

REVIEW

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Acupressure On Chemotherapy-Induced Nausea and Vomiting among Breast Cancer Patients: A Systematic Review and Meta-analysis

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Abstract

Background: Nausea and vomiting are one of the common and distressing side effects of chemotherapy in breast cancer patients often impacting their quality of life and treatment adherence. The purpose of this systematic review and meta-analysis was to determine whether acupressure is effective in treating breast cancer patients' acute nausea and vomiting brought on by chemotherapy as well as delayed nausea and vomiting. **Methods:** We systematically searched for Randomized controlled trials and quasi-experimental studies in PubMed, Cochrane Central Register of Controlled Trials, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Clinical Key, Web of Science, EMBASE, and Scopus. Based on the inclusion criteria two reviewers independently identified the articles using key thesaurus and free text terms. The review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement. **Results:** According to the pooled findings, acupressure combined with antiemetics greatly lessens the severity of acute nausea [SMD, (95% CI)] [-0.35(-0.62,-0.08), P=0.01, I²=0%], delayed nausea [SMD, (95% CI)] [-0.52(-0.78,-0.26), P<0.001, I²=16%], and delayed vomiting [SMD, (95% CI)] [-0.46(- 0.83,-0.08), P=0.02, I²=43%] brought on by chemotherapy. **Conclusion:** For chemotherapy-treated breast cancer patients, acupressure is a helpful complementary therapy for easing nausea and vomiting.

Keywords: Acupressure- nausea- vomiting- breast neoplasms- complementary therapies- drug therapy- well-being

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Introduction

Worldwide, breast cancer (BC) is the most prevailing malignant cancer in women. In 2020, 2.3 million females were newly diagnosed with BC [1], and 6.85 million died from the disease [2]. The World Health Organisation (WHO) claims 7.8 million living women have been diagnosed with BC in the previous five years [2]. Chemotherapy, which has diverse side effects, is still the main treatment for BC in women [3]. About 40% of chemotherapy patients experience the most frequent and distressing adverse event of chemotherapy-induced nausea and vomiting (CINV) [4, 5].

"Emetogenicity" is a term used to describe a chemotherapy drug's propensity to induce nausea or vomiting. The American Society of Clinical Oncology and the National Comprehensive Cancer Network have classified chemotherapy agents into four categories based on how likely they are to cause CINV within the first 24 hours of starting treatment: minimal (10%),

low (10-30%), moderate (30-90%), and high (>90%) [6]. Patients receiving chemotherapy may experience a range of nausea and vomiting side effects, collectively referred to as CINV. These include anticipatory nausea and vomiting, which occurs prior to chemotherapy administration and is triggered by taste, sight, or anxiety, delayed nausea and vomiting, which occurs 24 hours or more after chemotherapy administration, and acute nausea and vomiting, which begins minutes to hours after chemotherapy administration and subsides within 24 hours [7].

Now with the developed 5-hydroxytryptamine-3 and neurokinin-1 receptor antagonists, the vomiting is substantially under control [8]. However, nausea still remains a problem [9]. Patients undergoing chemotherapy ranked poorly controlled CINV as a near-death experience [10, 11]. Poorly managed and prolonged CINV could result in malnutrition, dehydration, hyponatremia, hypokalaemia, and metabolic acidosis; resulting in an oesophageal tear, deterioration of the capacity of a person

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to carry out daily tasks, increased morbidity, healthcare expenditure, and non-compliance to the treatment regimen [12, 13].

The fundamental idea behind the acupressure technique, which has its origins in ancient China, is to stimulate acupoints along meridians [14]. An acupoint is the pressure point on the human body that is closest to the skin's surface. By applying pressure to specific acupoints with hand, thumb, or handheld acupressure devices, acupoints are activated [15]. The stimulation of particular acupoints causes functional reactions that can be used to treat illnesses [16].

Acupressure is a simple technique that patients can use whenever it is convenient for them. Acupressure is a non-invasive, economical, and drug-free treatment option that can be implemented in clinical practice to improve patient's well-being with no adverse reactions. The efficacy of acupressure has been published, and the authors recommend the practice of acupressure for pain [17], anxiety [18], depression [19] and sleep disorder [20]. The authors have also recommended acupressure for CINV [21, 22]. However, all these studies evaluated the efficacy of acupressure from a mixed population. The effectiveness of acupressure on CINV among BC, has not been evaluated in any systematic reviews. The goal of this study was to determine whether acupressure could benefit BC patients who were experiencing both acute and delayed nausea and vomiting due to chemotherapy.

Materials and Methods

A systematic review and meta-analysis were carried out to find the efficacy of acupressure in treating both acute nausea and vomiting brought on by chemotherapy in BC patients as well as delayed nausea and vomiting. The Cochrane Collaboration guidelines [23] were followed in carrying out this comprehensive review and meta-analysis, and the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) 2015 statement was utilised to present the results [24]. The review protocol is registered on PROSPERO (CRD42022297481).

