhalation on a cotton ball or through a diffuser, compresses, topical application, or applying pressure on acupressure point

to help the free flow of energy in the channels. follow-up with the patient to assess efficacy of this intervention [45]. Finally, Nurses are encouraged to offer alternative therapies as part of a holistic nursing care plan, in which they consider the whole patient rather than attending only to symptoms. The nurses in acute hospital settings [46].

The target of this research is to investigate the influence of two alternative therapy as aroma therapy using (pepper mint oil inhalation) and PC6 acupressure in management of post-operative nausea and vomiting after surgery.

Research hypothesis:

The alternative therapies as "Peppermint oil inhalation, and acupressure as effective as IV Metoclopramide in managing PONV after surgery under conscious sedation and presents no side effects".

Research Questions

Is Peppermint oil inhalation as effective as IV Metoclopramide in managing PONV after surgery under conscious sedation and presents no side effects?

Is acupressure as effective as IV Metoclopramide in managing PONV after surgery under conscious sedation and presents no side effects?

Is Peppermint oil inhalation or acupressure as effective as IV Metoclopramide in managing PONV after surgery under conscious sedation and presents no side effects?

2. Material and methods:

Materials

Design:

A quasi experimental study design was used to conduct this study.

Setting:

The study was conducted in the recovery rooms of general surgery at Alexandria Main University Hospital.

Subjects:

The subjects of this study were compromised of a convenience sample of 66 adult patient, assigned into three groups study and control groups, 22 patients in control group while the study group are divided equally into 22 patients each. The study sample was estimated based on Epi info program, which used to estimate the sample size = 240, Expected frequency = 50%, Margin of error=10%, Confidence coefficient =95%, and, Minimum sample size =95%.

The patient inclusion criteria were:

Age ranging from 20-60 years, Scheduled for general surgery as tonsillectomy, surgical laparoscopy, appendectomy, and cholecystectomy, Patient received general and/ or regional anesthesia, Patient without other health problems as renal disorders, diabetes mellitus, liver disorders, and carpal tunnel syndrome) they had recent upper respiratory tract infections, inability or impaired ability to breathe through the nose, or history of hypersensitivity to pepper mint oil.

Tool

The research tool was used in the study is an assessment and observational form and it was designed by the researcher based on the review of literature [18-20]. The tool included four parts: Demographic/Medical Data, Risk factors for PONV, Nausea and vomiting events data and finally Patient satisfaction.

Part 1: Demographic/Medical data

Data were collected from patients' medical record files, which include age, height, weight, and body mass index (BMI). The Medical data consist of significant history, diagnosis, type of surgery, anesthetic agents used, duration of procedure, time from PACU admission to nausea events, history of motion sickness and Oro-gastric/Naso-gastric tube used.

Part 2: Risk factors for PONV

Data were collected from patients' medical record files and patients' interview regarding the occur of risk factor in patient while developing PONV such as; female gender, obesity, previous history of PONV, history of motion sickness, duration of procedure longer than 60 minutes**,** history of smoking.

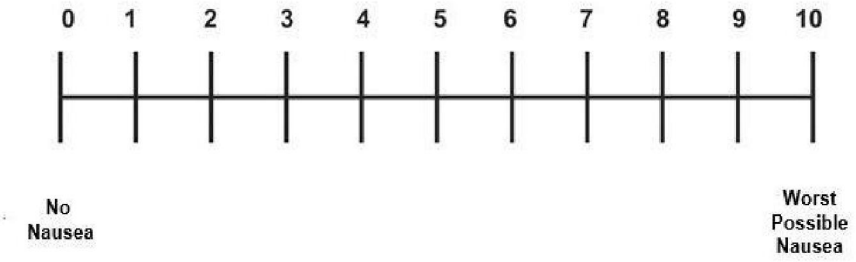
Female gender	**Yes** ☐	**No** ☐
Obesity (BMI ≥ kg/m2)	**Yes** ☐	**No** ☐
History of motion sickness	**Yes** ☐	**No** ☐
History of previous PONV	**Yes** ☐	**No** ☐
Smoker	**Yes** ☐	**No** ☐
Diabetes mellitus	**Yes** ☐	**No** ☐
Total number of PONV risk factors	**…….**	

Risk Factors for PONV

Part 3: Nausea and vomiting events data

Data were collected from patients' assessment includes the time for first nausea, number of nausea events**,** nausea visual analogue scale (VAS), need for rescue antiemetics and total consumption of antiemetics.

Nausea Visual Analogue Scale (VAS): Patients will be shown as a 100-mm long line on a piece of paper. One end will be marked as "No Nausea" and the other end marked as "Worst Possible Nausea". For each nausea event, the score will be taken before receiving the treatment, 5 minutes after the treatment and every 15 minutes thereafter for every 30 minutes.



Part 4: Patient Ssatisfaction

Data were collected from patients' assessment for their satisfaction. Patients will be asked to rate their total contentment with the administration of nausea in the recovery room utilizing the following scale: 1) justly displeased; 2) comparatively displeased; 3) comparatively pleased; 4) pleased, and 5) overall pleased.

