

REFLEXOLOGY FOR ANXIETY AND NAUSEA IN BREAST CANCER PATIENTS: A MINI REVIEW

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ABSTRAK

Latar Belakang: Pasien kanker payudara sering mengalami mual dan kecemasan selama menjalani pengobatan yang dapat menurunkan kenyamanan dan kualitas hidup. Reflexology merupakan terapi komplementer nonfarmakologis yang berpotensi membantu mengatasi keluhan tersebut. Penelitian ini bertujuan meninjau efektivitas reflexology dalam mengurangi mual dan kecemasan pada pasien kanker payudara. **Metode:** Penelitian ini menggunakan metode systematic review dengan menelusuri publikasi ilmiah tahun 2018–2023 melalui basis data internasional, yaitu PubMed, Cochrane Library, Elsevier, ProQuest, dan Google Scholar. Artikel dipilih berdasarkan kesesuaian dengan intervensi reflexology pada pasien kanker payudara. **Hasil:** Hasil penelusuran menghasilkan sepuluh artikel randomized controlled trial (RCT) yang memenuhi kriteria. Seluruh penelitian menunjukkan hasil positif setelah pemberian intervensi reflexology. Reflexology dilaporkan dapat membantu mengurangi mual dan kecemasan pada pasien kanker payudara, sehingga berpotensi meningkatkan kenyamanan dan kondisi psikologis selama menjalani pengobatan. **Kesimpulan:** Reflexology menunjukkan potensi sebagai terapi komplementer dalam membantu mengurangi mual dan kecemasan pada pasien kanker payudara. Intervensi ini dapat menjadi pendekatan pendukung dalam pelayanan pasien selama terapi kanker. Penelitian lebih lanjut dengan sampel lebih besar dan protokol intervensi terstandar diperlukan untuk memperkuat bukti efektivitas reflexology.

Kata Kunci : Reflexology; Breast Cancer; Nausea; anxiety

ABSTRACT

Introduction: Breast cancer patients frequently experience nausea and anxiety during treatment, which may reduce comfort and quality of life. Reflexology is a complementary non-pharmacological therapy that may help manage these symptoms. This study aimed to review the effectiveness of reflexology in reducing nausea and anxiety among breast cancer patients. **Methods:** A systematic review was conducted by searching scientific publications published between 2018 and 2023 through international electronic databases, including PubMed, Cochrane Library, Elsevier, ProQuest, and Google Scholar. Articles were selected based on their relevance to reflexology interventions among breast cancer patients. **Results:** The search identified ten randomized controlled trial (RCT) articles that met the inclusion criteria. All studies reported positive outcomes following reflexology intervention. Reflexology was found to help reduce nausea and anxiety among breast cancer patients, suggesting its potential to improve patients' comfort and psychological well-being during cancer treatment. **Conclusion:** Reflexology demonstrates potential as a complementary therapy for reducing nausea and anxiety among breast cancer patients. It may serve as a supportive approach alongside conventional cancer care. Further studies involving larger samples, standardized intervention protocols, and consistent outcome measurements are needed to strengthen the evidence regarding the effectiveness of reflexology in breast cancer care.

Keywords : Reflexology; Breast Cancer; Nausea; anxiety

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INTRODUCTION

Breast cancer is the most common cancer and the leading cause of cancer death in women worldwide. There were more than 2 million new cases worldwide in 2018 (Dilaveri et al., 2020). Breast cancer can also be found in men, although the incidence rate is less than 1% or only one in a thousand men will be diagnosed with breast cancer. Currently, there are many ways to treat breast cancer. Breast cancer patients with stage I to stage III disease have been treated with surgery, followed by radiation therapy or chemotherapy (Wang et al., 2022).

Breast cancer treatment affects the quality of life of sufferers. The symptoms most often faced by breast cancer sufferers are insomnia, fatigue, anxiety, and the most commonly felt is breast pain (E. M. Yang et al., 2023). Although the most common symptom felt by breast cancer sufferers is pain, there are still several other symptoms that breast cancer sufferers can feel, such as irritability, psychological disorders and also cognitive disorders (Mazor et al., 2018).