Utilizing PICO related search terms (population or patient, intervention, comparator or control, and outcome) in PubMed and tailored into various databases, a thorough search strategy was created. Following the inclusion criteria, relevant research articles conducted through randomized controlled trials and quasi-experimental studies, published in English language from inception to September 2022 were looked up in the databases PubMed, Cochrane Central Register of Controlled Trials, Cumulative Index to Nursing and Allied Health Literature (CINAHL), ClinicalKey, Web of Science, EMBASE, and Scopus. The following MeSH (Medical Subject Heading) terms or keyword combinations was used: acupressure, traditional Chinese medicine, complementary therapies, nausea, vomiting, retching, emesis, neoplasm, carcinoma, breast cancer, breast neoplasms, drug therapy, and chemotherapy. Through manual searches of bibliographies and internet searches, additional studies were found. The article was separately searched by two reviewers (AI and SGN) following the systematic review

protocol. Studies were considered if they satisfied the following requirements: Population: patients receiving chemotherapy after being diagnosed with breast cancer; Intervention: acupressure was used as a treatment, either with or without antiemetics; Comparison: routine medical care or antiemetic medications was made; Outcome: nausea or vomiting brought on by chemotherapy, or both. A difference in the outcome that was being measured led to the studies' exclusion.

Duplicates were removed from the search results after they were imported into the Rayyan software with the aid of the "check for duplicates tool" [25]. Potential study titles and abstracts were independently reviewed by one review author (AI) for pertinent articles. Another author (SGN) independently reviewed this. Following the acquisition of the complete texts of these potentially pertinent articles, two reviewers (AI, SGN) separately assessed and chose studies following the inclusion criteria. Consensus was used to resolve disagreements. Whenever a compromise was not possible, the third reviewer (KH) was consulted before making the final decision. A total of 4182 studies were found using electronic database searches. There were 284 duplicate records removed. Another 3880 studies were eliminated following evaluation of the titles and abstracts, because they didn't adhere to PICO's review criteria. Another 11 articles were removed after reading the full text because they failed to meet the requirements for inclusion in the systematic review and meta-analysis. The study was excluded due to the factor that the study involved acupressure given in combination with other therapies as an intervention, and the primary outcome differed from the study protocol. Although an RCT assessed the efficacy of acupressure on CINV among BC patients, the article was excluded as the severity of nausea and vomiting was mentioned in a number of participants who vomited [26]. Six trials were incorporated in the meta-analysis, and seven articles were incorporated in the narrative synthesis. The flow diagram for the study selection process is shown in Figure 1.

The Cochrane Risk of Bias Tool (ROB-2) was utilised to assess the risk of bias in the included trials [27]. Figure 2 displays information on all included trials' bias risks as well as assessments of each risk factor. Two authors (AI, KH) independently extracted the data, and any discrepancies were discussed with a third reviewer (SGN). The name of the author, publishing year, country, purpose, design, sample size, gender, mean patient age, acupressure point, treatment, specifics of the intervention, chemotherapy schedule, participant characteristics, outcomes, instruments, emetogenicity, and study findings were all retrieved and exported into a data extraction form. The characteristics of the involved studies are shown in Supplementary Table 1.

The key finding in each study was (severity of acute nausea, acute vomiting, delayed nausea, and delayed vomiting) was compared between the patients in the acupressure intervention group and those in the control group who received standard care (antiemetics). The meta-analysis was carried out to combine the study results. By pooling mean difference and standardized mean difference, the effect sizes for acupressure interventions

were calculated for the continuous outcome with 95% confidence intervals. Using the I^2 value, analysis of the trials' heterogeneity was assessed. We evaluated the principal outcome of the acupressure intervention by meta-analysis and contrasted it with the control group. Weighted mean differences and standardised mean differences with a 95% confidence interval were calculated using a random effects model for the effects of the acupressure intervention. RevMan v5.3 was used to analyze and combine all of the data.

Results

Six studies involving 287 BC patients (Intervention group: 143; Control group: 144) were a part of our systematic review and meta-analysis. The participants' average age was 47.86 (+8.11) years. According to the pooled findings of our studies, acupressure combined with antiemetics significantly lessens the severity of acute nausea, delayed nausea, and delayed vomiting brought on by chemotherapy. Acupressure with antiemetics did not differ statistically significantly in terms of frequency of acute vomiting, delayed vomiting, or acute nausea or the severity of acute vomiting brought on by chemotherapy. The most frequently employed instrument in the majority of the included studies was the index of nausea, vomiting, and retching. This strengthens the body of evidence supporting our study's findings.

