

Various Interventions for Managing Nausea and Vomiting in Breast Cancer Patients Undergoing Chemotherapy: A Scoping Review

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Abstract

Backgrounds; Management of nausea and vomiting in breast cancer patients undergoing chemotherapy is an important aspect of medical care. This article examines various interventions used to alleviate these symptoms, including the use of antiemetic drugs, non-pharmacological therapies such as acupuncture and acupressure, as well as psychological approaches. **Objectives;** The main objective of this study is to evaluate the effectiveness of different methods for managing nausea and vomiting in cancer patients undergoing chemotherapy. **Methods;** This scoping review design utilizes the Arksey and O'Malley framework for analyzing scoping reviews. **Results;** The literature sources are obtained from online databases, including PubMed, ScienceDirect, Ebsco, and Proquest, covering the years 2018 to 2023. **Conclusions;** Identification and analysis are conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis for Scoping Reviews (PRISMA-SR). **Conclusion:** From the analysis of 8 articles, this article has summarized various interventions for managing nausea and vomiting in cancer patients undergoing chemotherapy.

Keywords: *Cancer Patients; Chemotherapy; Nausea and Vomiting Management; Chemotherapy Treatment*

BACKGROUND

Breast cancer is one of the deadliest diseases affecting women. It is estimated that 685,000 deaths from breast cancer occurred globally in 2020. This is due to the uncontrolled nature of cancer and its tendency to spread to vital organs (Khairah et al., 2019). Globally, breast cancer is considered a significant health issue because it is often depicted as a tragic failure in life (Della et al., 2023). Breast cancer becomes fatal when cancer cells spread from the initial tumour to other parts of the body, such as the lungs, bones, brain, and liver. 30% of patients in advanced stages experience brain metastasis with a 1-year survival rate of 20% (Biologi et al., 2023). Therefore, breast cancer represents a major health threat worldwide.

METHODS

This review employs a scoping review approach to identify the steps in developing the research protocol, guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-SCR) to enhance the effectiveness and accuracy of reporting.

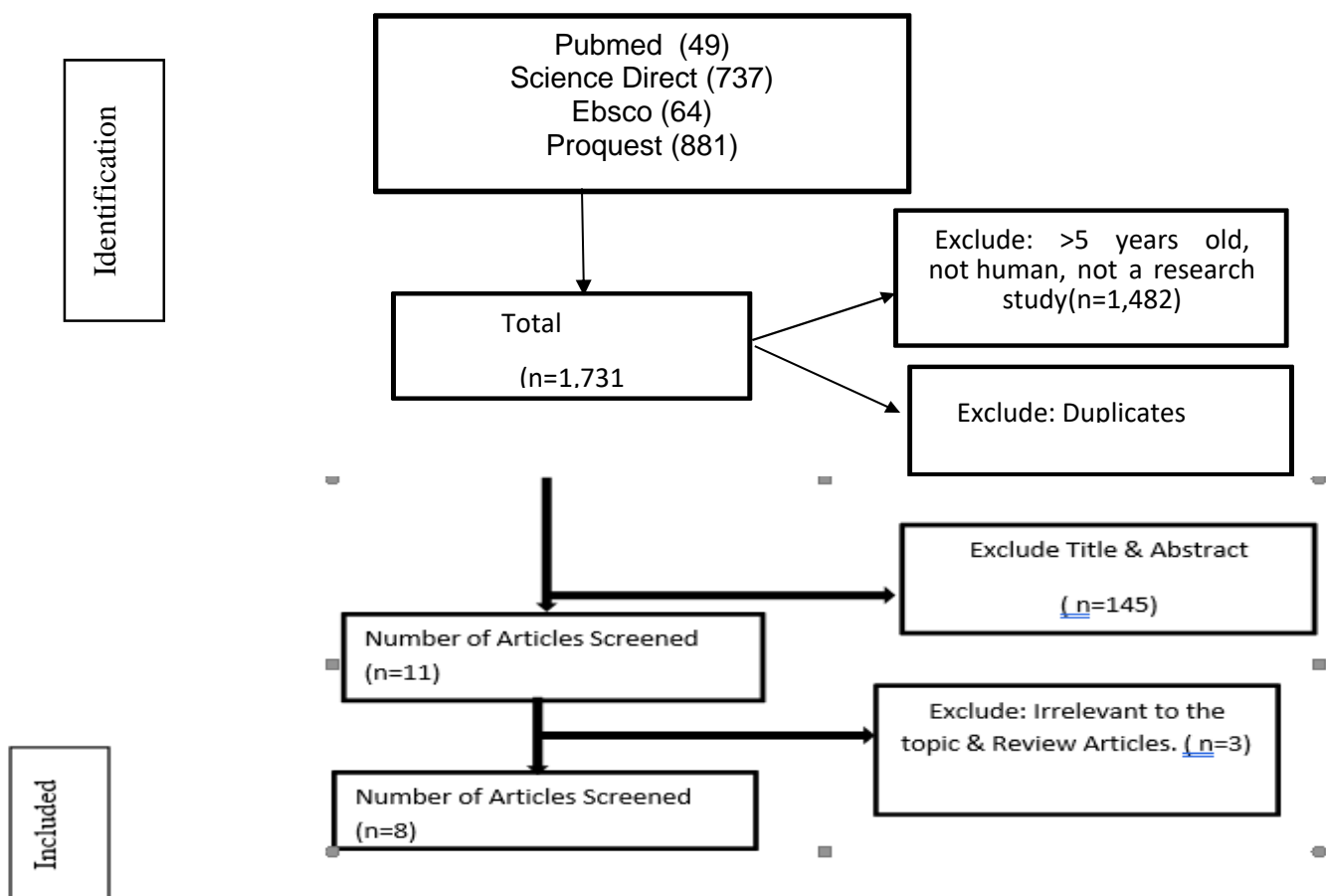
Inclusion Criteria:

1. Articles focusing on breast cancer patients undergoing chemotherapy
2. Articles on the management of nausea and vomiting
3. Articles related to research
4. Articles in English
5. Articles from the last five years
6. Full-text articles

Exclusion Criteria:

1. Review articles
2. Published before 2018

Study Selection



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No	Author, Year	Objectives	Sample	Study Design	Findings	Management of nausea and vomiting
1	A randomized trial of behavioral interventions by nurses to address anticipatory nausea and vomiting in chemotherapy (2018)	The study aims to reduce nausea and vomiting.	Number : 474	Randomized controlled trial	The study found that mindfulness relaxation and music relaxation interventions reduced the incidence of anticipatory nausea and vomiting at the midpoint of chemotherapy, compared to standard care.	Interventions: 1. Mindfulness relaxation (MR) – Patients received individual sessions with an oncology nurse before their first chemotherapy session, where they were taught MR techniques and provided recordings for home practice. They were instructed to practice MR at home at least once a day during chemotherapy treatment and before each chemotherapy session. 2. Music relaxation (RM) – Patients received individual sessions with an oncology nurse before their first chemotherapy session, where they were given music relaxation recordings for home practice. They were instructed to practice RM at home at least once a day during chemotherapy treatment and before each chemotherapy session.
2	The effect of Peppermint Oil on Nausea, Vomiting, and Vomiting in Cancer Patients Undergoing Chemotherapy (Turkey, 2020)	This study evaluates the effect of peppermint oil on the frequency of nausea, vomiting, and retching, and severity of nausea in cancer patients undergoing chemotherapy.	Total: 80 Intervention group: 36 Control group: 44	A quasi-randomized controlled study	Peppermint oil significantly reduced the severity of nausea in specific chemotherapy treatments – A significant reduction in the frequency of nausea, vomiting, and retching across all schedules except the cisplatin schedule – Overall, peppermint oil significantly reduced the frequency of nausea, vomiting, retching, and retching severity in cancer Patients undergoing chemotherapy.	The intervention group received an aromatic mixture and peppermint oil and applied one drop of the fragrant mixture to the point between the lips; both were applied thrice daily for five days after chemotherapy.
3	The Effect of Standardized Ginger Root Powder Regimen on Chemotherapy-Induced Nausea and Vomiting: A Randomized Trial	Supplementation with ginger is safe and associated with clinically relevant improvements in quality of life and symptom management for individuals undergoing chemotherapy.	total: 103 - Placebo: 51 - Jahe: 52	The study design is a parallel, double-blind, placebo- controlled, randomized trial conducted at two hospitals in Australia.	Ginger supplementation is safe and associated with clinically relevant improvements in quality of life and symptom management for individuals undergoing chemotherapy.	Four standardized ginger capsules (total 84 mg/day of active gingerol/school), sourced from India, were given daily for five days starting from the day of chemotherapy for cycles 1 to 3.
4	Positive effects of acupressure bands combined with music/relaxation instructions on patients at high risk of chemotherapy-induced nausea (USA, 2018)	This study investigates whether enhancing patients' expectations of the efficacy of acupressure bands with music/relaxation can improve their effectiveness in controlling chemotherapy-induced nausea.	N: 242 Age: 53 years	This study is a phase II, randomized, partially blinded, placebo- controlled trial.	Overall satisfaction with acupressure bands and music relaxation was positive, with 70% of patients finding the bands somewhat or very useful in managing CIN.	The intervention included acupressure bands, relaxation MP3s, and written leaflets. Patients in Groups 1 and 2 were given two acupressure bands and instructed to use them for up to five days as needed to prevent or reduce nausea.
