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Subgroup Effects of Mindfulness on Cancer-Related Fatigue: A Systematic Review & Meta-Analysis

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ADMINISTRATIVE INFORMATION

Support - No financial support was received.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 7 September 2025 and was last updated on 7 September 2025.

INTRODUCTION

Review question / Objective To evaluate the effectiveness of mindfulness-based interventions (MBIs) on cancer-related fatigue (CRF) and to explore potential moderating factors such as age, cancer type, treatment stage, and intervention setting.

Rationale Cancer-related fatigue (CRF) is one of the most prevalent and distressing symptoms among cancer patients, affecting up to 70% across the disease trajectory. Pharmacological treatments provide limited relief, underscoring the importance of effective non-pharmacological strategies. Mindfulness-based interventions (MBIs) have demonstrated beneficial effects in fatigue and improving quality of life. However, previous reviews have been constrained by narrow inclusion criteria, restricted populations, and limited subgroup analyses. Therefore, a comprehensive systematic review and meta-analysis is wanted to evaluate the effectiveness of MBIs across diverse cancer populations, intervention formats, and treatment stages, as well as to explore potential moderating factors such as age, cancer type, and treatment timing.

Condition being studied Cancer-related fatigue (CRF), a prevalent and distressing symptom experienced by patients across different cancer types and treatment stages.

METHODS

Search strategy Included: ("cancer" OR "tumor" OR "oncology") AND ("mindfulness" OR "mindfulness-based stress reduction" OR "MBSR") AND ("fatigue" OR "tiredness" OR "weakness"). No restrictions on publication year or language.

Participant or population Adult patients (≥18 years) with a diagnosis of cancer, at any stage of treatment or survivorship.

Intervention Mindfulness-based interventions (MBIs), including mindfulness-based stress reduction (MBSR), mindfulness-based cognitive

therapy (MBCT), mindful yoga, and other structured mindfulness programs.

Comparator Usual care, waitlist control, or non-mindfulness interventions.

Study designs to be included Randomized controlled trials (RCTs).

Eligibility criteria Inclusion: RCTs assessing MBIs for CRF in adult cancer patients; studies providing pre- and post-intervention fatigue outcomes.
Exclusion: Non-cancer populations, non-MBI interventions, qualitative studies, case reports, reviews, conference abstracts, studies with insufficient fatigue data.

Information sources Seven databases searched: PubMed, CINAHL Plus with Full Text, Medline (ProQuest), ProQuest Dissertations & Theses, Embase, Cochrane Library, and National Digital Library of Theses and Dissertation in Taiwan.

Main outcome(s) Fatigue scores measured by validated instruments (e.g., Fatigue Symptom Inventory, Cancer Fatigue Scale, EORTC-QLQ-C30).

Quality assessment / Risk of bias analysis The Cochrane Risk of Bias 2 tool (RoB2) was used to assess risk across domains of randomization, deviations from interventions, missing data, outcome measurement, and reporting bias.

Strategy of data synthesis Random-effects meta-analysis (Comprehensive Meta-Analysis). Effect sizes estimated with Hedges' g and 95% confidence intervals. Heterogeneity assessed using Cochran's Q and I^2 statistics.

Subgroup analysis Subgroup analyses examined age, cancer type, treatment stage, and intervention setting.

Sensitivity analysis We will do sensitivity analyses to check the stability of the results. This will include removing one study at a time, excluding high-risk studies, and reanalyzing the data to see if the effect sizes stay consistent.

Country(ies) involved Taiwan.

Keywords Cancer-related fatigue; Mindfulness-based interventions; Meta-analysis; Nursing practice; Nonpharmacological intervention.

Contributions of each author

Author 1 - Chia-Ling Li - Author 1: Designed the study, collected data, performed the analysis, and revised the manuscript.
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Author 2 - Pei-Ying Chen - Author 2: Resolved disagreements and reviewed the manuscript.
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