

ORIGINAL ARTICLE

Acupuncture and Related Therapies for Nausea and Vomiting among Patients with Cancer: A Systematic Review

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Abstract

Aims: This systematic review aims to evaluate the effectiveness of acupuncture in reducing chemotherapy-induced nausea and vomiting in cancer patients.

Methods: A comprehensive search was conducted for relevant randomized controlled trials (RCTs) published between 2017 and 2022, focusing on acupuncture as a treatment for nausea and vomiting, using multiple databases, including PubMed, CINAHL, MEDLINE, and Ovid, to ensure an inclusive approach. A total of eight studies met the inclusion criteria.

Selection Criteria: This systematic review exclusively included RCTs conducted in English language, involving adult patients with cancer. The scope was limited to acupuncture as a treatment for nausea and vomiting.

Data Collection and Analysis: The included studies were appraised using the Eleven-item Critical Appraisal Skills Program tool, which evaluated aspects such as study design, methodology, and research results.

Results: Several studies have demonstrated that acupuncture is associated with a reduction in chemotherapy complications, particularly vomiting and nausea. Notably, in some studies, the incidence of nausea and vomiting was lower in the acupuncture group compared to the control group at the beginning of chemotherapy.

Conclusions: Acupuncture and related therapies have positively improved cancer-related outcomes and reduced nausea and vomiting in cancer patients.

Keywords: Acupuncture; Chemotherapy; Patients; Cancer; Nausea and vomiting.

INTRODUCTION BACKGROUND

Nausea and vomiting are common side effects experienced by cancer patients undergoing chemotherapy [1]. These symptoms not only cause significant discomfort but can also negatively impact

patients' quality of life and overall treatment outcomes [2]. Although chemotherapy is a vital component in cancer treatment, the incidence of chemotherapy-induced nausea and vomiting (CINV) remains a major challenge [3]. To address this issue, various interventions have been explored, including

the use of acupuncture and related therapies.

Chemotherapy, a common treatment option for cancer patients, can lead to various side effects [4], with nausea and vomiting being the most prominent [5]. Chemotherapy-induced nausea and vomiting (CINV) can be divided into two phases: the acute phase, occurring within 24 hours after chemotherapy, and the delayed phase, which typically manifests between two to five days later [6]. The incidence of CINV is higher during the delayed phase compared to the acute phase. Although several pharmacological treatments are commonly used for CINV, their effectiveness varies among patients due to various factors, such as the chemotherapy regimen, specific drugs used, combination with other treatment modalities, and patient characteristics (e.g., age, sex, history of previous chemotherapy-induced emesis) [7]. While these treatments demonstrate greater efficacy in managing the acute phase, challenges persist in effectively treating the delayed phase. Therefore, there is a need to explore alternative approaches for managing CINV during this phase [8].

Problem Statement

Chemotherapy-induced nausea and vomiting present a significant burden for cancer patients, affecting their physical well-being, psychological state, and treatment adherence [2]. Despite advances in antiemetic medications, a substantial proportion of patients continue to experience CINV. These adverse effects can lead to nutritional deficiencies, dehydration, electrolyte imbalances, and in severe cases, treatment interruptions or discontinuations. Consequently, finding effective strategies to manage CINV is crucial for improving patients' comfort, treatment adherence, and overall treatment outcomes.

Acupuncture and Related Therapies

Acupuncture, a traditional medicine technique originating from Asia, has gained recognition as a potential adjunctive therapy for managing CINV. This method involves the insertion of fine needles into specific acupoints on the body, stimulating the body's natural healing response. Acupuncture is believed to restore the balance of energy flow, known as qi, within the body. By targeting specific acupoints, acupuncture may alleviate symptoms, including nausea and vomiting, providing a non-pharmacological approach to CINV management [9].

Objective of the Systematic Review

The aim of this systematic review is to evaluate the effectiveness of acupuncture and related therapies in reducing chemotherapy-induced nausea and vomiting among patients with cancer. By critically analyzing the available evidence from relevant randomized controlled trials (RCTs), this review intends to provide a comprehensive assessment of the impact of acupuncture on CINV. The review will focus on studies published between 2017 and 2022, assessing the quality of the evidence and identifying any potential limitations or gaps in the existing literature.

