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Effectiveness of exercise on sleep quality in patients with Parkinson's disease: a Meta-analysis

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Not reported.

ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202480029

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 06 August 2024 and was last updated on 06 August 2024.

INTRODUCTION

Review question / Objective To evaluate the effectiveness of exercise for people with Parkinson's disease on sleep quality.

Condition being studied Parkinson's disease is a common neurodegenerative disorder among the elderly, characterized clinically by motor symptoms such as bradykinesia, tremor, and muscle rigidity, as well as non-motor symptoms. Sleep-related disorders, including rapid eye movement (REM) sleep behavior disorder, excessive daytime sleepiness, and insomnia, are among the most common non-motor symptoms in Parkinson's disease patients, with prevalence rates ranging from 9% to 83%. Moreover, up to 52% of patients with early-stage Parkinson's disease may experience sleep disorders.

METHODS

Participant or population Adult patients diagnosed with Parkinson's disease.

Intervention Common types of exercise (such as aerobic exercise, etc.), and have a detailed exercise program.

Comparator The control group received routine nursing and treatment.

Study designs to be included RCT.

Eligibility criteria The inclusion criteria are as follows: Subjects: Adult patients with a confirmed diagnosis of Parkinson's disease. Interventions: The experimental group undergoes exercise interventions, which include common types of exercise (such as aerobic exercise) with detailed exercise protocols; the control group receives routine care and treatment. Outcome measures: Primarily sleep quality. Study type: Randomized controlled trials.

Exclusion criteria: Studies where the full text is unavailable or data is missing. Conference abstracts, dissertations, and case studies. Non-

Chinese or non-English literature. Duplicate studies.

Information sources PubMed, Web of Science, Embase, Cochrane Library, CINAHL, CNKI, Wanfang Database, VIP Database, Chinese Biomedical Literature Database.

Main outcome(s) Sleep quality.

Quality assessment / Risk of bias analysis

Literature quality was evaluated by two researchers with evidence-based care according to the evaluation criteria of randomized controlled trials in the Cochrane Handbook of Systematic Review [6]. The included literature was independently evaluated from seven aspects: random sequence generation, assignment concealment, blinding of subjects or interveners, blinding of outcome evaluators, data integrity, selective reporting of results, and other sources of bias. Evaluation results are expressed as "low risk," "high risk," or "unclear." If the original document fully meets the above standards, the quality grade is grade A; if it partially meets the standards, the quality grade is grade B; if it does not meet the above standards at all, the quality grade is grade C.

Strategy of data synthesis Meta-analysis was performed using RevMan 5.4 software. First, heterogeneity was assessed based on the P-value and I² value. If $P > 0.1$ and $I^2 < 50\%$, it indicates no statistical heterogeneity among the studies, and a fixed-effects model was used. If $P \leq 0.1$ and $I^2 \geq 50\%$, it indicates statistical heterogeneity among the studies, and a random-effects model was used, with further subgroup analysis conducted based on the possible sources of heterogeneity. The significance level for the meta-analysis was set at $\alpha = 0.05$, with $P < 0.05$ considered statistically significant. The outcome measures of the included studies were continuous variables, and since different tools were used to assess sleep quality across the studies, standardized mean difference (SMD) was used as the effect size measure, and 95% confidence intervals (CI) were calculated.

Subgroup analysis Subgroup analysis was performed according to possible sources of heterogeneity.

Sensitivity analysis The stability of this study was evaluated by sensitivity analysis.

Country(ies) involved China.

Keywords Exercise; Sleep Quality; Parkinson Disease; Meta-Analysis; Evidence-Based Nursing.

Contributions of each author

Author 1 - Shuo Chang.

Author 2 - Liang Mu.

Author 3 - Ningkun Xiao.