INPLASY PROTOCOL

To cite: Li et al. Comparison of efficacy and safety of complementary and alternative therapies for Parkinson's disease: A Bayesian network meta-analysis protocol. Inplasy protocol 202080079. doi: 10.37766/inplasy2020.8.0079

Received: 18 August 2020

Published: 18 August 2020

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Support: **R & D program of Shandong**

Review Stage at time of this submission: **Preliminary searches.**

Conflicts of interest:
There is no conflict of interest in this article.

Comparison of efficacy and safety of complementary and alternative therapies for Parkinson's disease: A Bayesian network meta-analysis protocol

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Review question / Objective: **In recent years, the incidence of Parkinson's disease (PD) has been on the rise. However, the existing therapy of PD cannot fundamentally treat the disease. Meanwhile, the complementary and alternative therapies of PD have played a positive role in the treatment of PD. Traditional meta-analysis was only able to compare two interventions, while the efficacy and safety of many complementary and alternative therapies were not comparable. Therefore, this study compared the efficacy and safety of different complementary and alternative therapies through network meta-analysis (NMA).**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 18 August 2020 and was last updated on 18 August 2020 (registration number INPLASY202080079).

INTRODUCTION

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therapies through network meta-analysis (NMA).

Condition being studied: There are lots of complementary and alternative therapies for PD. Although their efficacy has been evaluated and reported in randomized controlled trials and systematic reviews, it is difficult for many doctors and patients to choose from many methods. Because traditional meta-analysis usually can only compare two interventions, how to screen the most effective and safest method in the face of multiple interventions has become a major clinical problem. The NMA can compare a variety of interventions, and then screen the best and safest interventions. Therefore, this article compares the efficacy and safety of multiple complementary and alternative therapies for PD through the idea of NMA, in order to provide corresponding help for clinicians and PD patients.

METHODS

Participant or population: Patients who have been diagnosed with primary PD are classified as grades 1 to 4 on the Hoehn and Yahr scales.

Intervention: The intervention measures in the treatment group include exercise, acupuncture, moxibustion, massage, Chinese herbal medicine, yoga, Taiji, music therapy.

Comparator: The control group was only treated with conventional western medicine.

Study designs to be included: Complementary and alternative therapies for PD (exercise, acupuncture, moxibustion, massage, Chinese herbal medicine, yoga, Tai Chi, music therapy) all related RCT and systematic reviews/meta-analysis.

Eligibility criteria: Patients who have been diagnosed with primary PD are classified as grades 1 to 4 on the Hoehn and Yahr scales. Take one or more anti-parkinsonian medications regularly. The age was between 45 and 75. No restrictions on gender and race.

Information sources: The databases we searched mainly included PubMed, Cochrane Clinical Controlled Trials Center Registry, Cochrane Library, EMBASE, Web of Science, and included all RCT of complementary and alternative therapies for PD.

Main outcome(s): The main results include the total score of the UPDRS scale, the PDQ-39 score.

Additional outcome(s): Secondary results include the Berg balance scale, the HAMD depression scale score, the PD sleep quality scale score, adverse reactions and other indicators.

Quality assessment / Risk of bias analysis: According to the Cochrane Collaboration's bias risk assessment tool, the assessment mainly includes 7 aspects . Each aspect is classified as "Yes", "No", and "unclear." It is conducted independently by 2 researchers. If they have different opinions, a third researcher will independently review and explain the reasons.

Strategy of data synthesis: Network meta-analysis. We will use STATA15.0 for NMA, and use a random effects model to merge data and draw evidence network. The Bayesian NMA is mainly based on the Markov-chain-Monte-Carlo (MCMC), because it is more flexible and can solve the statistical processing in the complex evidence network. At the same time, it can use the posterior probability obtained to rank all intervention measures involved in the comparison and distinguish the good and bad order. Therefore, we will use the MCMCin WinBUGS1.4.3 to perform Bayesian NMA of the random effects model . When running the WinBUGS1.4.3 program, for each MCMC, the number of iterations is run 100,000 times, and the first 5000 times are discarded as the number of annealing. The Brooks-Gelman-Rubin statistical method is used to assessment the convergence. At the same time, we will adjust the number of iterations and

annealing time according to the specific situation, and calculate the 95% CI of the corresponding effect value. We will use the surface under the cumulative ranking curve (SUCRA)values to rank the intervention measures. The SUCRA value ranges from 0 to 1. The closer to 1, the better the possibility of intervention becoming the best intervention.

Subgroup analysis: When there is heterogeneity between research results, we will conduct a comprehensive and systematic analysis on the reasons of heterogeneity, and carry out hierarchical treatment according to different sources of heterogeneity. If it is due to the variation between studies, the intervention measures are consistent, and the research objects come from different populations. The following aspects will be used: age, course of disease, gender.

Sensibility analysis: By changing some important factors that may affect the results of the merger, we observe the heterogeneity of different studies and whether the results of the merger have changed, and then judge the stability and strength of the results. For example, for missing data, re-analyze after entering reasonable values, and if there is a heterogeneous change, the missing data will be the source of heterogeneity. If the missing data is re-analyzed with reasonable values, the heterogeneity has not changed, which means that the sensitivity is low and the results are stable and reliable.

Country(ies) involved: China, USA.

Keywords: Parkinson's disease, complementary and alternative therapies, protocol, network meta-analysis.

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