By systematically evaluating the efficacy of acupuncture and related therapies in managing CINV, this review aims to provide valuable insights into the potential benefits of integrating acupuncture into the standard care for cancer patients undergoing chemotherapy. The findings may inform healthcare professionals, patients, and caregivers about the role of acupuncture as an adjunctive therapy, ultimately contributing to improved symptom management and enhanced patient well-being during cancer treatment.

METHODS

Criteria for Study Inclusion

This systematic review focused on randomized controlled trials (RCTs) that are relevant to cancer treatment-induced nausea and vomiting. The participants included in the studies were individuals affected by cancer treatment who experience nausea and vomiting. There were no restrictions based on sex or race, but the minimum age for participants was 18 years or older. Patients with medical illnesses other than cancer that may cause nausea and vomiting were excluded from this review.

Inclusion Criteria:

1. Randomized controlled trials (RCTs) only
2. Participants with a diagnosis of cancer
3. Acupuncture as a treatment specifically for nausea and vomiting
4. Adult patients (18 years and older)

Exclusion Criteria:

1. Articles not written in English
2. Participants with a history of gastrointestinal diseases unrelated to cancer
3. Acupuncture used to treat symptoms other than nausea and vomiting.

These inclusion and exclusion criteria were established to ensure the review focuses on RCTs examining the effectiveness of acupuncture for managing nausea and vomiting in cancer patients, thereby providing a comprehensive analysis of the available evidence.

Search Methods for Study Identification

We conducted comprehensive searches on the following databases: PubMed, CINAHL, MEDLINE, and Ovid. The search process involved the use of specific terms to ensure the inclusion of relevant studies.

- For identifying acupuncture interventions, the search strategy included

terms such as Acupuncture, Acupuncture therapy, Acupuncture treatment, and Electroacupuncture.

- To identify studies focusing on nausea and vomiting, the search strategy included terms such as Nausea, Vomiting, and Emesis.
- To target the study population, the search strategy included terms such as Cancer patient, Oncology patients, and Patient with cancer.

These search strategies were designed to retrieve studies that specifically addressed acupuncture interventions for managing nausea and vomiting in cancer patients. By employing a comprehensive search across multiple databases, we aimed to ensure the inclusion of relevant studies in this systematic review.

Data Collection and Analysis

Selection of Studies:

Three authors independently screened the titles and abstracts of the searched studies, ensuring that duplicates from different databases were excluded. Following this initial screening, the full text of the selected studies was reviewed by two additional reviewers to verify their compliance with the inclusion criteria. The process of study selection is summarized in a PRISMA diagram (Figure 1).

Data Extraction and Management:

Data extraction was performed to review the relevant documents. Information regarding the study population, type of intervention, outcomes, symptoms, and conclusions were collected from the included studies.

Assessment of Risk of Bias in Included Studies:

Two reviewers assessed the quality of the included studies using a Risk of Bias tool comprising seven items: random sequence

generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, completeness of outcome data, completeness of reporting, and other sources of bias. Each item was categorized as high, low, or unsure.

Ethical Considerations:

This study was deemed exempt from IRB approval by the Human Subjects Protection guidelines. The data used in this study were publicly available, and individual patient identifiability was preserved. Proper citation and referencing were employed to ensure avoidance of plagiarism.

By following rigorous procedures for study selection, data extraction, risk of bias assessment, and ethical considerations, this systematic review aimed to provide reliable and unbiased findings on the effectiveness of acupuncture in managing chemotherapy-induced nausea and vomiting in cancer patients.

RESULTS

Description of Studies:

In this systematic review, a total of 2,131 records were initially identified. After removing duplicate records, 44 studies were assessed for eligibility. Among these, 32 reports were considered, but ultimately only eight studies met the inclusion criteria and were included in this systematic review. The remaining 24 studies were excluded.

Overall Completeness and Applicability of Evidence:

Some studies discussed the prevention of CINV and the use of acupuncture in cancer patients before chemotherapy, rather than using acupuncture solely for symptom relief [5,6,10,11]. The techniques employed, including acupuncture, acupuncturists, massage therapists, auricular acupuncture, and electroacupuncture, have shown

potential, but further application and research are needed to enhance inclusiveness.