Methodology:

-An official letter was submitted to the director of the chosen setting to obtain permission for data collection after explanation of the aim of the study.

- The data collection tool will be an assessment and observation tool consisting of 4 parts developed by the researcher based on previous literature review (18-20).

-The study tool was revised by five experts in the field of medical surgical nursing to test the tools for content validity, completeness and clarity of the items, and necessary modifications were carried out.

-Reliability of the tool was tested using Cronbach's Alpha where r=0.87.

-A Pilot study will be performed on 5 patients to test the clarity and applicability of the tool. and to identify the difficulties that may encountered during data collection and selected exclusive criteria from study subject.

-The exclusion criteria for the participants such as; documented allergy to pepper mint oil, documented allergy to metoclopramide, patients reporting recent upper respiratory tract infection, patients having psychiatric or neurological illnesses, carpal tunnel syndrome, hemodynamic instability, patients unable to breathe through the nose, patients reporting the use of an antiemetic within 24 hours before the procedure and General anesthesia developed by the researcher based on previous literature review. A Pilot study will be performed on 5 patients to test the clarity and applicability of the tool.

Patients meeting the inclusion criteria should be considered for enrollment in the study upon their arrival to the recovery room. Participants were only be recruited to the study when they develop nausea or vomiting in the recovery room of the surgery unit.

The study subject Patients meeting the inclusion criteria were assigned randomly into one of the three groups (pepper mint oil, acupressure and control groups)

The objective of this research, the definition of nausea will be as the individual sensibility of the urgent vomit, and emesis should be defined as the forceful expulsion of gastric contents. Every happening of nausea or emesis through at least 60 seconds from any other happening to be registered as a separate happening.

Patients should be assessed for the severity of PONV by Visual Analogue Scale (VAS) score for nausea. Patients will be shown as a 100-mm long line on a piece of paper. One end should be marked as "No Nausea" and the other marked as "Worst Possible Nausea". The researcher should instruct the patients to make a mark on the line corresponding to their degree of nausea. The researcher should then measure the distance from the "No Nausea" end of the line to the patients' mark. This should be correspond to the VAS score for nausea; a VAS of 0-mm corresponds to stone nausea, whereas a VAS of 100-mm indicates the Worst Possible Nausea.

Intervention

In the intervention Nausea events will be treated according to group assignment such as; peppermint oil inhalation (study) sample, Acupressure bands were used at the P6 points on each wrist, 15 minutes previously anesthesia creation, in like a way that the patients felt only gentle stress and no discomfort (study) sample. and standard attention utilizing metoclopramide received 10 mg of Metoclopramide intravenously, directly previously to anesthesia induction, as this was one of the greatest public medications of option for prohibition nausea and emesis. (control group).

Control group:

Subjects in the control group received the

standard protocol for management of PONV in the surgery unit as ordered by the treating physician and administered by the recovery room nurse. The protocol used in the surgery unit consists of metoclopramide, 10-mg IV over 2 minutes to be repeated as needed every 30 minutes, not to override an overall potion of 30-mg. Patients in the control group are given no intervention from the researcher other than observation, assessment and monitoring.

1. Study group (peppermint oil):

Subjects in the first study group received inhalation therapy using peppermint oil saturated pads. Subjects explained by the procedures; those who refuse the intervention were excluded from the study and were received the standard care offered in the recovery unit. For subjects, who approve inhalation therapy were consist of three inhalations from a zip lock plastic bag containing four 2x2 gauze pads saturated each with two drops of pure peppermint oil and 5-ml (0.9%) of normal saline. The researcher was coach the patients to inhale vapors from the peppermint oil gauze pad within the zip lock plastic bag, by holding the open bag in front of the nose. Patients will be instructed to take three slow, deep breaths, inhaling through the nose and exhaling through the mouth. Supplemental oxygen which is received by patients will be temporarily disconnected from the oxygen delivery device for peppermint oil inhalation therapy and then promptly reconnected. The peppermint oil treatments should be managed on prerequisite basis, up to an overall of 3 separate uses (3 deep inhalations per utilize) every 15 minutes. For complaint of nausea recalcitrant to peppermint oil therapy (no resolution of PONV symptoms after 3 uses) or if a patient demanded an antiemetic factor at any period, these patients will receive the same treatment as in the control group, which is the standard protocol of care for nausea and vomiting in the surgical recovery rooms as ordered by the physician and consists of metoclopramide,10-mg IV over 2 minutes for every 30 minutes, not to exceed the total dose of 30-mg. Antiemetics will be administered by recovery room nurse upon order from the treating physician. The number of administrations of rescue antiemetics and the total dosage of antiemetics will be recorded by the researcher.

2. Study group (acupressure):

Subjects of the second study group were received Acupressure as a management of PONV Acupressure were applied at the P_6 points on both wrists, for 2-3minutes when the patient felt nausea by using the following steps: ***Pressure Point P-6 (Neiguan)***

1. **Relax and position patient arms. by** Place arms directly in front of researcher with the fingers pointing up and palms facing her.

