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The Application of Eucalyptus Oil Aromatherapy in Reducing Nausea in Breast Cancer Patients During Chemotherapy: A Case Study at Gunung Jati Regional General Hospital, Cirebon City

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ABSTRACT

Background & Objective: Nausea is a common side effect of chemotherapy in breast cancer patients, which can interfere with patient comfort and nutritional status. Aromatherapy is known to have the potential to reduce these complaints non-pharmacologically. **Method:** This study is a case study with a qualitative descriptive approach, conducted in the HOT ward of Gunung Jati General Hospital in Cirebon City. Data were collected through nursing care assessments and documentation of breast cancer patients undergoing chemotherapy who experienced nausea. The intervention involved the administration of eucalyptus oil aromatherapy, as well as education and emotional support. **Result:** After continuous aromatherapy administration, patients showed a decrease in nausea intensity from a scale of 4 to a milder level. Patients also felt more emotionally calm, hydration patterns improved, and overall comfort increased. **Conclusion:** Eucalyptus oil aromatherapy is effective as an additional intervention to reduce chemotherapy-induced nausea in breast cancer patients. This approach also supports a holistic nursing approach in improving patients' quality of life.

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Introduction

Cancer is the abnormal growth of body tissue. Under normal circumstances, body cells only divide to replace cells that have died or been damaged. In contrast, cancer cells continue to divide even when the body does not need them. As a result, there is an accumulation of new cells, which crowd out normal tissue and disrupt the function of the organ they inhabit.

Breast cancer is a disease process that begins when these abnormal cells form clones and start to proliferate abnormally, ignoring growth-regulating signals in the breast cell environment (Brunner & Suddarth, 2002). Breast cancer ranks first in terms of the highest number of cancer cases in Indonesia and is one of the leading causes of cancer-related deaths (Ministry of Health of the Republic of Indonesia, 2022).

In 2020, there were 2.3 million women diagnosed with breast cancer and 685,000 deaths globally. By the end of 2020, there were 7.8 million women living with a diagnosis of breast cancer in the past five years, making it the most common cancer worldwide. Breast cancer occurs in women of any age after puberty in every country worldwide, but incidence rates increase later in life (World Health Organization, 2023 in Finta, 2024).

According to GLOBOCAN data from the International Agency for Research on Cancer (IARC), there were approximately 2,261,419 (11.7%) new cases of breast cancer with 684,996 (6.9%) deaths worldwide in 2020. In Indonesia alone, there were 65,858 (16.6%) people diagnosed with breast cancer, with an incidence rate of 44.0 per 100,000 and a mortality rate of 15.3 per 100,000 (Barroso-Sousa et al., 2020 in Finta, 2024).

Data obtained from the Medical Records Department of RSD Gunung Jati Hospital in Cirebon City shows that in 2023, there were 564 cancer patients undergoing outpatient and inpatient treatment. Although there is no data separating the types of cancer in detail, this number indicates that the burden of cancer cases in the region is quite high and requires a holistic approach to treatment, including psychological and medical aspects. (RSD Gunung Jati, 2023).

Chemotherapy is an anti-cancer treatment process using drugs aimed at killing, destroying, or slowing the growth of remaining cancer cells in the body that cannot be reached by surgical intervention. The side effects of chemotherapy not only destroy cancer cells but also attack healthy cells, particularly those that divide rapidly. Chemotherapy can be administered via intravenous injection or oral consumption. Chemotherapy is administered over several months with breaks for recovery. Chemotherapy drugs are typically administered in combination (combination chemotherapy) because it is more effective than using a single drug. It can have psychological and physiological effects. Psychological effects include anxiety, stress, fear, and depression, while physiological effects include hair loss, itching, dry skin, significant weight loss, decreased appetite, fluid loss, reduced fertility due to hormonal changes, anemia, and nausea and vomiting (Apriyeni, 2021).

Nausea and vomiting are the most common symptoms experienced by cancer patients after undergoing chemotherapy. According to Soliman et al (2021), this condition can last between 24 and 72 hours after chemotherapy and gradually subsides over the next few days. Nausea and vomiting can also be managed using complementary therapy, which is beneficial for patients experiencing post-chemotherapy nausea and vomiting (Muliatie et al., 2021). Nausea and vomiting caused by chemotherapy can be managed through pharmacological and non-pharmacological treatments. Non-pharmacological treatment involves therapy without the use of medications. Non-pharmacological therapy may include mind-body therapies such as progressive relaxation, meditation, imagery, music therapy, humor, laughter, and aromatherapy (Acs, 2019).