Quality of the Evidence & Risk of Bias:

To minimize bias, all studies that examined the use of acupuncture for treating chemotherapy-induced nausea and vomiting employed randomized controlled trial (RCT) designs. The included studies exhibited statistical power, randomness, and a high level of evidence. However, to generalize the results, larger trials are required to obtain more comprehensive and confirmatory findings.

Limitations and Potential Biases in the Review Process:

Some limitations and potential biases in this review include variations in acupoint therapies, differences in chemotherapeutic regimens, and variations in cancer stages, which may contribute to heterogeneity among the studies. Additionally, the restriction to studies published in English or Chinese introduces a potential risk of publication bias. Some studies had small sample sizes and limited randomization, emphasizing the need for further research and experimentation.

Agreements and Disagreements with Other Studies or Reviews:

As depicted in Table 1, studies concurred that acupuncture played a significant role in reducing chemotherapy-induced nausea and vomiting (CINV), and patients who received acupuncture treatment required fewer antiemetic and experienced milder nausea compared to others. It was also been observed that both acupuncturists and massage therapists can help mitigate the side effects of cancer and its treatment.

Synthesis of Results:

Several studies have demonstrated that traditional acupuncture can alleviate clinical symptoms, while some studies have shown no

significant effect of acupuncture on acute CINV. However, acupuncture has been found to relieve symptoms in follow-up periods. It is important to note that acupuncture cannot replace traditional antiemetic drugs, but starting acupuncture treatment before chemotherapy initiation in high-risk patients may be more effective in managing CINV [5]. True acupuncture (TA) has been found to have a better effect on secondary symptoms of chemotherapy, such as nutritional status, but no significant effect on depression and anxiety. Patients treated with verum acupuncture required fewer antiemetics and experienced milder nausea compared to other patients [12]. Acupuncture is considered an appropriate adjunctive therapy for CINV, although the available supporting evidence is not yet sufficient due to high or unclear risk of bias in most of the analyzed RCTs [3]. Laser acupuncture has shown effectiveness in relieving nausea within 5 days of chemotherapy and reducing the number of vomiting episodes on Days 2 and 3 after chemotherapy [13]. On the other hand, a study indicated that open dialogue about complementary alternative medicine does not outperform standard care in reducing CINV; however, it may improve patients' psychological state and quality of life (QOL) [14].

Summary of Main Results:

Acupuncture has demonstrated efficacy in reducing chemotherapy-related complications such as vomiting and nausea, as supported by several studies [15,16]. Additionally, acupuncture has shown promise in alleviating various symptoms associated with breast cancer treatment. Chinese medicine, including acupuncture, has been found to reduce fatigue among palliative cancer patients [17,18]. Laser acupuncture has been effective in relieving

chemotherapy-induced nausea and vomiting [13]. Patients who undergo acupuncture treatment require fewer antiemetics and experience milder nausea compared to those who do not receive acupuncture.

Acupuncturists and massage therapists can help reduce the side effects of cancer and its treatment [19]. Open dialogue about complementary alternative medicine does not outperform standard care in reducing CINV, but it may improve patients' psychological state and quality of life (QOL). Auricular acupuncture has been found to be safer and more effective than electroacupuncture in reducing CINV [20].

DISCUSSION

The findings of this systematic review support the effectiveness of acupuncture in reducing chemotherapy-induced nausea and vomiting (CINV). Acupuncture has been recognized as a complementary therapy that can alleviate clinical symptoms associated with CINV. Several studies included in this review have shown positive outcomes, demonstrating that acupuncture can provide relief for patients experiencing nausea and vomiting as a result of chemotherapy treatment.

One aspect highlighted in the reviewed studies is the distinction between the acute phase and delayed phase of CINV. While some studies reported no significant effect of acupuncture on acute CINV, they found that acupuncture showed promise in relieving symptoms during the follow-up periods [5]. This suggests that acupuncture may have a more pronounced impact on delayed-phase CINV. It is worth noting that acupuncture should not replace traditional antiemetic drugs but can serve as an adjunctive therapy to enhance symptom management in high-risk patients. Furthermore, the review

revealed that true acupuncture (TA) had a better effect on secondary symptoms of chemotherapy, such as improving nutritional status [5]. However, it did not show a significant effect on psychological aspects such as depression and anxiety. Conversely, patients receiving verum acupuncture demonstrated reduced reliance on antiemetics and experienced milder nausea compared to those in control groups [12]. These findings indicate that acupuncture has the potential to improve the overall well-being and quality of life of cancer patients undergoing chemotherapy.