The presence of pain symptoms that are felt can cause the sufferer's daily activities to be disrupted, psychological stress, decreased social activities and ultimately reduced quality of life and can even result in sleep disorders in sufferers, therefore, to overcome the pain felt by breast cancer sufferers, various interventions are needed to overcome both pharmacological and non-pharmacological treatments (Mansano-Schlosser & Ceolim, 2017).

On the one hand, this treatment helps eliminate cancer cells; on the other hand, this treatment can cause negative side effects. For example, radiation therapy can cause skin irritation and redness, breast tenderness, and lymphedema (Lopez et al., 2022).

Some side effects of chemotherapy may include hair loss, fatigue, nausea, vomiting, diarrhea, and pain. Side effects after surgery in breast cancer patients may include pain and discomfort, infection,

seroma, and lymphedema (M. Ma et al., 2021). Therefore, it is common for patients around the world to seek other treatments called “complementary and integrative health,” beyond these approaches or combined with conventional medicine, for their health practices, as they prefer holistic or natural medicine to support treatment (Najafpour & Shayanfard, 2020).

According to the National Center for Complementary and Integrative Health (NCCIH), complementary approaches refer to non-mainstream practices used alongside conventional medicine, while integrative care combines conventional and complementary approaches in a coordinated manner (Qiu et al., 2020; Unlu et al., 2018).

Lastly, if a non-mainstream practice is used as a substitute for conventional therapy, it is called “alternative.” (M. Ma et al., 2021). Among the complementary and integrative approaches used by breast cancer patients, reflexology and other pressure-based therapies have gained attention for their potential role in managing treatment-related symptoms (Tambour et al., 2018).

However, one aspect to be aware of is that patients who use this complementary and integrative health approach may not be aware of the potential risks of using this method, such as potential interactions between herbal medicines and modern medicine (Tsai et al., 2021). Many complementary and integrative health approaches still lack high-level scientific evidence to support their safety and effectiveness for cancer patients (Vallim et al., 2019).

Therefore, a focused synthesis of the available evidence is needed to clarify the effectiveness of complementary and integrative health approaches in managing treatment-related symptoms among breast cancer patients and to support evidence-based clinical decision-making (Hasni et al., 2022).

Reflexology is a complementary therapy that has been increasingly explored

for the management of cancer-related symptoms, including pain, chemotherapy-induced nausea and vomiting, and constipation (Behzadmehr et al., 2020; E. Yang et al., 2023)

One theory states that the mechanism of reflexology works because direct pressure on certain nerve endings in the feet stimulates the area of the body in question to relieve symptoms (Göral Türkcü & Özkan, 2021). Others argue that reflexology helps activate receptors to release oxytocin; to increase circulation through pressure; and to reduce symptoms through complex inputs and processes in the neuro matrix of the central nervous system (Rezaei et al., 2022).

These theories still need to be clarified. Therefore, further research is needed regarding the mechanisms of reflexology in managing symptoms in breast cancer patients (J. Zhang et al., 2021). It is also possible that regularly applied complementary and integrative health approaches such as reflexology provide psychological comfort beyond the effects of conventional cancer treatments of surgery, chemotherapy and radiation (Sikorskii et al., 2020). This potential psychological comfort may be considered by some to be a placebo effect, but further investigation in RCTs and physiological studies may help clarify this role (Wanchai & Armer, 2020).

However, some patients report experiencing side effects after using reflexology, such as fatigue, chills, dizziness, and fever (González Rubino et al., 2022). These symptoms may stem from the nocebo effect, which is defined as a negative physical or emotional response to massage reflecting the patient's expectations (Luo et al., 2019). Reflexologists need to provide evidence-based information, and maintain good relationships with patients to reduce this nocebo effect (D. Ma et al., 2020).

METHODS

The research question and eligibility criteria were developed using an adapted PICO framework. The Population (P) consisted of patients with breast cancer; the Intervention (I) was reflexology; the Comparison (C) included standard care, sham or placebo intervention, or no intervention; and the Outcomes (O) were anxiety and nausea. Eligible studies were randomized controlled trials published in international journals, available in full-text format, and published within the predefined study period. Studies that did not involve breast cancer patients, did not evaluate reflexology, did not assess anxiety or nausea, or were unavailable in full text were excluded.