2. Relax patient shoulders and encourage him/her to take several deep breaths.

3. To find pressure point P-6, place the first 3 fingers across patient wrist. Then, place thumb on the inside of patient wrist just below index finger.

4. The nurse should be able to feel 2 large tendons (tissue that connects muscles to bones) under patient thumb. This is pressure point P-6.

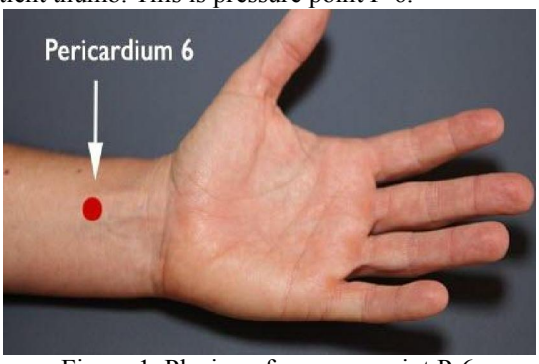


Figure 1. Placing of pressure point P-6

5. Use thumb or forefinger to press on this point when patient feel nauseous. Then gently, don't press so hard but firmly rub the point using a circular motion for several minutes (2-3 minutes). take up to five minutes.[46] in such a way that the patients felt only a gentle pressure and no discomfort.

5. Repeat the process on his/her other wrist.

Measurement

Both groups were assessed for nausea VAS score before receiving treatment,

5 minutes after treatment and every 15 minutes thereafter for 30 minutes after each nausea or vomiting event. Before discharge from the PACU, patients were be asked to rate their total contentment with the administration of nausea in the recovery room utilizing the following scale:1) justly displeased; 2) comparatively displeased; 3) comparatively pleased; 4) pleased, and 5) overall pleased.

Patients were also be asked to indicate whether they would want to try peppermint oil therapy or trained on using acupressure if they developed by nausea following subsequent procedures.

Ethical considerations:

-Patient written approval to participate in the study was obtained after explaining the purpose of the study.

- Privacy of the participants were maintained.

-Confidentiality of the collected data was secured.

-Patient's right to with draw at any time of the research participation was considered and respected.

Statistical Analysis

Continuous data were presented by mean with standard deviation, significance difference between the three groups were tested by independent test.

Categorical data were presented by frequency with percentage and it was analyzed by T. test. All the analyses were done by using SPSS 21.0 version. A p value of less than 0.05 was considered as significant.

3. Results

Table (1) illustrates distribution of the control, and study groups (peppermint & acupressure) as regards sociodemographic and clinical data. Regarding age, the results revealed that, the mean value of patient the age in control group was 42.49 years with standard deviation of 12.1, while in the (peppermint & acupressure) study groups the mean age of the patients were (42.81, 43,6) years with standard deviation of (11.6, 12.0) respectively. in relation to sex the control, and (peppermint & acupressure) study groups, were female (72.7%, 68.2%, and 72.2%) respectively. Concerning to the body weight, the finding showed that, Patients of control group mean weight were 95.6 kg and standard deviation was 24 kg. while patients mean weight of (peppermint & acupressure) study groups were (96 kg,93.8kg) and standard deviation were (25kg,23kg) respectively. This table also, illustrates the height measurements of patients in (peppermint & acupressure) study groups and control groups. In control group164.7 cm was the mean height and standard deviation was 5cm. as In (peppermint & acupressure) study groups the mean height were equal 164.9cm in both study groups, while the standard deviation was equal 4.9 cm for the both study groups. In relation to the body mass index, the result founded that. In the control group mean BMI was35.18 and the standard deviation was 8.8, while the mean of BMI for patients in (peppermint & acupressure) study groups were (35.2,34.58) while the standard deviation were (9.1,8.4) respectively. Also the table showed that, in the control group40.9% made appendectomy and 22.7% made abdominal exploration, while as 40,9% of the (peppermint & acupressure) study groups were made cholecystectomy equally.

Table 1: **Distribution of the control, and study groups (peppermint & acupressure) as regards sociodemographic and clinical data.**

	Control Group (n=22)		Study Groups (n=44)			
			Peppermint oil (n=22)		Aqua pressure (n=22)	
	No.	%	No.	%	No.	%
Age:						
<20	1	4.5	0	0.00	1	4.6
20-<30	4	18.2	4	18.2	3	13.6
31-<40	5	22.7	6	27.3	6	27.3
40-<50	2	9.00	2	9.00	1	4.5
50+	10	45.6	10	45.5	11	50.0
Mean+SD	42.49+12.1		42.86+11.6		43.61+12	
Gender:						
Male	5	27.3	7	31.8	6	27.3
Female	17	72.7	15	68.2	16	72.7
Type of surgery						
Appendectomy	9	40.9	7	31.8	7	31.8
Cholecystectomy	8	36.4	9	40.9	9	40.9
Abdominal exploration	5	22.7	6	27.3	6	27.3
Weight:						
60-<70	6	13.7	4	18.2	3	13.6
70-<80	9	20.5	4	18.2	6	27.3
80-<100	14	31.8	7	31.8	7	31.8
100-131	14	31.8	7	31.8	6	27.3
Mean+SD	95.6+24		96+25		93.82+23	
Height:						
<160	3	11.4	2	9.1	2	9.1
160-<170	12	59.1	14	63.6	15	68.2
170+	7	29.5	6	27.3	5	22.7
Mean+SD	164.7+5		164.9+4.9		164.5+4.9	
BMI: (CDC)						
Underweight <18.5	0	0	0	00	0	0
Healthy 18.5-24.9	6	13.7	4	18.2	3	13.6
Overweight 25-29.9	11	25.0	3	13.6	6	27.3
Obese 30+	18	61.3	15	68.2	13	59.1
Mean+SD	35.18+8.8		35.2+9.1		34.58+8.4	