Five trials looked at how well acupressure reduced BC patients' acute nausea symptoms [28–32]. A total of 212 BC patients took part in the studies, with 106 BC patients in the experimental and control group. When the data on the effectiveness of acupressure combined with

antiemetics on the severity of acute nausea were combined for analysis, a statistically significant difference between the intervention and control groups was found [SMD, (95% CI)] [-0.35(-0.62,-0.08), $P=0.01$, $I^2=0\%$] (Figure 3.1)

Three studies reported the efficacy of acupressure on the severity of acute vomiting [30–32]. Total 132 BC patients participated in the studies, with 66 BC patients in the experimental and control groups. When the data on the effectiveness of acupressure combined with antiemetics on the severity of acute vomiting were combined for analysis, it was found that there was no statistically significant difference between the intervention group and the control group [SMD, (95% CI)] [0.06 (-0.29,0.40), $P=0.74$, $I^2=0\%$] (Figure 3.2).

Six studies reported the effectiveness of acupressure on the severity of delayed nausea [28–33]. There were 212 participants in all, and 106 were randomly assigned to the experimental and control groups. When the data on the effectiveness of acupressure combined with antiemetics on the intensity of delayed nausea were combined for analysis, a statistically significant difference between the intervention and control groups was found [SMD, (95% CI)] [-0.52(-0.78,-0.26), $P<0.001$, $I^2=16\%$] (Figure 3.3).

Four studies reported the effectiveness of acupressure on the severity of delayed vomiting [30–33]. The trials included 207 participants overall, of whom 103 were in the intervention group and 104 were in the control group. When the data on the effectiveness of acupressure combined with antiemetics on the severity of delayed vomiting were merged for analysis, it was found that the intervention group and control group differed statistically significantly [SMD, (95% CI)] [-0.46(- 0.83,-0.08), $P=0.02$, $I^2=43\%$] (Figure 3.4).

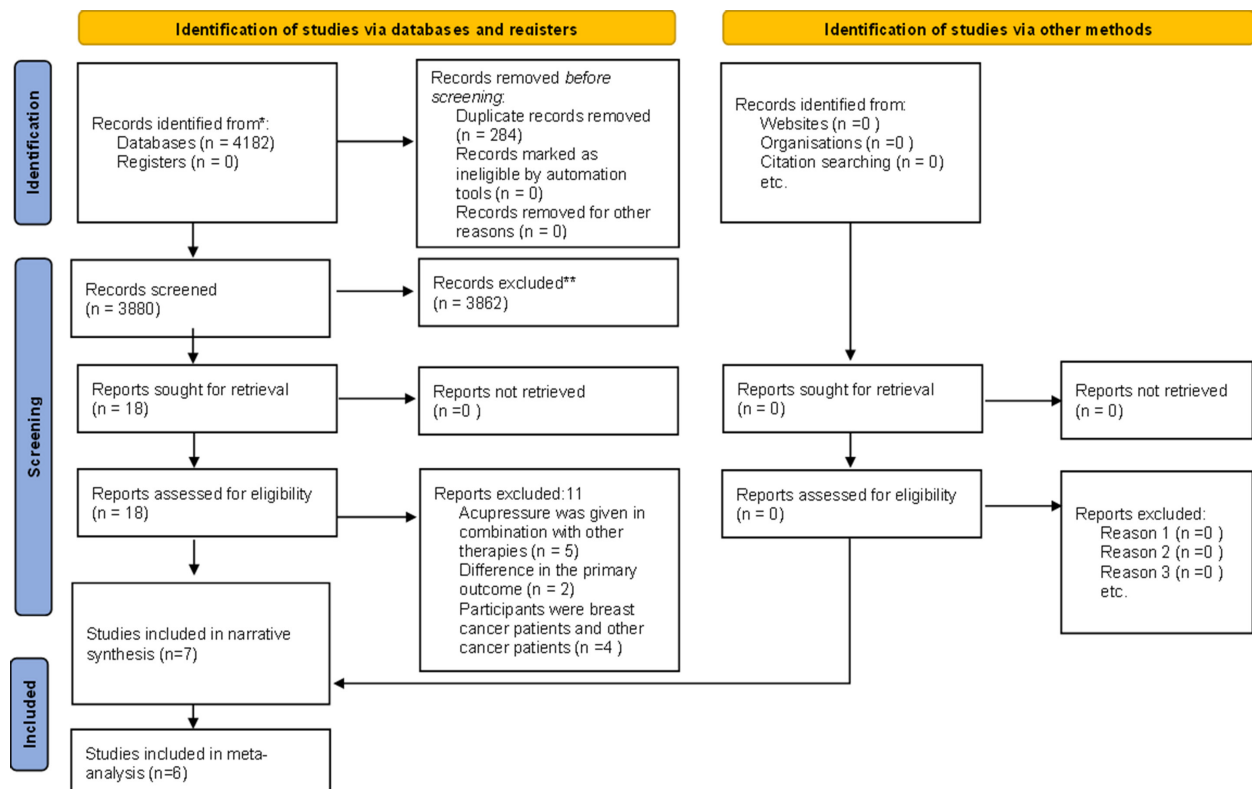


Figure 1. PRISMA Flow Chart of Study Selection



Figure 2. Risk of Bias Summary of the Included Studies

Sub-group analysis was carried out to evaluate the efficacy of acupressure plus antiemetics on the chemotherapy-induced frequency of nausea and vomiting among BC patients. Two studies [28, 32] reported the frequency of acute nausea. The results of the efficacy of acupressure plus antiemetics were pooled for analysis and found that acupressure didn't have a statistically significant difference in the frequency of acute nausea in the intervention group as compared to the control group [SMD, (95% CI)] [-0.24(-0.73,0.25), P=0.33, I²=0%] (Figure 3.5).

