

Efficacy of Different Acupuncture Methods in Treating Cancer-Induced Fatigue: A Network Meta-Analysis

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Data analysis.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY2025100092

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 25 October 2025 and was last updated on 25 October 2025.

INTRODUCTION

Review question / Objective This study employed network Meta-analysis to evaluate the clinical efficacy of various acupuncture approaches in treating cancer-related fatigue, providing evidence-based guidance for selecting the most appropriate treatment strategy.

Rationale Search computerized databases from self-built databases to July 31, 2024, published in PubMed, The Cochrane Library, Embase, CNKI, VIP, China Biomedicine, and Wanfang databases for randomized controlled trials on acupuncture in the treatment of cancer-related fatigue. Data extraction and quality evaluation were independently performed by two researchers, and network Meta-analysis was conducted using

Stata16.2 software. A computer search was conducted to retrieve randomized controlled trials on the application of external therapeutic methods in Traditional Chinese Medicine (TCM) for cancer-related fatigue, published in China CNKI, VIP, biomedical databases, Wanfang Data Knowledge Service Platform, PubMed, Web of Science, Embase, and The Cochrane Library from the self-built database to September 30, 2023. Data extraction and quality evaluation were independently performed by two researchers, and a network Meta-analysis was conducted using Stata 16.2 software.

Condition being studied Cancer-related fatigue (CRF) is a subjective experience characterized by emotional, physical, and cognitive exhaustion disproportionate to recent physical activity,

stemming from both the disease and treatment [1]. As a common adverse reaction across cancer treatment phases, studies indicate CRF occurs in 90% of chemotherapy patients and over 75% of radiotherapy patients [2-3], with chemotherapy patients showing the highest incidence. This persistent fatigue can undermine treatment adherence and even lead to treatment discontinuation [3]. Research also shows that fatigue in some cancer patients may persist for 1-2 years post-treatment, negatively impacting overall quality of life and family well-being [4]. However, as a subjective experience, CRF is often overlooked by both healthcare providers and patients. Consequently, reducing CRF incidence and improving patients' fatigue status has become a critical challenge in cancer care. Given the side effects of drug therapies, non-pharmacological interventions are now recommended by global guidelines. Acupuncture, a common non-pharmacological approach, has shown promising results in Meta-analyses comparing acupuncture and moxibustion for CRF. However, limited research compares their clinical effectiveness. Unlike traditional Meta-analyses, network Meta-analysis prioritizes interventions by ranking multiple treatment options. This study aims to conduct a network meta-analysis to compare the efficacy of various acupuncture techniques in treating cancer-related fatigue, providing evidence for clinical application.

METHODS

Search strategy Using a combination of subject terms and free terms, computer retrieval was conducted from the database construction to July 31, 2025, in databases such as PubMed, Web of Science, Embase, The Cochrane Library, China National Knowledge Infrastructure (CNKI), VIP, China Biomedicine, and Wanfang, to identify experimental studies on the effects of acupuncture in treating cancer-related fatigue. Chinese search terms included "fatigue", "cancer-related fatigue", "tumor-related fatigue", "acupuncture", "needling", "electroacupuncture", "fire needle", "warm needle", "moxibustion", "moxa therapy", "millet moxibustion", "garlic-separated moxibustion", "thunderfire moxibustion", "garlic-coated moxibustion", "acupoint embedding", "acupoint patching", "ear acupuncture", and "warm moxibustion". English search terms included: "fatigue", "cancer-related fatigue", "CRF", "acupuncture", "needling", "moxibustion", "electroacupuncture", "ear/auricular", "hydro-acupuncture/point injection", "plumbblossom/dermal", "intradermal", "w.

Participant or population Patients diagnosed with cancer and experiencing cancer-related fatigue.

Intervention Acupuncture.

Comparator Non-acupuncture;.

Study designs to be included Randomized controlled trial.

Eligibility criteria 1.1.1 Inclusion Criteria (1) Study Type: Randomized controlled trial; (2) Participants: Patients diagnosed with cancer and experiencing cancer-related fatigue; (3) Intervention: One group received acupuncture treatment while the other received non-acupuncture intervention; (4) Outcome Measure: Cancer-related fatigue assessment score; (5) Language: Chinese or English; (6) Accessible data from unpublished grey literature.

1.1.2 Exclusion criteria: (1) case studies or studies with only one group of subjects; (2) literature using ordinal data for analysis; (3) duplicate publications; (4) conference papers or those with unavailable full texts.

Information sources PubMed, Web of Science, Embase, The Cochrane Library, China National Knowledge Infrastructure (CNKI), VIP, China Biomedicine, and Wanfang databases.

Main outcome(s) Cancer-related fatigue score.

Quality assessment / Risk of bias analysis The quality assessment was conducted using the Cochrane Handbook [5] recommended tool for assessing the risk of bias in randomized controlled trials, covering aspects such as randomization methods, concealment of allocation and methodological validity, blinding of participants, assessors, and outcomes, intention-to-treat analysis, publication bias, and other potential biases.

Strategy of data synthesis Stata 16.1 software was used for network meta-analysis and figure generation [6]. The cancer-related fatigue score served as the primary outcome measure in this study, with MD or SMD and their 95%CI serving as statistical measures for effect analysis.

Subgroup analysis Consistency of closed-loop systems was evaluated using the inconsistency factor (IF) and its 95% CI, where IF values with 95%CI containing 0 indicated good consistency, suggesting alignment between direct and indirect evidence. Statistical significance was defined as $P < 0.05$.

Sensitivity analysis For comparisons among multiple interventions, the area under the cumulative rank probability (SUCRA) curve was calculated to assess the superiority of different acupuncture methods. Publication bias was identified using funnel plots.

Language restriction chinese/english.

Country(ies) involved China.

Keywords Acupuncture; Moxibustion; Carcinogenic Fatigue; Reticular Meta.

Contributions of each author

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