Table 2: illustrates risk Factors score for post-operative nausea and vomiting in control and (

Peppermint oil and acupressure) study groups There were a significance difference in the history of PONV (p = 0.009) and smokers (0.041) between the two groups. While as There were no significant difference between female gender, obesity, History of motion sickness, and diabetes mellitus for both groups.

Table 2: Risk Factors score for post-operative nausea and vomiting in control and (Peppermint oil and acupressure) study groups

Variables	Control Group (n=22)	Study Groups (n=44)		P
		Peppermint oil (n=22)	Aqua pressure (n=22)	
Female gender	17 (70.5%)	16 (72.7%)	16 (72.7%)	0.235
Obesity (BMI ≥kg/m^2)	18(72.7%)	16 (72.7%)	16 (72.7%)	0.169
History of Motion Sickness	7 (34.1%)	8 (36.4%)	7 (31.8%)	0.114
History of Previous PONV	5 (22.7%)	6 (27.3%)	6 (27.3%)	0.009*
Smoker	6 (25%)	5 (22.7%)	5 (22.7%)	0.014*
Diabetes mellitus	4 (18.2%)	5 (22.7%)	4 (18.2%)	0.185

*Sig. if p <0.05

Table 3 illustrates the Time to first nausea in control and (Peppermint oil and acupressure) study groups. Mean for control group was 35.29 min with the standard deviation of 13.63 min while the experimental group mean is 16.38 min with the standard deviation of 17.019 min, the P value showed as statistically significant difference between the mean of the (Peppermint oil and acupressure) study groups and the control groups (p= 0.001).

Table 3: Time to first nausea in control and (Peppermint oil and acupressure) study groups

Groups	No	Mean	Std. Deviation	P value
Control	22	35.29	13.633	0.001*
Peppermint oil study group **groupps**	22	16.38	17.019	
Acupressure study group	22	16.38	17.019	

** Sig. if P <0.05

Table 4: shows comparison between control and (Peppermint oil and acupressure) study groups related to Number of Nausea Events. as regards the Nausea occurrence with one, two, three, four and five times. Analysis of data revealed that the percentage of nausea for five times event were 0% in control group in comparing with the percentage of patient who had nausea for five time events in peppermint oil study groups were reduce to 9,1% whereas the group percentage of nausea five times events were decrease into 0% in acupressure group as in control group0%.

On the other hand, there were a significant difference between control and peppermint oil study (p=0.035) while as there were no significance difference between control and acupressure study groups (p=0.802)

Table 4: comparison between control and (Peppermint oil and Aqua pressure) study groups related to Number of Nausea Events

Groups		Number of Nausea Events					P
		1	2	3	4	5	
Peppermint oil study group (n=22)	No.	10	2	5	3	2	0.035*
	%	45.5%	9.1%	22.7%	13.6%	9.1%	
Control Group (n=22	No.	11	6	3	2	0	
	%	50%	27.3%	13.6%	9.1%	0%	0.802
Acupressure study group (n=22)	No.	9	7	4	2	0	
	%	40.9%	31.8%	18.2%	9.1%	0%	

*Sig. if p <0.05

Table 5: shows comparison between Peppermint oil and acupressure study groups related to Number of Nausea Events. Analysis of data revealed that the percentage of nausea for four times event were 13.6% in peppermint oil study group in comparing with the percentage of patient who had nausea for four time events in acupressure study groups were 9,1%. As a result there were a significant difference between Peppermint oil and acupressure study groups (p=0.0 02).

Table 5:: comparison between Peppermint oil and acupressure study groups related to Number of Nausea Events

Groups		Number of nausea events					P value
		1	2	3	4	5	
Peppermint oil study group **(No=22)**	No	10	2	5	3	2	0.002*
	%	45.5%	9.1%	22.7%	13.6%	9.1%	
Acupressure (n=22) study group	No	9	7	4	2	0	
	%	40.9%	31.8%	18.2%	9.1%	0%	

** Sig. if P <0.05

Table 6 illustrates the number of nausea occurrence for subjects in correlation to the total score of PONV risk factor. in total number of risk factors were 1 the nausea occurrence in Pepper mint oil study group is 0 and Acupressure study group is 3 times in counting the total number of nausea events in each group. While when there is increase in the total number of score to be 2 its increase the incidence of number of nausea events to be 6 time in Pepper mint oil study group and 11 times total number of nausea events in each group and when total score increase to be 4 incidence of nausea events is 7 time in Pepper mint oil study group and 1 in Acupressure study group So the results shows a positive relationship between the two groups in relate to PONV risk factor and number of nausea events. p=0.029.