Two studies reported the frequency of acute vomiting [31, 32]. The results of the efficacy of acupressure plus antiemetics were pooled for analysis and found that acupressure didn't have a statistically significant difference in the frequency of acute vomiting in the intervention group as compared to the control group [SMD,(95% CI)] [0.30(-0.98,1.59), P=0.64, I²=16%] (Figure 3.6).

Another two studies [31, 32] reported the frequency of delayed vomiting. The results of the efficacy of acupressure plus antiemetics were pooled for analysis and found that acupressure didn't have a statistically significant difference in the frequency of delayed vomiting in the intervention group as compared to the control group [SMD,(95% CI)] [-0.05(-0.48,0.37), P=0.81, I²=0%] (Figure 3.7).

Discussion

In our review form the included research studies

acupressure protocols were varied. The most commonly adopted technique was acupressure with bands worn for five days. Neiguan (P6) acupoint stimulation was the widely utilized acupoint in our included trials. Some other acupoints, such as Zusanli, point zero, stomach, brainstem, shenmen and cardia of the ear may have a similar outcome on the intensity of nausea and vomiting. It is still unclear which acupoint can reduce nausea and vomiting the most effectively and this calls for further research. The efficacy of acupressure combined with antiemetics on the frequency of nausea and vomiting was assessed using sub-group analysis. However, we could not find any statistical significance of acupressure plus antiemetics on the frequency of acute nausea, acute vomiting and delayed vomiting.

Acupressure has been shown to be effective in reducing nausea and vomiting in chemotherapy patients in previous meta-analysis [21, 34]. However, all these articles involved data from mixed population, so the effectiveness of acupressure on a specific population couldn't be established. Furthermore, we could retrieve three more articles on the breast cancer population, than the study done by Miao [21]. Acupressure has been demonstrated to be useful in treating symptoms, such as nausea and vomiting caused by chemotherapy and pregnancy [35, 36]. Acupressure practised by the patient themselves showed an improvement in the symptom scores as compared to the patients who didn't practice acupressure [37]. Acupressure showed a different impact profile from other acupuncture-point stimulation techniques, according to a

