INPLASY

Assessing the Impact of Exercise on Quality of Life in Advanced-stage Cancer Patients: A Network Meta-analysis of Randomized Controlled Trials

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ADMINISTRATIVE INFORMATION

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202430068

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 16 March 2024 and was last updated on 16 March 2024.

INTRODUCTION

Review question / Objective To evaluate the effectiveness of various exercise interventions (aerobic only, strength only, or a combination of both) on improving the quality of life (QoL) in patients with advanced-stage cancer.

Condition being studied The condition being studied is the impact of exercise interventions on the quality of life in patients with advanced-stagecancer.

METHODS

Participant or population Patients with advanced-stage cancer (Stage III-IV) across various cancer types, undergoing different treatment regimens.

Intervention Exercise.

Comparator Control.

Study designs to be included Randomized Controlled Trials (RCTs), Cohorts, Case-Control Studies.

Eligibility criteria Inclusion Criteria:Participants must be diagnosed with Stage III or IV cancer, as defined in prior studies referenced.Participants enrolled in randomized controlled trials (RCTs) focusing on the effect of exercise-based interventions on quality of life indicators.Studies providing data on quality of life metrics before and after the intervention.Exclusion Criteria:Studies lacking quality of life metrics or focusing solely on the functional aspects of quality of life without a comprehensive assessment.Studies without baseline data or failing to incorporate exercise-based interventions.Studies excluding advanced-stage cancer patients or not adhering to randomized controlled trial methodologies.Studies characterized by incomplete datasets or involving patients pre-treated with exercise interventions.Studies based solely on protocol documentation without actual data on patient outcomes.

Information sources The information sources for the network meta-analysis include:
PubMed
Embase
Web of Science
Cochrane Reviews
Cochrane Central Register of Controlled Trials
These databases were searched up to February 24, 2023, utilizing a specific set of keywords related to advanced cancer, palliative care, quality of life, physical activity, and randomized trials, without any language restrictions. Additional studies were identified through manual searches of the bibliographies of selected review articles and relevant studies.

Main outcome(s) The main outcomes assessed were changes in quality of life (QoL), measured using structured scales such as the European Organization for Research and Treatment of Cancer Quality-of-Life Questionnaire-Core 30 (EORTC QLQ-C30), the Functional Assessment of Cancer Therapy-General (FACT-G), and the Short Form-36 Health Survey(SF-36).

Quality assessment / Risk of bias analysis
Quality assessment and risk of bias analysis were conducted using the Cochrane risk of bias tool for randomized trials (version 2, RoB 2), which evaluates six key dimensions to ascertain study quality: the process of randomization, adherence to the allocated intervention, completeness of outcome data, measurement of the outcome, selection of the reported result, and overall bias. This comprehensive approach ensures a robust evaluation of the included studies' methodological rigor and the reliability of their findings.

Strategy of data synthesis The data synthesis strategy employed a network meta-analysis (NMA) approach, enabling the simultaneous comparison of multiple exercise interventions. This method constructs a comprehensive network of evidence, incorporating both direct comparisons between interventions and indirect comparisons across studies. A random effects model was used to account for variability within and between studies, allowing for the estimation of effect sizes and rankings of the interventions based on their impact on quality of life outcomes for patients with advanced-stage cancer. Sensitivity analyses were conducted to test the robustness of the findings, including a leave-one-out approach and adjustment of pre-post correlation coefficients. The synthesis aimed to provide a nuanced understanding of how different exercise modalities support quality of life in this patient population.

Subgroup analysis NR.

Sensitivity analysis Two sensitivity analyses were conducted to enhance the reliability of the study's findings:
Leave-One-Out Approach: This analysis methodically excluded one study at a time from the dataset to examine if any single study disproportionately influenced the overall results. This approach assessed the stability and consistency of the conclusions regarding the improvement in quality of life.
Adjustment of Pre-Post Correlation Coefficients: Initially assuming a pre-post correlation coefficient of 0.8, based on the Cochrane Handbook's recommendation, a sensitivity analysis with a coefficient of 0.5 was also performed. This analysis aimed to examine the impact of different correlation coefficients on the calculated mean and standard deviation of changes in quality-of-life scores, including the direction, magnitude, statistical significance, and ranking of the effects.
These sensitivity analyses were essential for verifying the robustness and credibility of the network meta-analysis findings, ensuring that conclusions were not affected by selective study inclusion or assumptions made during data analysis.The data synthesis strategy employed a network meta-analysis (NMA) approach, enabling the simultaneous comparison of multiple exercise interventions. This method constructs a comprehensive network of evidence, incorporating both direct comparisons between interventions and indirect comparisons across studies. A random effects model was used to account for variability within and between studies, allowing for the estimation of effect sizes and rankings of the interventions based on their impact on quality of life outcomes for patients with advanced-stage cancer. Sensitivity analyses were conducted to test the robustness of the findings, including a leave-one-out approach and adjustment of pre-post correlation coefficients. The synthesis aimed to provide a nuanced understanding of how different exercise modalities support quality of life in this patient population.

Country(ies) involved Taiwan.

Keywords Advanced-stage cancer, Quality of life (QoL), Aerobic exercise, Strength training, Network meta-analysis, Randomized controlled trials (RCTs), Exerciseinterventions.

Contributions of each author
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