Table 6: Correlation between the number of total score of PONV risk factors and number of nausea events in peppermint oil and acupressure study groups.

Total score of PONV risk factor	**Pepper mint oil study group (N=22)**	**Acupressure study group (N =22)**	**P value**
1	**0**	**3(14.3)**	**0.029***
2	**6(35.3)**	**11(52.4)**	
3	**4(23.5)**	**6(28.6)**	
4	**7(41.2)**	**1(4.8)**	

** Sig. if P <0.05

Table 7: Comparison between peppermint oil and acupressure study groups related to Nausea pre-intervention and post- intervention

	Study Groups (n=44)	**Mean**	**St. Deviation**	**P**
Pre-intervention	Peppermint oil (n=22)	6.05	2.214	0.056*
	acupressure (n=22)	5.91	2.180	
Post-intervention at 15 min.	Peppermint oil (n=22)	4.64	2.013	0.146
	acupressure (n=22)	4.41	1.843	
Post-intervention at 30 min.	Peppermint oil (n=22)	3.86	2.396	0.003*
	acupressure (n=22)	3.09	2.022	

** Sig. if P <0.05

Table 7 illustrates Comparison between peppermint oil and acupressure study groups related to Nausea pre-intervention and post- intervention. In pre-intervention, mean with standard deviation nausea score is 6.05 ± 2.21 for peppermint oil study group and 5.91 ± 2.18 for acupressure study group which is statistically significant p = <0.056. During the period of post-intervention after 15 minutes, the mean and standard deviation is 4.64 ± 2.01 for peppermint oil study group and 4.19 ± 2 for acupressure study group which is not significant p=0.146. The nausea score for the post-intervention after 30 minutes is 1.06 ± 1.1 in control group and 3.29 ± 2.5 in acupressure study group which was statistically significant p = 0.003 in comparing the two groups.

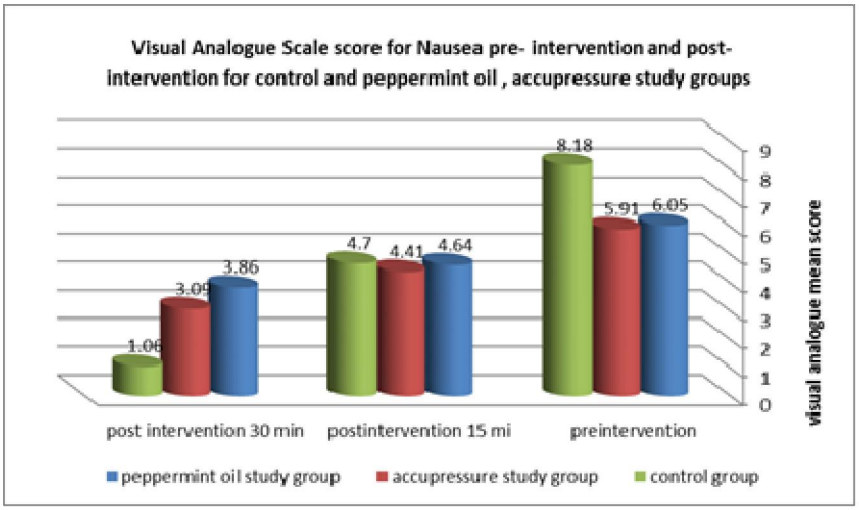


Figure (2) Comparison between control, peppermint oil and acupressure study groups related to Visual Analogue Scale score for nausea pre-intervention and post- intervention

Figure (2) illustrates the Visual Analogue Scale score for Nausea in pre- intervention and post-intervention in comparing between control group who managed with metoclopramide and both study groups who managed with peppermint oil and acupressure. In pre- intervention, mean nausea score (8.18) for control group while mean score peppermint oil and acupressure study groups were (6.05, 5.9) respectively in comparing the three groups. During the period of post-intervention after 15 minutes, the mean score of control and both peppermint oil and acupressure study groups were nearly as the same (4.71,4.6,4.4) respectively. in comparing the three groups. The nausea mean score for the post intervention after 30 minutes. the results indicated that the mean score of patient were decrease nausea was 1.06 in control group while the mean score for patient who managed by peppermint oil and acupressure study groups were highly increase than control group (3.89,3.09) respectively.

