INPLASY PROTOCOL

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None declared.

Comparative efficacy of noninvasive brain stimulation for the treatment of Parkinson disease: a systematic review and network meta-analysis

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Review question / Objective: **A variety of noninvasive brain stimulation have been applied in patients with Parkinson disease, but it is still controversial which is the best.**
Condition being studied: **Parkinson disease(PD) is a highly prevalent neurodegenerative disease characterized by tremor, bradykinesia, rigidity. Currently, a series of noninvasive brain stimulation(NIBS) have been developed for PD. Some meta-analysis has proved the efficacy of NIBS. However, it is still unclear which NIBS is best. Therefore, we will conduct the problem by network meta-analysis.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 27 March 2022 and was last updated on 27 March 2022 (registration number INPLASY202230151).

INTRODUCTION

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efficacy of NIBS. However, it is still unclear which NIBS is best. Therefore, we will conduct the problem by network meta-analysis.

METHODS

Participant or population: Patients diagnosed with PD.

Intervention: NIBS regimens of unlimited forms including transcranial magnetic stimulation (TMS), transcranial direct current stimulation (tDCS), transcutaneous vagus nerve stimulation nerve stimulation (tVNS).

Comparator: Sham-control or active control.

Study designs to be included: Randomized control trials.

Eligibility criteria: Peer-reviewed randomized control trials will be eligible for inclusion. And language will be restricted to English and Chinese.

Information sources: Eight electronic databases will be searched from set up to March 30, 2022 including PubMed, Cochrane library, Web of Science, Embase, China National Knowledge Infrastructure, Wanfang Database, VIP Database, and China Biology Medicine disc.

Main outcome(s): The total score of Unified Parkinson's Disease Rating Scale (UPDRS) or the score of UPDRS part III.

Additional outcome(s): Including but not limited to Emotion assessment (ie: Hamilton Depression Scale, Beck depression inventory), Cognition assessment (ie: Mini-mental State Examination, Montreal Cognitive Assessment), Quality of life/ living ability (ie: Activities of daily living, Parkinson's Disease Questionnaire), Task test (ie: time up and go) and so on.

Quality assessment / Risk of bias analysis: Cochrane risk-of-bias tool (ROB 2.0) will be used to evaluate the quality of included studies.

Strategy of data synthesis: Pair-wise meta-analysis will be performed by STATA. Network meta-analysis will be performed by OpenBUGS, R, and STATA. We will express continuous and binary outcomes in terms of mean differences and risk ratio, respectively, with corresponding 95 % confidence intervals. In pairwise meta-analysis, heterogeneity will be assessed by the I-square and a fixed model will be conducted if I-square $<$ 50%. Global inconsistency and local inconsistency will be assessed by STATA. R will be used to perform the statistical heterogeneity. Finally, league figure and surface under the cumulative ranking curve will be conducted by OpenBUGS.

Subgroup analysis: Subgroup analysis will be conducted if heterogeneity is too great.

Sensitivity analysis: Before selecting model, sensitivity analysis will be accomplished if sufficient studies are available and necessary.

Country(ies) involved: China.

Keywords: Parkinson Disease, noninvasive brain stimulation, NetworkMeta-analysis.

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