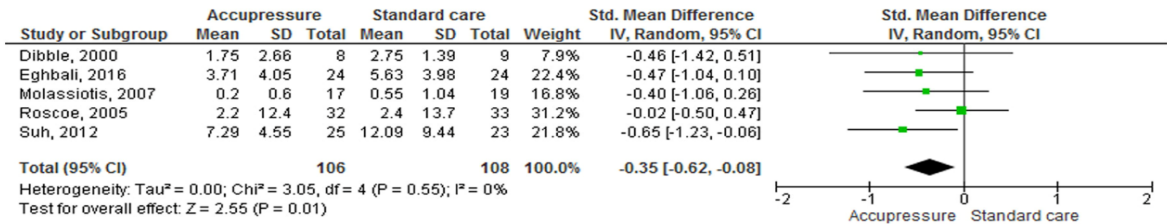


Figure 3.1: Severity of acute nausea

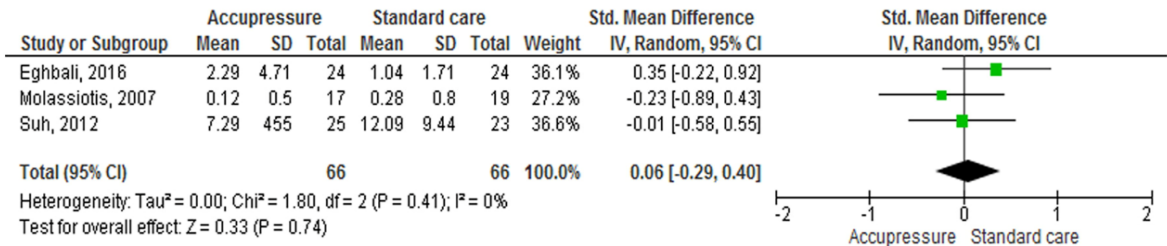


Figure 3.2: Severity of acute vomiting

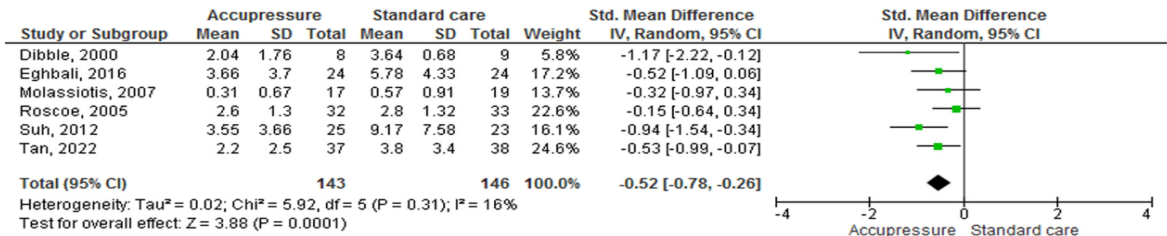


Figure 3.3: Severity of delayed nausea

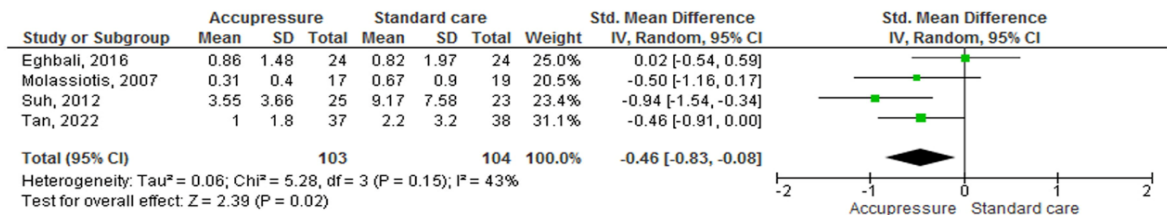


Figure 3.4: Severity of delayed vomiting

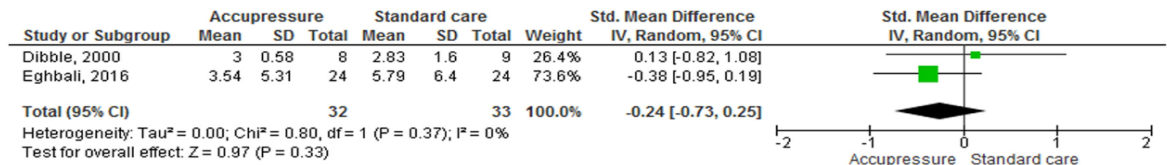


Figure 3.5: Frequency of acute nausea

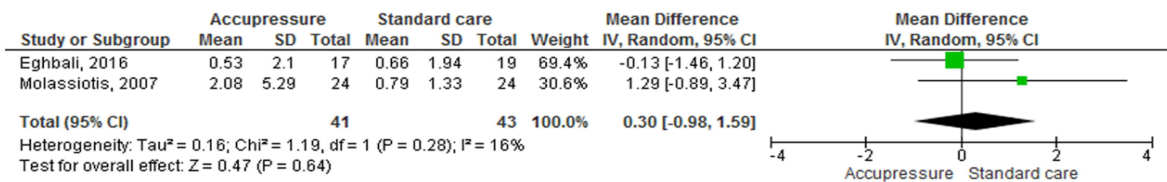


Figure 3.6: Frequency of acute vomiting

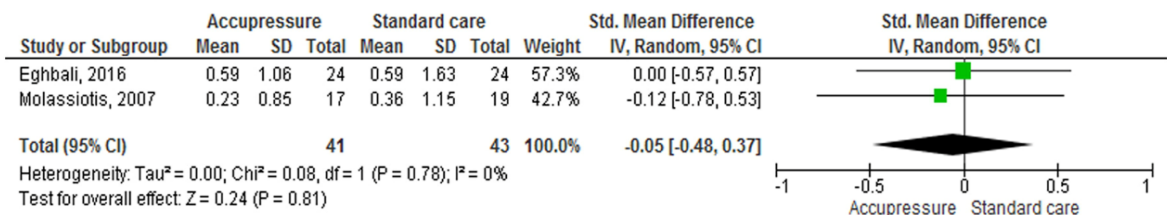


Figure 3.7: Frequency of delayed vomiting

systematic review and meta-analysis that combined the findings of 11 RCTs from the Cochrane Library. The study concluded that acute nausea can be lessened in severity with acupressure. The study did discover, however, that acupressure did not affect the severity of either delayed or acute symptoms of vomiting [36].

Acupressure appears to be a safe and well-tolerated intervention with high patient acceptability. However, our review also observed heterogeneity in terms of chemotherapy regimens, patient demographics, acupressure points and acupressure protocols. Neiguan (PC6) was the most commonly used acupoint the studies included in the review. This point is for alleviating nausea and it may enhance gastric motility and has been found to be as effective as antiemetic agents in decreasing the occurrence of nausea and vomiting [39]. Zusanli (ST36) is another acupressure point and stimulating this with PC-6, and SP-6 (Sanyinjiao) also have been proven in improving gastrointestinal motility [40]. In addition to the beneficiary effect on nausea and vomiting, providing acupuncture may align with patient preferences, meet their expectations for the acupressure treatment, and foster a positive patient-practitioner relationship [41].