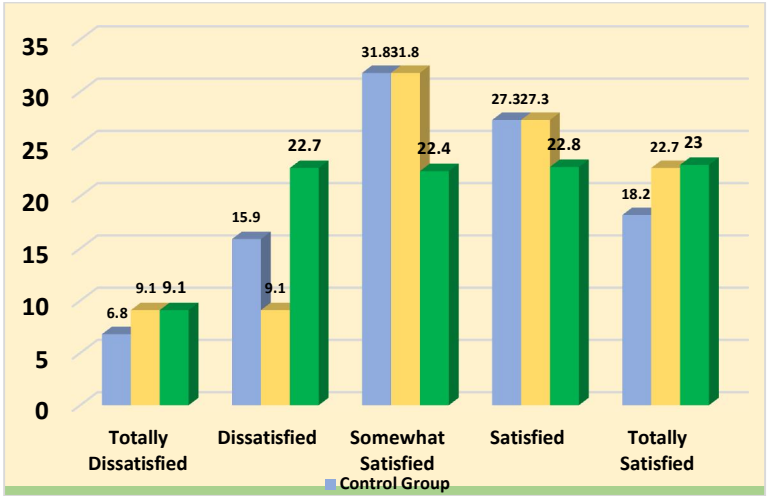


Figure 3 Patients' rating of overall satisfaction after management of nausea in control, peppermint oil and acupressure groups

Figure (3) illustrates the patient satisfaction after management of nausea by metoclopramide for the control group, peppermint oil and acupressure for study groups. the result revealed that less than quarter of patient of two study groups were totally satisfied with acupressure and peppermint oil management (23,22.7%) respectively. While 31.8% of patients for study and control groups were somewhat satisfied after administering metoclopramide medication & peppermint oil. Moreover, the results showed that about,9.1% of patients who administer peppermint oil & acupressure were more totally dissatisfied than

patient who administer metoclopramide of control group (6.8%)

4. Discussion

Although (PONV) is not fatal, It have a major impact on patients psychological and physical comfort and satisfaction with their peri-operative care. Which is one of the major problems in the post-operative stage for patients recovering from surgery [13]. In high risk populations for PONV, incidence varies between 70% and 80% and it is often associated with distressing complications such as dehydration, electrolyte disturbances, cardiac dysrhythmias, wound disruption, esophageal tears, gastric hernia, fatigue and changes in intraocular pressure. Additionally, pulmonary complications may arise due to aspiration, which may occur in patients with delayed recovery from anesthesia or in those unable to protect their airway. The occurrence of PONV can thus negatively influence the patients' safety and satisfaction, procedure outcomes and may lead to increased medical costs. Nurses in the endoscopy recovery care unit often explore alternative, less expensive and more efficient methods for PONV management post-surgery. Antiemetics have been reported to cause many serious side effects including anxiety, muscle twitching, akathisia, uncontrolled movements, fatigue, tremors, depression, confusion, dystonic reactions, seizures, Parkinsonian symptoms and tardive dyskinesia. These side effects may be avoided by using non-pharmacological interventions such as aromatherapy with peppermint oil inhalation, acupressure an alternative complementary therapy that results in strong physiological, emotional and psychological reactions that prevent or minimize PONV by influencing the release of neurotransmitters that activate the chemotaxis trigger zone (10,12,17)

. The current study explored the effectiveness of oil of peppermint and acupressure in the management of PONV in patients who have undergone general surgery, The study used a randomized controlled design in which no statistically significant differences were found in demographic characteristics such as age, gender, body mass index and in Clinical data between the three groups of the study. Additionally, no statistically significant differences were found between the two groups regarding the type and dose of sedative and anesthetic agents used (p value = 0.137). Effective management of PONV primarily focuses on early detection and prediction of patients who are more liable or have a high risk to develop PONV. Those risk factors depend on patient factors such as sex, age, history of previous PONV, motion sickness and also depend on surgical factors such as type of surgery, anesthetics used, duration of anesthesia and the use of postoperative opioids (47). Apfel *et al (17)* reported that, there are a five powerful foretellers of PONV, every holding the same weight. These foretellers were female gender, before PONV, a period of operation over 60 minutes, history of moving the state of being ill and smoking. The existence of one of these agents in any surgical patient was predicted to lead to an increase in risk for PONV of 17%, two factors lead to a risk of 42%, three factors lead to a risk of 54%, four factors lead to a risk of 74% and to 87% when every five damage agents were existing in the same patient. A patient who has three or four danger agents would contemplate at great danger and antiemetic medication should be utilized (17,21).

In the current study, The presence of risk factors for PONV In study and control group The Results revealed that, about two third of total studied patients of control and (Peppermint oil and acupressure) study groups had risk factors for PONV regarding female gender (70.5%,72.7%,72.7%) respectively and obesity (72.7%,,72.7%,,72.7%,) respectively. On the other hand In Comparison of the incidence of each risk factor in the three groups revealed that there was no statistically significant difference between the control and (Peppermint oil and acupressure) study groups There were a significance difference in the history of PONV (p = 0.009) and smokers (0.041) between the three groups. While as There were no significant difference between female gender, obesity, History of motion sickness, and diabetes mellitus for three groups. Additionally, our study showed a strong positive correlation between the number of nausea occurrences and the total score of PONV risk factor, this results was supported by Kocaturk O (2018) who found that Female gender is the powerful patient particular predictor of PONV, followed by a history of PONV or motion sickness, non-smoking status, and younger age. Anesthesia-related agents involve the utilize of volatile anesthetics, a period of anesthesia, perioperative opioid utilizes, and utilize of nitrous oxide. Confirmed kinds of surgery may be connected with growing the frequency of PONV. These involve abdominal procedures, gynecological surgery, and cholecystectomies. In the present study The mean time to first nausea event was 35 minutes for the control group and 16.38 minutes for the two study groups, which showing a statistically significant difference (p= 0.001). Moreover, there was no statistically significant difference was found between the acupressure study group, and control group (P = 0.803), which indicates that the acupressure were as effective as metoclopramide in reducing the number of relapse events of nausea after treatment. this may be because when Acupressure is competently applied, the body's energy balance will be restored also, the researcher who apply the acupressure for patients. These findings stand in the line with Direkv. M et al (2012) [50] Who