5	The Effect of Foot Massage on Patients with Chemotherapy-Induced Nausea and Vomiting (2020).	To reduce nausea, vomiting, & Retching through massage therapy.	Number : 82 Experimental group: 41 Control group:	A registered, randomized, controlled clinical trial with a true experimental pretest-posttest design	Swedish foot massage significantly reduced NVR in patients undergoing highly emetogenic chemotherapy, particularly reducing the percentage of patients experiencing moderate NVR. This treatment is effective in	Swedish foot massage significantly reduced NVR in patients undergoing highly emetogenic chemotherapy, particularly reducing the percentage of patients experiencing moderate NVR. This treatment is effective in reducing chemotherapy-induced NVR.

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			41 Age: 18-70 years		reducing chemotherapy- induced NVR.	
6	The Effect of Dietary Counseling During Adjuvant Chemotherapy on Chemotherapy-Induced Nausea and Vomiting and Quality of Life in Breast Cancer Patients (2018)	Dietary counseling during adjuvant chemotherapy reduced the incidence of CINV and resulted in significant improvements in quality of life - NRI, ONI, and VAS measurements increased significantly over three chemotherapy sessions in the intervention group – This study is the first to assess the impact of individual nutritional counseling on Nausea and vomiting levels and quality of life in breast cancer patients during chemotherapy using a large sample size.	Total: 150 Intervention group: 70 Control group: 67 Age: 18-60	The study design is a single-center, randomized, controlled clinical trial.	Dietary counseling during adjuvant chemotherapy reduced the incidence of CINV and resulted in significant improvements in quality of life NRI, ONI, and VAS Measurements increased significantly over three chemotherapy sessions in the intervention group – This study is the first to assess the impact of individual nutritional counseling on nausea and vomiting levels and quality of life in breast cancer patients during chemotherapy using a large sample size.	The intervention included: <ul style="list-style-type: none"> Personalized diet plans. Face-to-face nutrition education. Pamphlets containing beneficial nutrition information. The personalized diet plans included 1.2-1.5 g/kg protein, 30% energy from fat, and 55-60% carbohydrate energy. Nutrition education and pamphlets were provided for three periods before each chemotherapy session.
7	The Effect of Abdominal	The study aims to determine the effect	Number of	The study design is a randomized	Abdominal massage with Salvia officinalis resulted in	Abdominal massage with and without Salvia officinalis was performed for 15 minutes twice daily
	Massage with and without Salvia officinalis on Nausea and Vomiting in Cancer Patients Undergoing Chemotherapy (2021)	Of abdominal massage with and without Salvia officinalis on Nausea and vomiting in cancer patients undergoing chemotherapy.	Participants: 60 Age: 54-63	clinical trial with a control and two intervention groups.	lower mean nausea scores immediately after the intervention compared to the control group. Still, one week after the intervention, mean nausea scores did not differ between the three groups. The frequency of vomiting did not differ between the three groups.	for three consecutive days. In one group, abdominal massage was performed using 2 mL of 100% concentrated aromatic Salvia officinalis.
8	Comparison of the Effect of Inhalation Aromatherapy of 10% and 30% Peppermint Essential Oil on the Severity of Nausea in Abdominal Surgery Patients (Iran, 2020)	This study aims to compare the effects of 10% and 30% peppermint essential oil aromatherapy on the severity of nausea in surgery patients.	Total: 120 10% peppermint: 40 30% peppermint: 40 Control: 40 Age: 15-65 years	The study design is a randomized controlled trial comparing the intervention and control groups.	10% and 30% peppermint essential oil are equally effective in reducing the severity of nausea	Inhalation of 0.2 ml of 10% and 30% peppermint essential oil in distilled water for five minutes at a distance of 10 cm from the patient's nose.