The literature search was conducted using the keywords “Breast Cancer,” “Reflexology,” “Nausea,” and “Anxiety” across PubMed, Cochrane Library, Elsevier, ProQuest, and Google Scholar. The search identified PubMed (n=10), Cochrane Library (n=8), Elsevier (n=3), ProQuest (n=34), and Google Scholar (n=9,090). After duplicate removal and eligibility screening, ten studies were included in the review.

Table 1. Characteristics of reaearch included in the systematic review

No	Author	Participant	Group	Research Place	Research design	Intervention	Instrument	Results
1.	(Peoples et al., 2019) German	A total of 242 women	Women aged ≥ 18 years with breast cancer, chemotherapy-naïve, and scheduled for initial chemotherapy with doxorubicin-, docetaxel/carboplatin-, or docetaxel/cyclophosphamide-based regimens.	in four clinics cancer in three cities in the Northeastern United States	phase II trial, randomized, partially blinded, and placebo controlled.	Patients in arms 1 and 2 were asked to try acupressure bands after randomization. However, they were allowed to wear or remove the band during the intervening five days at their own discretion.	Demographic and clinical data, including nausea history, were collected at enrollment; worst anxiety in the previous 24 hours was rated on a 0–10 scale.	Mean acupressure-band use was 56 (0–120) hours and relaxation-music use was 5 (0–31) hours over 5 days. No significant between-group difference or serious adverse effects were reported.
2.	(J.-Y. Tan et al., 2022) China.	As much 114 female patients	Participants were randomly allocated to the true AA group (n=38), sham AA group (n=38), and standard care group (n=38).	Subject recruitment was carried out at three tertiary health centers in Fuzhou, Fujian, China.	Initial randomized controlled trial	All participants received standard antiemetic therapy with 5-HT ₃ receptor antagonists and/or dexamethasone before chemotherapy, followed by prescribed antiemetics for 1–2 days after chemotherapy.	Patient-reported outcomes were collected via questionnaires with assistance from two research assistants. Acute and delayed CINV were assessed on Days 2 and 6 of the first chemotherapy cycle using the MASCC Antiemesis Tool (MAT).	True AA showed a lower incidence of acute vomiting than sham AA, and both AA groups reported less severe vomiting than standard care, with a moderate between-group effect (p=0.07; Cramer's V=0.22).
3.	(Rezaei et al., 2022) Iran	A total of 66 women	Breast cancer patients undergoing chemotherapy at Ayatollah Khansari Hospital, Arak, Iran (May 2018–January 2020),	This research was conducted at Ayatollah Khansari Hospital, Arak, Iran,	randomized controlled clinical trial	Foot reflexology was performed using sesame oil, beginning with gentle massage of the soles, followed by sustained pressure or rotation at the pituitary and	Data were collected using a demographic questionnaire and the 20-item Spielberger State-Trait Anxiety Inventory (STAI) to assess situational anxiety.	Paired t-tests showed no significant pre–post change in mean anxiety scores in either the intervention group or the control group (P=0.844 for the control group).