reported that, Metoclopramide and Acupressure have had the same influence on therapy pony. Moreover, these researches have observed that as Metoclopramide prevents dopamine be givens in the CTZ and vomiting centers. It also abbreviates gut transit time and in high doses, it prevents serotonin be givens It has been explained that those patients who were given 50 mg intravenous Metoclopramide had considerably decreased in delayed PONV; also their part influences were unsatisfactory Also, the technique of action of Acupressure is influential might be caused to its effect on restoration of the body's energy balance [50-53].

On the other hand the results of current study showed that, there was a statistically significant difference between peppermint oil study group, and control group (p=0.035). this result was contradicted by Mandal *et al (2014)* [27] who investigated the effect of aromatherapy on the recurrence of nausea in a prospective randomized controlled study where they compared the efficacy of ginger added to Ondansetron in preventing PONV after ambulatory surgery. 100 adult patients were scheduled for day care surgery and randomly allocated into; Group (A) receiving 4-mg of Ondansetron and placebo and Group (B) receiving IV 4-mg of Ondansetron and ginger simultaneously one hour prior to induction of general anesthesia in a double-blind manner. Prophylactic administration of ginger and Ondansetron significantly reduced the number of post-operative nausea and vomiting events compared to ondansetron alone in patients.

This present study used the Visual Analogue Scale (VAS) for measuring the severity of nausea. VAS,. For each nausea event, the score was taken before receiving treatment, 5 minutes after treatment and every 15 minutes thereafter for 30 minutes. The change in score was computed to determine the decrease in nausea score after the intervention. In the first study group, the mean nausea VAS was 6.05 before peppermint oil inhalation. After 15 minutes from the intervention it decreased to 4.71, and after 30 minutes it decreased to 3.09. These results indicate the consecutive decrease in the severity of nausea following peppermint oil inhalation. as regards the second study group the mean nausea VAS was 5.9 before acupressure After 15 minutes from the intervention it decreased to 4.16, and after 30 minutes it decreased to 3.89. These results indicate the consecutive decrease in the severity of nausea following acupressure In the control group, the mean nausea VAS was 8.18% before the intervention. 15 minutes after administering metoclopramide it became as 4.4% and after 30 minutes the mean nausea VAS was 1.60%. These results indicate that the studied groups were able to decrease the nausea score, while the mean nausea score for patient who management by peppermint oil were less than from the mean nausea score of patient who managed with acupressure While, There were no statistically significant differences p=0.056 in mean nausea VAS in both groups 15 minutes after the administration of either the peppermint oil or acupressure. However, the difference was statistically significant between the mean nausea score of patient managed with peppermint oil inhalation and acupressure study groups 30 minutes after the intervention p=0.004, which indicating effect of peppermint oil inhalation when used for prolonged time on the PONV management over acupressure.

These findings support the results obtained by Tan et al (,2014) [54] who explained that inhalation of peppermint oil vapors decrease postoperative nausea following gynecologic surgery. The authors found significant differences between placebo and experimental group (peppermint oil) in the incidence and severity of post-operative nausea between the placebo and experimental groups. In spite of the small sample size and the presence of a number of confounding variables, the research explained that aromatherapy is an influential initial therapy for post-operative nausea in adults and that it may be combined with antiemetics, thus decreasing the required dose and decreasing the incidence of side effects [54]. These results stand in line with finding of Aydin N et al (2018) [55] they found that, there was a considerable variation among the experimental and control groups with an estimate to nausea existence at 6-12, 12-24, and 24-48 h postoperatively. In the peppermint oil inhalation group (experimental), nausea presence was decreased than that in the control group. As a result, Peppermint oil inhalation was influential in lowering postoperative nausea severity. In this research, it was demonstrated that in patients susceptible to postoperative nausea and emesis, peppermint oil inhalation is preferable to pharmacologic therapy for the reason that of its performance and easy management methods.

Contrasting results of current study, Pasha et al (2014) [56] the author examined the effect of mint on nausea and vomiting during pregnancy in a double blind randomized control trial including 60 pregnant women with nausea and vomiting due to pregnancy. The samples were divided into a mint group, where a bowel of water with four drops of pure mint essential oil was placed on the floor near their beds and a placebo group, where four drops of normal saline were used in the same manner. These verities of nausea were assessed by using the nausea Visual Analogue Scale and the severity of vomiting was assessed by counting the number of vomiting events. The authors' results showed that the severity of nausea and vomiting did not differ between the two groups. The

reason behind the controversy between their results and the present study may be have the difference in the sample characteristics and the use of spearmint oil as opposed to peppermint oil which is generally more potent (27). Other studies have also investigated different types of aromatherapy in managing PONV; Chang et al (2018) [56] compared isopropyl alcohol inhalation to standard antiemetic treatment of post operative nausea and vomiting for patients who underwent the surgical procedures under general anesthesia. Their results showed that IPA to be an effective treatment for PONV with no significant differences between it and the standard treatment protocol of antiemetics. However, the authors did not properly define the "control" therapy and utilized a little sample size, leading to the possibility for Type II statistical error (56).