Nausea is a response with a fluctuating threshold that is influenced by the interplay between an individual's inherent traits and psychological factors [42]. However, vomiting occurs when stimuli exceed a certain threshold and can be more easily controlled if the neuronal signals are reduced below this threshold [43]. Hence, nausea is more difficult to manage than vomiting, which signifies the need for appropriate assessment and management of nausea [44].

The risk factors for CINV could be roughly categorised as elements particular to the patient and factors specific to the treatment. Patients who are known to have morning sickness, younger age, and female gender have a greater risk of CINV. The chances of developing CINV and alcohol intake are inversely correlated. The emetogenicity, dose, and schedule of each drug also determine the chances of developing CINV. The articles in our review used moderate to highly emetogenic drugs among BC patients. Although the participant's ages in our review ranged from 45-50, acupressure effectively reduced CINV.

According to conventional Chinese medicine, the illness is brought on by an imbalance in the body's energy flow. By exerting pressure on particular body points, the release of neurochemicals helps to restore this energy, or Qi (chee). A safe and efficient method for managing CINV is acupressure, which could be given to BC patients receiving chemotherapy. The use of this non-pharmacological, affordable, non-invasive technique by nurses as a supplemental treatment strategy for the relief of CINV is advised. Since our study only included papers that were published in the English language, it would be subject to language bias. The assessment of publication bias was omitted as our review involved only a few articles.

In conclusion, controlling CINV in BC patients receiving chemotherapy was more effective when acupressure was used in conjunction to conventional antiemetic medicine and care than when it was used alone.

Acupressure is a helpful supplementary approach that can help minimise the severity of acute nausea, delayed nausea, and delayed vomiting in women getting treatment for breast cancer.

Author Contribution Statement

Author 1: Conceptualization (lead), Methodology (lead), data curation (equal), writing – original draft (equal), review and editing (equal). Author 2: Conceptualization (lead), Methodology (lead), data curation (equal), writing – original draft (equal), review and editing (equal). Author 3: Data curation (equal); writing – review and editing (equal); validation (lead). Author 4: Conceptualization (equal), Methodology (equal); review and editing (equal); formal analysis (lead); validation (equal); Author 5: Conceptualization (equal), Methodology (equal); review and editing (equal); validation (equal).

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This manuscript is not part of any student thesis and hence is not submitted for any scientific body for approval.

Ethics approval

This was a systematic review and no ethical approval is required.

Availability of data

The data for this systematic review were derived from the publicly available sources including the academic databases and are appropriately cited in the reference.

Conflict of interest

The authors have no relevant financial or non-financial interests to disclose.

References

1. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global cancer statistics 2020: Globocan estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin.* 2021;71(3):209-49. <https://doi.org/10.3322/caac.21660>.
2. Breast cancer [internet]. Accessed november 11, 2022. Available from <https://www.Who.Int/news-room/factsheets/detail/breast-cancer>.
3. Twelves C, Jove M, Gombos A, Awada A. Cytotoxic chemotherapy: Still the mainstay of clinical practice for all subtypes metastatic breast cancer. *Crit Rev Oncol Hematol.* 2016;100:74-87. <https://doi.org/10.1016/j.critrevonc.2016.01.021>.
4. Lorusso D, Bria E, Costantini A, Di Maio M, Rosti G, Mancuso A. Patients' perception of chemotherapy side effects: Expectations, doctor-patient communication and impact on quality of life - an Italian survey. *Eur J Cancer Care (Engl).* 2017;26(2). <https://doi.org/10.1111/ecc.12618>.
5. Dranitsaris G, Molassiotis A, Clemons M, Roeland E, Schwartzberg L, Dielenseger P, et al. The development of a prediction tool to identify cancer patients at high risk for chemotherapy-induced nausea and vomiting. *Ann Oncol.* 2017;28(6):1260-7. <https://doi.org/10.1093/annonc/mdx100>.