RESULTS AND DISCUSSION

1. Study Characteristics

This study aims to address the various interventions for managing nausea and vomiting in breast cancer patients undergoing chemotherapy. The literature review reveals that the interventions for managing nausea and vomiting differ across studies. All eight studies utilized quantitative methods, with no qualitative techniques employed.

2. Interventions for Managing Nausea and Vomiting in Breast Cancer Patients Undergoing Chemotherapy

From the nine identified articles, various interventions have significantly contributed to managing nausea and vomiting in breast cancer patients undergoing chemotherapy. These interventions include self-care behaviors, peppermint oil, ginger root powder regimen, acupressure bands combined with music/relaxation instructions, foot massage, dietary counseling, abdominal massage with and without Salvia officinalis, and inhalation aromatherapy with 10% and 30% peppermint essential oil. All these

methods have been shown to reduce nausea and vomiting resulting from chemotherapy side effects.

The limitation of this review is that it only utilized four English-language databases. However, the strength of this study lies in the comprehensive collection of articles related to various interventions for managing nausea and vomiting in breast cancer patients undergoing chemotherapy. This scoping review is the first of its kind, as no previous studies have conducted a similar analysis.

Various interventions have been tested to manage chemotherapy-induced nausea and vomiting, showing diverse results. A 2018 study demonstrated that mindfulness relaxation (MR) and music relaxation (RM) significantly reduced anticipatory nausea and vomiting in chemotherapy patients. Patients practiced MR techniques and used relaxation music before and during chemotherapy, proving more effective than standard care. In 2020, a Turkish study found that peppermint oil significantly reduced nausea and vomiting severity for most chemotherapy regimens, except those involving cisplatin, when applied thrice daily for five days post-chemotherapy. An Australian study in 2020 showed that ginger root powder supplementation improved quality of life and symptom management for 103 patients, taken daily for five days starting from chemotherapy day, over three cycles. Additionally, a 2018 U.S. study found that acupressure bands combined with relaxation music significantly helped control nausea, with 70% of high-risk patients reporting moderate to high effectiveness when used for up to five days.

CONCLUSION

The studies listed in the table demonstrate various interventions that are effective in reducing nausea and vomiting in cancer patients undergoing chemotherapy. These studies involve mindfulness relaxation, relaxation music, peppermint oil, ginger, acupressure, foot massage, dietary counseling, and abdominal massage with *Salvia officinalis*. The findings indicate that these interventions can significantly reduce symptoms of nausea and vomiting, improve patients' quality of life, and provide alternatives or supplements to standard care. Each intervention has specific application methods and has proven effective under different conditions, offering various options for symptom management in cancer patients.

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