While the evidence supporting the use of acupuncture in CINV treatment is promising, it is important to acknowledge the limitations of the reviewed studies. Some studies had a small sample size, and the randomization process was limited. Additionally, variations in acupoint therapies, different chemotherapeutic regimens, and varying cancer stages among the studies may introduce heterogeneity and potential biases. To address these limitations and provide more conclusive evidence, further large-scale trials with rigorous methodologies are warranted. In terms of the overall completeness and applicability of the evidence, it is evident that acupuncture, in conjunction with standard care, can offer a valuable therapeutic option for managing CINV [21]. Acupuncture techniques, including traditional acupuncture, auricular acupuncture, and laser acupuncture, have shown promise in relieving symptoms and improving outcomes for cancer patients. However, more research and application of these techniques are necessary to enhance inclusiveness and expand their utility across different patient populations.

In conclusion, this systematic review highlights the potential benefits of

acupuncture in reducing chemotherapy-induced nausea and vomiting among cancer patients. Acupuncture has shown efficacy in relieving various symptoms associated with cancer treatment, particularly in the delayed phase of CINV. While it cannot replace traditional antiemetic drugs, it can serve as a complementary therapy to enhance symptom management and improve patients' overall well-being. However, further large-scale trials and standardized methodologies are required to strengthen the evidence base and provide more comprehensive guidelines for the use of acupuncture in CINV treatment.

Author contributions:

S.J. and K.A. conceived and designed the systematic review. S.J. conducted the literature search and screened the articles for inclusion. A.A. and H.A. independently verified the article selection process. K.G. and M.B. performed data extraction from the selected studies. S.J. and K.A. conducted the quality assessment of included studies, with input from A.A. Any discrepancies were resolved by consensus among all. S.J. drafted the initial version of the systematic review manuscript, and all authors provided critical revisions. All authors have read and approved the final version of the manuscript for submission.

Declaration of conflicting interests: We hereby certify that this material, which we now submit for the journal is entirely our own work and there is “No conflict of interest has been declared.”

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Data availability statement: Please note that as a systematic review, this study does not involve the collection of primary data. Instead, we have synthesized and analyzed

data from previously published articles, which are duly referenced in the reference list. Readers interested in accessing the original data sources should refer to the cited references or contact the corresponding author for further information.

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العلاج بالوخز بالإبر والعلاجات المرتبطة بها للغثيان والقيء لدى مرضى السرطان: مراجعة منهجية

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الملخص

أهداف الدراسة : تهدف هذه المراجعة المنهجية إلى تقييم فعالية العلاج بالوخز بالإبر في تقليل الغثيان والقيء الناتج عن العلاج الكيميائي لدى مرضى السرطان.

منهجية الدراسة : تم إجراء بحث شامل عن التجارب العشوائية المضبوطة ذات الصلة التي نُشرت بين عامي 2017 و2022، مع التركيز على العلاج بالوخز بالإبر كوسيلة لعلاج الغثيان والقيء، باستخدام قواعد بيانات متعددة مثل PubMed، و CINAHL، و MEDLINE، و Ovid لضمان شمولية البحث.

النتائج: تشير الدراسات إلى أن العلاج بالوخز بالإبر مرتبط بانخفاض في مضاعفات العلاج الكيميائي، وخاصة الغثيان والقيء. وفي بعض الدراسات، كان معدل الغثيان والقيء أقل في مجموعة العلاج بالإبر مقارنة بالمجموعة الضابطة في بداية العلاج الكيميائي.

الاستنتاج : يظهر العلاج بالوخز بالإبر والعلاجات المرتبطة بها تأثيرًا إيجابيًا في تحسين النتائج الصحية المرتبطة بالسرطان وتقليل الغثيان والقيء لدى مرضى السرطان.

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