			were assigned to an intervention group (n=33) or control group (n=33).			solar plexus reflex points for 40 minutes (20 minutes per foot), twice daily in the morning and evening.		
4.	(Pan et al., 2019) Hong Kong	A total of 30 women	Female patients aged 18 to 75 years who are diagnosed with stage I to IV breast cancer. allocated to acupuncture control group or waiting list	This research conducted in, Queen Mary Hospital. Participants Assessments and interventions were conducted at the outpatient clinic of the School of Chinese Medicine	Pilot Randomized Controlled Trial	The acupuncture group received electroacupuncture plus auricular acupressure twice weekly for 6 weeks, while the waitlist group received the same regimen after a 6-week delay.	Hospital Anxiety and Depression Scale (HADS), Functional Assessment of Cancer Therapy-Breast Cancer (FACTB) from baseline to weeks 3, 6, 10, and 14.	After 3 weeks, the acupuncture group showed significant improvements in HADS depression (P=0.020) and FACT-B scores (P<0.001). Sleeping-medication use decreased to zero after acupuncture and remained zero at the 14-week follow-up.
5.	(Jahani et al., 2018) Iran	A total of 260 patients	130 anxious patients diagnosed by a psychiatrist), 130 people were randomly selected from a normal sample	samples were selected from the adult hematology ward of Baghaei 2 hospital in Ahvaz, Iran,	Randomized controlled clinical trial	The treatment group received manual foot reflexology based on the Father Josef Eugster/Ingham method, administered in a private patient-room setting, with male researchers assisting male participants.	To measure anxiety, the Spielberger scale was provided to the samples and filled in by them once 1 day before treatment and another time on day 3 days after treatment.	Foot reflexology targeting digestive reflex points (upper/lower stomach, liver, spleen, gallbladder, and duodenum) was associated with reduced pain and anxiety and lower analgesic use in postoperative patients with gastric and hematologic cancers.
6.	(Murat-Ringot et al., 2021) French	A total of 80 patients	Participants in this study were divided into two groups: intervention group	This research was conducted between April 2018 and April 2020 at Hospices	open-label randomized controlled trial.	Foot reflexology massage provides much better management of the severity of acute	The severity of acute nausea and vomiting was assessed with a visual analog scale	The foot reflexology group showed a trend toward less delayed nausea (P=0.28) and significantly lower

			(i.e. conventional treatment with foot reflexology; n=40) and control group (i.e. conventional treatment without foot reflexology; n=40).	Civils de Lyon, France.		nausea and reduces the consumption of antiemetic drugs in lung or digestive cancer patients.	during the second cycle of chemotherapy.	antiemetic use (P=0.04), while vomiting did not differ significantly (P=0.99). The control group showed greater perceived delayed-nausea severity (P=0.39), and 21% (7/34) had a ≥ 2 -point improvement (P=0.001).
7.	(Jahani et al., 2018)	As much 66 patients	consists of individuals aged 18 years and over, who are the primary informal caregivers of cancer patients (without professional assistance), can communicate verbally and agree to participate in the study.	This was carried out in the adult oncology unit of Tülay Aktaş Oncology Hospital, Faculty of Medicine, Ege University, Izmir, Turkey between June-October 2019.	Randomized controlled trial	Reflexology targeted the pituitary, hypothalamus, brain, pineal, and solar plexus reflex points. Each point was pressed for 5–10 seconds using thumb pressure, caterpillar-like movements, and rotational stimulation while the foot was supported with the other hand.	State Anxiety Inventory (SAI): It was developed in 1970 by Spielberger et al. Coefficients reflecting internal consistency and	Anxiety levels decreased in the reflexology and placebo groups. When the effect of reflexology compared to placebo was evaluated, it was found that reflexology had a great influence on anxiety according to Cohen
8.	(Rejeh et al., 2020)	A total of 90 patients	Eligible participants were adults aged >18 years undergoing first-time, non-emergency coronary angiography, with no prior invasive cardiac procedures,	University of Medical Sciences in urban areas of Iran, from March 2, 2018 to July 31, 2018.	Controlled Clinical Trial Random	Hand reflexology massage is performed for 20 minutes in the intervention group.	Rhoten 7e Fatigue Scale (RFS). Consists of lines 10 cm long with a very positive statement on one end and a very negative statement at the other end.	Hand reflexology significantly reduced pain and fatigue (P=0.001), with moderate-to-large effects, and may serve as a safe non-pharmacological adjunct for invasive procedures.

			coronary angiography, upper-extremity vascular or sensory-motor disorders, hand lesions or deformities, intervertebral disc herniation, mental disorders, joint disorders, or impaired consciousness.					
9.	(Luo et al., 2019)	A total of 256 patients	Patients selected a friend or family caregiver who was trained in a 30-minute reflexology protocol and provided at least one session weekly for 4 weeks. Informed consent was obtained from both patient and caregiver, with IRB approval from the investigator's university and participating sites.	Couples were recruited from nine community-based oncology clinics and two comprehensive cancer centers in the Midwest.	Randomized controlled trial	Intervention-group caregivers were trained by reflexology practitioners in a 30-minute protocol. Both groups completed weekly telephone MDASI assessments for 4 weeks, and participants completing at least one weekly call were included in the secondary analysis (N=209).	The MD Anderson Symptom Inventory (MDASI) was administered at baseline and weekly for 4 weeks to assess 13 symptoms and their interference with daily life on 0–10 scales. The instrument has established reliability and validity.	In a trial group comparison of symptom responses, reflexology was more successful than attention control in producing responses to pain [OR=1.84, 95% CI (1.05, 3.23), p=.03], with no significant differences for other symptoms
10.	(Kapila et al., 2019)	A total of 55 patients	in our district general hospital since 2010. This service is funded by	in our district general hospital since 2010. This service is funded by	Randomized controlled trial	Patients received six 45-minute reflexology sessions. After positioning	The 'Measure Your Self-Care and Well-Being' (MYCaW) questionnaire was	There was a 43.4% improvement in patient well-being in BC, and changes