6. Berger MJ, Ettinger DS, Aston J, Barbour S, Bergsbaken J, Bierman PJ, et al. Nccn guidelines insights: Antiemesis, version 2.2017. *J Natl Compr Canc Netw*. 2017;15(7):883-93. <https://doi.org/10.6004/jnccn.2017.0117>.
7. Vaid AK, Gupta S, Doval DC, Agarwal S, Nag S, Patil P, et al. Expert consensus on effective management of chemotherapy-induced nausea and vomiting: An indian perspective. *Front Oncol*. 2020;10:400. <https://doi.org/10.3389/fonc.2020.00400>.
8. Jordan K, Gralla R, Jahn F, Molassiotis A. International antiemetic guidelines on chemotherapy induced nausea and vomiting (cinv): Content and implementation in daily routine practice. *Eur J Pharmacol*. 2014;722:197-202. <https://doi.org/10.1016/j.ejphar.2013.09.073>.
9. Einhorn LH, Rapoport B, Navari RM, Herrstedt J, Brames MJ. 2016 updated mascc/esmo consensus recommendations: Prevention of nausea and vomiting following multiple-day chemotherapy, high-dose chemotherapy, and breakthrough nausea and vomiting. *Support Care Cancer*. 2017;25(1):303-8. <https://doi.org/10.1007/s00520-016-3449-y>.
10. Sun CC, Bodurka DC, Weaver CB, Rasu R, Wolf JK, Bevers MW, et al. Rankings and symptom assessments of side effects from chemotherapy: Insights from experienced patients with ovarian cancer. *Support Care Cancer*. 2005;13(4):219-27. <https://doi.org/10.1007/s00520-004-0710-6>.
11. Liu L, Wu Y, Cong W, Hu M, Li X, Zhou C. Experience of women with breast cancer undergoing chemotherapy: A systematic review of qualitative research. *Qual Life Res*. 2021;30(5):1249-65. <https://doi.org/10.1007/s11136-020-02754-5>.
12. Herrstedt J, Lindberg S, Petersen PC. Prevention of chemotherapy-induced nausea and vomiting in the older patient: Optimizing outcomes. *Drugs Aging*. 2022;39(1):1-21. <https://doi.org/10.1007/s40266-021-00909-8>.
13. Rao KV, Faso A. Chemotherapy-induced nausea and vomiting: Optimizing prevention and management. *Am Health Drug Benefits*. 2012;5(4):232-40.
14. Mehta P, Dhapte V, Kadam S, Dhapte V. Contemporary acupressure therapy: Adroit cure for painless recovery of therapeutic ailments. *J Tradit Complement Med*. 2017;7(2):251-63. <https://doi.org/10.1016/j.jtcm.2016.06.004>.
15. Kwan RY, Leung MC, Lai CK. Acupressure for agitation in nursing home residents with dementia: Study protocol for a randomized controlled trial. *Trials*. 2014;15:410. <https://doi.org/10.1186/1745-6215-15-410>.
16. Choi EM, Jiang F, Longhurst JC. Point specificity in acupuncture. *Chin Med*. 2012;7:4. <https://doi.org/10.1186/1749-8546-7-4>.
17. Chen YW, Wang HH. The effectiveness of acupressure on relieving pain: A systematic review. *Pain Manag Nurs*. 2014;15(2):539-50. <https://doi.org/10.1016/j.pmn.2012.12.005>.
18. Chen SR, Hou WH, Lai JN, Kwong JSW, Lin PC. Effects of acupressure on anxiety: A systematic review and meta-analysis. *J Integr Complement Med*. 2022;28(1):25-35. <https://doi.org/10.1089/jicm.2020.0256>.
19. Lin J, Chen T, He J, Chung RC, Ma H, Tsang H. Impacts of acupressure treatment on depression: A systematic review and meta-analysis. *World J Psychiatry*. 2022;12(1):169-86. <https://doi.org/10.5498/wjp.v12.i1.169>.
20. Wang X, Gu J, Liu J, Hong H. Clinical evidence for acupressure with the improvement of sleep disorders in hemodialysis patients: A systematic review and meta-analysis. *Complement Ther Clin Pract*. 2020;39:101151. <https://doi.org/10.1016/j.ctcp.2020.101151>.
21. Miao J, Liu X, Wu C, Kong H, Xie W, Liu K. Effects of acupressure on chemotherapy-induced nausea and vomiting—a systematic review with meta-analyses and trial sequential analysis of randomized controlled trials. *Int J Nurs Stud*. 2017;70:27-37. <https://doi.org/10.1016/j.ijnurstu.2017.02.014>.
22. Morehead A, Salmon G. Efficacy of acupuncture/acupressure in the prevention and treatment of nausea and vomiting across multiple patient populations: Implications for practice. *Nurs Clin North Am*. 2020;55(4):571-80. <https://doi.org/10.1016/j.cnur.2020.07.001>.
23. Cumpston MS, McKenzie JE, Welch VA, Brennan SE. Strengthening systematic reviews in public health: Guidance in the cochrane handbook for systematic reviews of interventions, 2nd edition. *J Public Health (Oxf)*. 2022;44(4):e588-e92. <https://doi.org/10.1093/pubmed/fdac036>.
24. Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, et al. Preferred reporting items for systematic review and meta-analysis protocols (prisma-p) 2015 statement. *Syst Rev*. 2015;4(1):1. <https://doi.org/10.1186/2046-4053-4-1>.
25. Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan—a web and mobile app for systematic reviews. *Syst Rev*. 2016;5(1):210. <https://doi.org/10.1186/s13643-016-0384-4>.
26. Dibble SL, Luce J, Cooper BA, Israel J, Cohen M, Nussey B, et al. Acupressure for chemotherapy-induced nausea and vomiting: A randomized clinical trial. *Oncol Nurs Forum*. 2007;34(4):813-20. <https://doi.org/10.1188/07.ONF.xxx-xxx>.
27. Sterne JAC, Savović J, Page MJ, Elbers RG, Blencowe NS, Boutron I, et al. Rob 2: A revised tool for assessing risk of bias in randomised trials. *BMJ*. 2019;366:14898. <https://doi.org/10.1136/bmj.l4898>.
28. Dibble SL, Chapman J, Mack KA, Shih AS. Acupressure for nausea: Results of a pilot study. *Oncol Nurs Forum*. 2000;27(1):41-7.
29. Roscoe JA, Matteson SE, Morrow GR, Hickok JT, Bushnow P, Griggs J, et al. Acustimulation wrist bands are not effective for the control of chemotherapy-induced nausea in women with breast cancer. *J Pain Symptom Manage*. 2005;29(4):376-84. <https://doi.org/10.1016/j.jpainsymman.2004.07.007>.
30. Suh EE. The effects of p6 acupressure and nurse-provided counseling on chemotherapy-induced nausea and vomiting in patients with breast cancer. *Oncol Nurs Forum*. 2012;39(1):E1-9. <https://doi.org/10.1188/12.Onf.E1-e9>.
31. Molassiotis A, Helin AM, Dabbour R, Hummerston S. The effects of p6 acupressure in the prophylaxis of chemotherapy-related nausea and vomiting in breast cancer patients. *Complement Ther Med*. 2007;15(1):3-12. <https://doi.org/10.1016/j.ctim.2006.07.005>.
32. Eghbali M, Yekaninejad MS, Varaei S, Jalalinia SF, Samimi MA, Sa'atchi K. The effect of auricular acupressure on nausea and vomiting caused by chemotherapy among breast cancer patients. *Complement Ther Clin Pract*. 2016;24:189-94. <https://doi.org/10.1016/j.ctcp.2016.06.006>.
33. Tan JY, Molassiotis A, Suen LKP, Liu J, Wang T, Huang HR. Effects of auricular acupressure on chemotherapy-induced nausea and vomiting in breast cancer patients: A preliminary randomized controlled trial. *BMC Complement Med Ther*. 2022;22(1):87. <https://doi.org/10.1186/s12906-022-03543-y>.
34. Byju A, Pavithran S, Antony R. Effectiveness of acupressure on the experience of nausea and vomiting among patients receiving chemotherapy. *Can Oncol Nurs J*. 2018;28(2):132-8. <https://doi.org/10.5737/23688076282132138>.
35. Devi B. Effectiveness of p6 acupressure on reduction of