Aromatherapy is a type of alternative therapy that uses plant-based liquids that evaporate easily, known as essential oils, and aromatic compounds derived from plants, with the aim of influencing a person's mood or health. Aromatherapy can be

used in several ways, such as inhalation, addition to bathwater, or vaporization. Aromatherapy has effects on both psychological and cellular levels, which can provide a relaxing effect. The calming effect reduces the risk of nausea and vomiting (Lisnawati et al., 2021).

Eucalyptus aromatherapy, also known as eucalyptus oil. According to Kusparlina's research (2019). Eucalyptus essential oil contains the primary compound 1,8-Cineole (Eucalyptol), which is one of the monoterpenes. In addition to being dominated by 1,8-cineole (44.76–60.19%), eucalyptus oil also contains other compounds such as α-terpineol (5.93–12.45%), d(+)-limonene (4.45–8.85%), and β-caryophyllene (3.78–7.64%), which can alleviate symptoms of illnesses such as cough, cold, nausea, and vomiting (Wijayanti, 2017).

A study by Indriyani, Ardiyanti, and Arisdiani (2023) at Dr. Moewardi General Hospital in Surakarta, titled "The Effect of Eucalyptus Aromatherapy on Nausea and Vomiting in Breast Cancer Patients After Chemotherapy at Dr. Moewardi General Hospital in Surakarta," evaluated the effect of eucalyptus oil aromatherapy on nausea and vomiting in breast cancer patients after chemotherapy. In a pre-experimental study with a pretest-posttest design, 62 patients were administered eucalyptus aromatherapy. The results showed a significant reduction in the intensity of nausea and vomiting after the intervention, with a p-value of 0.000, indicating the effectiveness of this aromatherapy in reducing nausea and vomiting symptoms in patients.

Based on the above findings, the researcher is interested in preparing a final thesis report titled "The Application of Eucalyptus Essential Oil Aromatherapy in Reducing Nausea in Breast Cancer Patients During Chemotherapy: A Case Study at Gunung Jati General Hospital, Cirebon City."

Objective

Based on this, the researcher was interested in conducting this study with the aim of determining the application of aromatherapy: eucalyptus oil in reducing nausea in breast cancer patients during chemotherapy: a case study at Gunung Jati Regional General Hospital, Cirebon City.

Method

This study used a descriptive research design with the application of a case study. The case study was conducted by collecting data according to the nursing process, which includes assessment, determining nursing diagnoses, developing nursing interventions, implementing nursing actions, and evaluation. The research subjects in this study were breast cancer patients experiencing nausea during chemotherapy. Data collection in this study was conducted using interview techniques, observation, and documentation in the form of nursing care reports.

Results

The assessment conducted on Mrs. W, a 30-year-old Muslim housewife residing in Argapura, Majalengka, on February 5, 2025. She visited the HOT room to undergo her second round of chemotherapy. The primary complaint revealed that the patient was experiencing nausea. The current medical history indicated that the patient presented with a diagnosis of stage III breast cancer. A core needle biopsy was performed two months ago, revealing invasive ductal carcinoma of the right breast.

The patient is currently undergoing her second round of chemotherapy with the regimen of Epirubicin, Paclitaxel, and Carboplatin. The patient reported moderate nausea rated at 4 on the Numeric Rating Scale (NRS) and fatigue during chemotherapy, without fever, severe pain, or signs of infection. In the patient's past medical history, there is no history of cancer or breast disease. The patient also reported nausea after her first chemotherapy session at home. The patient has no history of chronic conditions such as hypertension, diabetes mellitus, or heart disease. There was no history of major surgery. In the family medical history, no family members had the same disease. In the psychosocial assessment, the patient appeared anxious and expressed concerns about the continuation of treatment and the side effects of chemotherapy. The patient felt sad due to physical changes such as hair loss and fatigue. Support from the family, especially the husband and children, was adequate. The patient is still able to perform light daily activities. No signs of severe mental disorders were found, but the patient requires emotional support and further education regarding treatment. In terms of personal hygiene and habits, the patient is still able to perform personal hygiene independently, but complains of feeling tired quickly. The frequency of bathing remains once a day, but the patient avoids using soap on the biopsy site. The patient regularly changes clothes and maintains bodily cleanliness. The habit of brushing teeth is still done twice a day, although the patient complains of discomfort in the mouth after chemotherapy. There are no complaints of body odor or open wounds besides the biopsy site, which is in the healing process. In the spiritual assessment, it was found that the patient is Muslim and regularly performs the five daily prayers. The patient believes that healing is God's will but remains committed to undergoing treatment. The patient states that spiritual support from family and the community greatly helps strengthen their resolve.

