INPLASY PROTOCOL

To cite: Wu et al. The efficacy and acceptability of light therapy in ameliorating cancer-related fatigue in cancer patients: an updated meta-analysis of randomized controlled trials. Inplasy protocol 202140090. doi: 10.37766/inplasy2021.4.0090

Received: 17 April 2021

Published: 17 April 2021

Corresponding author:
Ping-Tao Tseng

ducktseng@gmail.com

Author Affiliation:
Prospect Clinic for Otorhinolaryngology & Neurology, Kaohsiung City, Taiwan

Support: **None.**

Review Stage at time of this submission: **Data analysis.**

Conflicts of interest:
None declared.

The efficacy and acceptability of light therapy in ameliorating cancer-related fatigue in cancer patients: an updated meta-analysis of randomized controlled trials

Wu, MK[1]; Tseng, PT[2]; Matsuoka, YJ[3].

Review question / Objective: **To date, there have been no standardized pharmacologic or non-pharmacologic interventions to ameliorate cancer-related fatigue. The aim of the current updated meta-analysis was to address the efficacy of light therapy in improving cancer-related fatigue in cancer participants.**
Condition being studied: **To directly address the efficacy of light therapy in improving cancer-related fatigue.**
Information sources: **electronic search on PubMed, ClinicalKey, Cochrane CENTRAL, Embase, ProQuest, ScienceDirect, and Web of Science for publications of randomized controlled trials; contact with authors with email; applied search on trial registration site and grey literature.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 April 2021 and was last updated on 17 April 2021 (registration number INPLASY202140090).

INTRODUCTION

Review question / Objective: **To date, there have been no standardized pharmacologic or non-pharmacologic interventions to ameliorate cancer-related fatigue. The aim of the current updated meta-analysis was to address the efficacy of light therapy in improving cancer-related fatigue in cancer participants.**

Rationale: **Light therapy, which is easy and inexpensive to administer, has received attention in the amelioration of cancer-related fatigue. Some early randomized controlled trials (RCTs) investigated the potential benefit of light therapy in cancer-**

related fatigue and provided controversial results. A recent Bayesian network meta-analysis of multiple non-pharmacologic interventions concluded that light therapy was not significantly associated with higher improvement in fatigue compared to controls. Over time, there have been several new RCTs investigating the efficacy of light therapy in cancer-related fatigue management. Some of these new RCTs provided new viewpoints about the potential role of light therapy, such as concomitant depressive symptoms and the potential placebo effect with dim red light (DRL), in ameliorating cancer-related fatigue. The aim of the current updated meta-analysis was to provide updated evidence and to directly address the efficacy of light therapy in improving cancer-related fatigue. Furthermore, we will also examine the placebo effect and the potential confounding effects of the aforementioned factors, such as concomitant psychiatric comorbidities, on cancer-related fatigue amelioration.

Condition being studied: To directly address the efficacy of light therapy in improving cancer-related fatigue.

METHODS

Search strategy: Searched PubMed, ClinicalKey, Cochrane CENTRAL, Embase, ProQuest, ScienceDirect, and Web of Science for publications of randomized controlled trials.

Participant or population: Cancer survivor.

Intervention: Light therapy.

Comparator: Placebo-controlled.

Study designs to be included: Randomized controlled trials.

Eligibility criteria: (1) RCTs investigating changes in cancer-related fatigue by light therapy in cancer patients, (2) RCTs using a placebo-control, and (3) RCTs investigating different efficacies in changes of fatigue by the intervention.

Information sources: Electronic search on PubMed, ClinicalKey, Cochrane CENTRAL, Embase, ProQuest, ScienceDirect, and Web of Science for publications of randomized controlled trials; contact with authors with email; applied search on trial registration site and grey literature.

Main outcome(s): The change in fatigue severity after the light therapy intervention.

Additional outcome(s): Secondary outcomes were changes in depressive symptoms and quality of life. The safety profile was defined as the rate of any adverse event. Acceptability was calculated using the drop-out rate. Drop-out was defined as termination of the intervention before the end of the study for any reason.

Data management: We extract data and input into a predetermined excel file to manage the records and data.

Quality assessment / Risk of bias analysis: To investigate the methodological quality of the recruited studies, we used the Cochrane risk of bias tool, which consists of seven main items (randomization, concealment, blindness of participants, blindness of investigator, attrition bias, reporting bias, and other bias).

Strategy of data synthesis: This meta-analysis was conducted using random-effects meta-analysis models with effect size of Hedges' g.

Subgroup analysis: We performed a subgroup meta-analysis according to whether psychiatric disorders were excluded at baseline (with psychiatric comorbidities vs. without psychiatric comorbidities).

Sensitivity analysis: A sensitivity test was performed by the one-study-removal method, in which one study was excluded from analyses at a time to observe whether the results of meta-analysis were biased by an outlier.

Language: No restriction.

Country(ies) involved: Taiwan.

Keywords: light therapy; cancer-related fatigue; meta-analysis; circadian rhythm; evidence-based medicine.

Dissemination plans: In the peer review publication.

Contributions of each author:

Author 1 - Ming-Kung Wu - work as corresponding author.
Email: mingkung180@gmail.com
Author 2 - Ping-Tao Tseng - work as corresponding author.
Email: ducktseng@gmail.com
Author 3 - Yutaka J Matsuoka - work as corresponding author.
Email: yumatsuo@ncc.go.jp