			charitable funds and has good results based on experience.	charitable funds and has good results based on experience.		comfortably and cleansing the feet, a reflexologist stimulated the foot reflex zones according to a standardized protocol.	considered the most suitable tool to evaluate services. This is a well-established and valid tool (adapted from MYMOP – Measure Yourself Medical Outcome Profile) which is specifically used to evaluate complementary therapies in care cancer	on NBC of 37.8% which means an increase in total welfare of 41.2%. There has been an increase by 46.4% on MYCaW score, 46.4% on BC and 42.6% on NBC; indicates an increase in average a combined 42.4%.
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RESULTS

Of the four journals reviewed, it was found that the four journals were homogeneous or in other words had the same method, namely using RCT (Randomized Control Trial) (Terapi et al., 2022). All samples are randomized and randomized to avoid bias. The instrument used in the study to assess nausea and vomiting using the CIN was assessed based on self-reported 5-day diaries that have been used in previous large clinical trials (J. Y. Tan, Molassiotis, et al., 2022). Patients reported the severity of nausea four times each day (morning, afternoon, evening, and night) for 5 days starting on the day of chemotherapy and four days following the day. Nausea is rated on a 7-point scale ranging from 1 (not at all nauseous) to 7 (very nauseous) (J. Y. Tan, Wang, et al., 2022). Peak CIN was defined as the highest nausea rating among 20 nausea rating points from a 5-day diary. A y score of 3 for peak CIN indicates a moderate-severe level (Keles et al., 2020). Acute and delayed CINV Te MAT is the only tool available that separately records acute and delayed CINV (Peoples et al., 2019). The Te MAT has eight items that assess the onset of vomiting, frequency of vomiting, onset of nausea, and intensity of nausea. Excellent psychometric properties of the Mandarin Chinese version were reported among a group of Chinese cancer patients with various cancer diagnoses (Hasni et al., 2022). Each MAT item can be scored individually, and a total CINV score, nausea score, vomiting score, and different domain scores (acute/delayed CINV, acute/delayed nausea, and acute/delayed vomiting) can be generated by summing the relevant items. items, with lower scores indicating better results (Wanchai & Armer, 2020).

INVR anticipatory nausea and vomiting has eight items that contribute to three domains of symptom experience (Kapila et al., 2019), symptom occurrence, and symptom distress Each item is rated on a 5-point Likert scale (0–4), and the total score can range from 0 to 32, with higher

scores indicating more severe emesis outcomes (Wanchai & Armer, 2020). The psychometric properties of the Mandarin Chinese version of INVR have been well established in cancer and obstetric patients in China.

The FACT-B is a BC-specific quality of life assessment consisting of four general subscales (physical, social/family, emotional, and functional well-being) and one BC-specific subscale. Each FACT-B item is rated on a 5-point Likert scale (0–4), and the total score can range from 0 to 148, with higher scores reflecting better quality of life (Ivan Fanani Qomusuddin & Siti Romlah, 2021). The Mandarin Chinese version of the FACT-B was used in this study, with appropriate psychometric properties documented in Chinese BC patients (Silang et al., 2023)

The instrument used in research to assess anxiety uses the Anxiety and Depression Scale (HADS). HADS (Hospital Anxiety and Depression Scale) aims to measure symptoms of anxiety (HADS Anxiety) and depression (HADS Depression). The HADS is widely used but shows ambiguous results regarding both factor structure and sex differences in the prevalence of depressive symptoms (J. Zhang et al., 2021).