- nausea, vomiting & retching among antenatal women attending antenatal clinic at district hospitals of sikkim. *Int J Nurs Midwifery Res.* 2020;07:24-30. <https://doi.org/10.24321/2455.9318.202005>.
36. Lee EJ, Frazier SK. The efficacy of acupressure for symptom management: A systematic review. *J Pain Symptom Manage.* 2011;42(4):589-603. <https://doi.org/10.1016/j.jpainsymman.2011.01.007>.
 37. Song HJ, Seo HJ, Lee H, Son H, Choi SM, Lee S. Effect of self-acupressure for symptom management: A systematic review. *Complement Ther Med.* 2015;23(1):68-78. <https://doi.org/10.1016/j.ctim.2014.11.002>.
 38. Genç F, Tan M. The effect of acupressure application on chemotherapy-induced nausea, vomiting, and anxiety in patients with breast cancer. *Palliat Support Care.* 2015;13(2):275-84. <https://doi.org/10.1017/s1478951514000248>.
 39. Lv JQ, Feng RZ, Li N. P6 acupoint stimulation for prevention of postoperative nausea and vomiting in patients undergoing craniotomy: Study protocol for a randomized controlled trial. *Trials.* 2013;14:153. <https://doi.org/10.1186/1745-6215-14-153>.
 40. Chao HL, Miao SJ, Liu PF, Lee HH, Chen YM, Yao CT, et al. The beneficial effect of st-36 (zusanli) acupressure on postoperative gastrointestinal function in patients with colorectal cancer. *Oncol Nurs Forum.* 2013;40(2):E61-8. <https://doi.org/10.1188/13.Onf.E61-e68>.
 41. Cao HJ, Li X, Li XL, Ward L, Xie ZG, Hu H, et al. Factors influencing participant compliance in acupuncture trials: An in-depth interview study. *PLoS One.* 2020;15(4):e0231780. <https://doi.org/10.1371/journal.pone.0231780>.
 42. Levine me. The psychology of nausea [internet]. *Complications in anesthesia: Monoamine oxidase inhibitors.* 2017. 644–648 p.
 43. Hornby PJ. Central neurocircuitry associated with emesis. *Am J Med.* 2001;111 Suppl 8A:106s-12s. [https://doi.org/10.1016/s0002-9343\(01\)00849-x](https://doi.org/10.1016/s0002-9343(01)00849-x).
 44. Yan Y, López-Alcalde J, Zhang L, Siebenhüner AR, Witt CM, Barth J. Acupuncture for the prevention of chemotherapy-induced nausea and vomiting in cancer patients: A systematic review and meta-analysis. *Cancer Med.* 2023;12(11):12504-17. <https://doi.org/10.1002/cam4.5962>.



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