On the other hand,. Researchers (,2013,2017) [57,58] studied that the acupressure as a safe complement to the more conventional process of utilizing drugs to prohibit and/or alleviate nausea and emesis in the Cesarean section (C/S) under spinal anesthesia on 152 patient. These results observed that the happening of PONV was estimated through the surgery, at recovery room and at 1st, 2nd and 3rd two hours after the surgery. Significant considerably in the happening of postoperative nausea and emesis was found among the acupressure and control groups, with a decrease in the happening average of nausea from 35.5% to 13.2%. The amount of emesis and the degree of discomfort were, respectively, less and decrease in the study group. In seeing the total absence of side-influences in acupressure, its use is valuable. Our research assured the performance of acupressure in prohibition postoperative nausea and emesis, this results are contradicting the results of current study which founded that, peppermint oil inhalation has effective when used for prolonged time on the PONV management over acupressure. but in my opinion the acupressure intervention need more training on the assign site and how to apply pressure genteelly without do any side effect as swelling or pain.

In addition, the present study also explored patients' satisfaction with peppermint oil and acupressure management in the PACU. All patients were asked that how they satisfied with the prevention and control of PONV and were asked to rate their degree of satisfaction on a five point Likert scale. The results showed that 9.1 % of both study group patients were totally satisfied with peppermint and acupressure management, 27.3% were dissatisfied to managed by pepper mint oil and totally dissatisfied only 22.7%. Various patients determined that they intended to try peppermint toil in other cases where they were likely to experience nausea.

Favorable results regarding satisfaction with alternative therapy were also obtained by Anderson et al. In their study, all subjects were asked to rate their overall satisfaction with the management of nausea as either extremely dissatisfied or fully satisfied. Overall, their results reflected a very high overall patient satisfaction score (78%) patients also reported that they would choose to try aromatherapy if they advance nausea following the following operation this results were similarly to the results of this current study which reflected a very high overall patient somewhat satisfaction score (33.3%) who had treated by Metoclopramide for control group. Patients also reported that they would choose to try peppermint oil inhalation if they advance nausea following the following operation but the treatment with acupressure less dissatisfied. this may be due to the patient was not trained on how to assign PC6 acupressure site.

The current study also investigated the degree of patient satisfaction with traditional antiemetic treatment; the control group who received Metoclopramide showed as 6.7% of patient totally satisfaction rate while as 9.1% of each study group who managed by acupressure or pepper mint oil inhalation totally satisfied. These results were supported by Previous study conducted by Darkow et al (2012) [52], which stated that limit the effect of antiemetic selection on postoperative nausea and vomiting (PONV) and patient contentment. The sample involved five hundred fifty-four consecutive patients undergoing ambulatory surgical procedures the incidence of PONV and patient satisfaction were collected. Patient satisfaction was very low satisfaction rating in 9.1% of patients who receiving any kind of antiemetic after ambulatory surgery. As the result thy reported that, choice of antiemetic drug given for prophylaxis had a small effect on the clinical result patient contentment, traditional factors as should form the core of antiemetic utilized for PONV prophylaxis in an ambulatory surgery patient [59].

Finally, the current study findings did not support the proposed hypothesis that "Peppermint oil inhalation or acupressure is as effective as IV Metoclopramide in preventing PONV after surgery However, the study show that peppermint oil and acupressure effective in decreasing PONV in post-surgery without the need for rescue antiemetic, thus preventing patients from being exposed to the unwanted side effects of antiemetic medication.

Conclusion

The conclusion of this study found that alternative therapy with peppermint oil inhalation & acupressure were successful in reducing post-operative nausea and vomiting after surgery Perhaps peppermint oil therapy is as an alternative therapy to antiemetics medications and could be implemented to meet the

needs of the patient and to improve the quality of care. While as Metoclopramide and Acupressure were found to be similarly influential in decreasing emetic symptoms (nausea, retching, and emesis).

Recommendation:

- Using peppermint oil or acupressure in management of post-operative nausea and vomiting after all surgeries than pharmacological treatment.
- Continuing education for nursing staff through in-services training program to improve their knowledge and skills about the alternative therapies other than administering prescribed medication.
- Utilize of Acupressure has been recommended for decreasing PONV, considering that it doesn't have side influence and for the reason that it is cheap.
- Regular continues educational programs should be designed to give information about different treatment modalities like complementary therapy with peppermint oil other than antiemetic's medication for post-operative nausea and vomiting.
- Its recommended to conduct further studies with the use another alternative therapies with a larger sample in management of post-operative nausea and vomiting.

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