Other studies also used data was collected through the form of demographic characteristics and the Spielberger State-Trait Anxiety Inventory (STAI) (Y. Zhang et al., 2023). The demographic characteristics form includes information such as age, gender, marital status, number of children, education level, employment status, and insurance status. The STAI is a standard questionnaire with 20 items, assessing an individual's current emotions and response time (situational anxiety). The scientific validity and reliability of the STAI was evaluated and approved by scores of 20-31 (mild anxiety), 32-42 (low to moderate anxiety), 43-53 (moderate to high anxiety), 64-64 (severe anxiety), 65-75 (high and severe anxiety). anxiety), and

over 76 (extreme anxiety) (Silang et al., 2023).

DISCUSSION

The intervention provided in the study "The Effect of Foot Reflexology Massage on Anxiety in Women with Breast Cancer" This study aims to determine the effect of foot reflexology massage on anxiety in women with breast cancer who are referred to the Ayatollah Khansari Hospital in Arak, Iran (Rezaei et al., 2022). Based on the results, no significant differences were observed between the intervention and control groups in terms of age, gender, education level, and employment status at the start of the study. Most participants (88%) were urban residents in this study (Behzadmehr et al., 2020).

In addition, the results of this study showed that there was no significant difference between the two intervention and control groups in terms of average anxiety scores at the start of the study, and the level of anxiety in both groups was moderate to high (Dai et al., 2023). In addition, although the average anxiety in the intervention group was lower than that in the control group at the end of the study, this difference was not statistically significant between the two groups (Özdelikara & Tan, 2017). However, the results of several previous studies showed the positive effect of foot reflexology massage in reducing anxiety in patients. The effectiveness of reflexology massage on the anxiety of men undergoing coronary angiography reduced their anxiety 1 hour after reflexology massage and before angiography (Unlu et al., 2018).

The available evidence demonstrated some inconsistency across studies. While several studies suggested that reflexology may reduce anxiety and other treatment-related symptoms, other studies did not find statistically significant improvements in anxiety outcomes (Rezaei et al., 2022). Similar variability was observed for nausea-related outcomes, where some benefits

were reported, although not all differences reached statistical significance. These variations may reflect differences in intervention protocols, sample sizes, participant characteristics, outcome measures, and duration of follow-up. Therefore, the effectiveness of reflexology should be interpreted cautiously.

Apart from that, the results of research conducted by Samir et al. hemodialysis patients showed significant differences in the anxiety scores of intervention group patients before and after reflexology; therefore, reflexology reduces the patient's anxiety level (Vallim et al., 2019). Comparison of the average anxiety scores before and after the intervention in the reflexology group resulted in lower anxiety after the intervention, compared to the group at baseline; However, a comparison of the mean anxiety before and after the intervention in the control group did not show any difference (Choudhari et al., 2017).

Based on the results, no significant differences were observed between the intervention and control groups in terms of age, gender, education level, and employment status at the start of the study (Wang et al., 2022). Most participants (88%) were urban residents in this study. In addition, the results of this study showed that there was no significant difference between the two intervention and control groups in terms of average anxiety scores at the start of the study, and the level of anxiety in both groups was moderate to high.

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which reduced their anxiety 1 hour after reflexology and before angiography (Rezaei et al., 2022).

Apart from that, the results of research conducted by Samir et al. hemodialysis patients showed significant differences in the anxiety scores of intervention group patients before and after reflexology; therefore, reflexology reduces the patient's anxiety level.

CONCLUSION

The conclusion of this mini systematic review is that reflexology massage In breast cancer patients undergoing chemotherapy and having high expectations of CIN, attempts to increase the efficacy of acupressure bands in controlling CIN through manipulation of expected efficacy were unsuccessful. However, acupuncture pressure bands with relaxation music had varying effects on CIN based on the type of chemotherapy regimen or level of chemotherapy in patients' anxiety and significantly reduced CIN for those receiving anthracyclines and/or having high anxiety. Considering that receiving doxorubicin and experiencing anxiety are known predictors of CIN, it seems likely that our intervention has excellent findings to provide the best outcomes for patients who need it most.

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