On physical examination, the patient's general condition was fair. An intravenous infusion of 0.9% NaCl was observed on the left hand. Vital signs were recorded as follows: Blood pressure: 140/80 mmHg, Pulse rate: 96 beats per minute, Temperature: 36.5°C, RR: 20 breaths per minute, MAP: 90 mmHg, SpO2: 99%. The patient was alert and oriented, with no pain reported. The Barthel Index for functional activity and mobility was categorized as independent. On examination of the head, no abnormal findings were noted, but there was hair loss following the first chemotherapy session. No abnormal findings were noted on examination of the eyes, nose, oral cavity, ears, and neck. No abnormal findings were noted on respiratory system examination, including no shortness of breath, respiratory rate 20 breaths/minute, SpO2: 99%, and regular respiratory rhythm. No abnormal findings were noted in the cardiovascular system examination, with no chest pain, CRT <2 seconds, blood pressure within normal limits, normal heart sounds I and II, and the patient did not report any cardiovascular complaints during chemotherapy up to the second cycle. Regarding the digestive system and nutritional status, the patient reported decreased appetite with a frequency of 2 times per day, and sometimes unable to finish meals. The patient also reported nausea during meals. The patient's weight is 45 kg, and height is 149 cm. On abdominal examination, the abdomen was flat, with no masses or lumps, no tenderness, no hepatomegaly, tympanic bowel sounds, and no ascites. In the nervous system, no abnormal findings were noted, and the patient did not report any dizziness. In the urinary system, the patient was not catheterized, and no abnormal findings were noted. In the musculoskeletal and integumentary systems, joint movement was free, and muscle strength was rated as 5.

In the endocrine system, there was no enlargement of the thyroid gland or lymph nodes. In the sexual and reproductive systems, there were no issues in the reproductive system, but there was a biopsy scar on the breast.

Supportive examinations revealed laboratory data on February 1 with the following results: Hemoglobin: 12, White Blood Cells: 9,400, Hematocrit: 40.7, Platelets: 236, and Blood Sugar: 130. These laboratory results are normal, allowing for the second cycle of chemotherapy to proceed. The pharmacological therapy administered to Mrs. W included Epirubicin, Paclitaxel, Carboplatin, Ondansetron, Dexamethasone, and Ranitidine dissolved in 0.95% NaCl.

Based on the theoretical review of nursing diagnoses identified according to the Indonesian Nursing Diagnosis Standards established by the SDKI DPP PPNI 2018 task force, the following nursing diagnoses were identified in this study: Nausea (code D.0076), nutritional deficiency (code D.0019), risk of fluid and electrolyte imbalance (code D.0037), and anxiety (code D.0080).

Based on the assessment analysis and nursing diagnosis, the author then established a nursing plan consisting of a series of established nursing interventions, including observation, therapeutic interventions, education, and collaboration.

The nursing care plan provided to stage III breast cancer patients undergoing chemotherapy focused on four main issues: nausea, nutritional deficiency, risk of fluid and electrolyte imbalance, and anxiety. One of the non-pharmacological interventions used was the administration of eucalyptus oil aromatherapy, which is known to have therapeutic effects on nausea and anxiety in cancer patients.

Overall, the integrated nursing intervention using eucalyptus essential oil aromatherapy has been proven to provide physiological and psychological benefits for breast cancer patients undergoing chemotherapy. This approach underscores the importance of holistic nursing in improving patients' quality of life through safe, easy-to-implement, and evidence-based methods.

The implementation of nursing care for breast cancer patients undergoing chemotherapy is based on previously identified priority nursing issues, namely: nausea, nutritional deficiencies, risk of fluid and electrolyte imbalance, and anxiety. The nursing approach adopted is holistic, encompassing both the physiological and psychological aspects of the patient, and utilizes non-pharmacological methods such as eucalyptus oil aromatherapy as an adjunct therapy.

Nursing evaluations are conducted using the SOAP (Subjective, Objective, Assessment, Plan) approach, which helps nurses to assess the overall progress of a patient's condition based on the interventions that have been provided. This evaluation is important to see the extent to which nursing actions have had an effect on the patient's condition, as well as to determine whether the intervention needs to be continued, modified, or discontinued.

In general, the evaluation shows that the majority of nursing interventions have yielded positive results and directly contributed to improvements in patients' comfort and physical and psychological well-being. Patients' positive responses to aromatherapy and educational approaches underscore the importance of holistic interventions in the care of breast cancer patients undergoing chemotherapy.

Discussion

In this study, the researchers applied an intervention involving the administration of eucalyptus essential oil aromatherapy to address nausea complaints

in patients undergoing chemotherapy, which is consistent with several other studies, as follows:

A study by Indriyani, Ardiyanti, and Arisdiani (2023) at Dr. Moewardi General Hospital in Surakarta, titled "The Effect of Eucalyptus Aromatherapy on Nausea and Vomiting in Breast Cancer Patients After Chemotherapy at Dr. Moewardi General Hospital in Surakarta," evaluated the effect of eucalyptus essential oil aromatherapy on nausea and vomiting in breast cancer patients after chemotherapy. In a pre-experimental study with a pretest-posttest design, 62 patients were administered eucalyptus aromatherapy. The results showed a significant reduction in the intensity of nausea and vomiting after the intervention, with a p-value of 0.000, indicating the effectiveness of this aromatherapy in reducing nausea and vomiting symptoms in patients.

The study conducted by Lee et al. (2024), titled "*Effects of aromatherapy on nausea and vomiting in patients with cancer: A systematic review and meta-analysis of randomized controlled trials*," evaluated the effects of aromatherapy on nausea and vomiting in cancer patients. Analysis of 25 randomized controlled trials showed that aromatherapy significantly reduced nausea (SMD = -0.85) and the combination of nausea and vomiting (SMD = -1.08) in cancer patients, particularly those undergoing chemotherapy. Although peppermint was the most commonly used essential oil in this study, the results support the use of aromatherapy, including eucalyptus oil, as a non-pharmacological intervention for managing nausea and vomiting related to cancer treatment.

A study by Ayubbana and Hasanah (2021) at RSUD Jenderal Ahmad Yani Metro investigated the effectiveness of peppermint aromatherapy on nausea and vomiting in breast cancer patients undergoing chemotherapy. In a quasi-experimental study with a pretest-posttest design, 34 patients were divided into an intervention group and a control group. The intervention group received peppermint aromatherapy, while the control group received standard hospital care. The results showed that the intervention group experienced a significant reduction in nausea and vomiting scores compared to the control group, with a p-value of 0.008, indicating the effectiveness of peppermint aromatherapy in reducing these symptoms.

Based on the above studies, aromatherapy, including the use of eucalyptus oil, has been proven effective in reducing nausea and vomiting in breast cancer patients undergoing chemotherapy. This intervention can be used as a safe and effective non-pharmacological approach in nursing practice to improve patient comfort and quality of life during the treatment process.

Conclusion

Based on the results of a case study conducted on breast cancer patients (Ca Mamae) undergoing chemotherapy at Gunung Jati General Hospital in Cirebon City, it can be concluded that the application of aromatherapy using eucalyptus oil has a positive impact in reducing nausea experienced by patients. Nausea is one of the most common and highly disruptive side effects experienced by patients undergoing chemotherapy, as it can affect appetite, nutrient intake, emotional well-being, and overall comfort.

In this case, patients demonstrated a satisfactory response to the aromatherapy therapy administered regularly. The therapy involved inhaling the aroma of eucalyptus oil (eucalyptus oil) in short sessions over several days of treatment. The

relaxing effects of aromatherapy were found to help reduce patients' emotional tension levels and alleviate the sensation of nausea they experienced.

Eucalyptus oil aromatherapy contains active compounds such as 1,8-cineole (eucalyptol), α-terpineol, and d(+)-limonene, which have a calming effect on the nervous and digestive systems and provide a warm and comfortable sensation when inhaled. This makes it a safe, easy, and affordable option as a complementary therapy outside of pharmacological treatment. From a nursing perspective, the administration of aromatherapy also reinforces a holistic approach that focuses not only on physical healing but also on the psychological comfort of patients.

This study also emphasizes the importance of nurses' role in implementing non-pharmacological interventions as part of evidence-based nursing care. Nurses are not only responsible for administering medications and performing medical procedures but can also significantly contribute to improving patients' quality of life through a more humanistic and comprehensive approach.

Overall, it can be concluded that eucalyptus oil aromatherapy is an effective, safe, and viable complementary therapy alternative in nursing practice to help reduce nausea in breast cancer patients undergoing chemotherapy. These findings are expected to serve as a reference in the development of non-invasive nursing interventions and as a foundation for further research.

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