INPLASY PROTOCOL

To cite: LI et al. Effectiveness and Safety of Transcranial Direct Current Stimulation for the Treatment of Alzheimer' s disease: A protocol for systematic review and meta-analysis. Inplasy protocol 2020120120. doi: 10.37766/inplasy2020.12.0120

Received: 23 December 2020

Published: 24 December 2020

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Support: **None.**

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

Conflicts of interest:
None.

Effectiveness and Safety of Transcranial Direct Current Stimulation for the Treatment of Alzheimer' s disease: A protocol for systematic review and meta-analysis

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Review question / Objective: **This review protocol aims to indicates whether tDCS is an effective and safe therapeutic for AD patients.**
Condition being studied: **Alzheimer's disease (AD) is the most common form of dementia,is the fifth-leading cause of death in aging patients.Transcranial direct current stimulation (tDCS) is a method for noninvasive brain neurostimulation technique,Several studies have demonstrated that tDCS may have a beneficial effect in Alzheimer' s disease (AD).**
Information sources: **PubMed, Embase, Web of Science, Medline and the Cochrane Central Register of Controlled Trials will be searched to identify from inception to Dec 20.The search items included ("Alzheimer Disease" OR "Senile Dementia") AND ("tDCS" OR "transcranial direct current stimulation").**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 24 December 2020 and was last updated on 24 December 2020 (registration number INPLASY2020120120).

INTRODUCTION

Review question / Objective: **This review protocol aims to indicates whether tDCS is an effective and safe therapeutic for AD patients.**

Rationale: **To summarize updated evidences on the efficacy and safety of tDCS in the treatment of patients with AD.**

Condition being studied: **Alzheimer's disease (AD) is the most common form of dementia,is the fifth-leading cause of death in aging patients.Transcranial direct current stimulation (tDCS) is a method for**

noninvasive brain neurostimulation technique,Several studies have demonstrated that tDCS may have a beneficial effect in Alzheimer' s disease (AD).

METHODS

Participant or population: Patients diagnosed with Alzheimer's disease.There were no restrictions on age, gender or race.

Intervention: tDCS therapy or tDCS plus drug ;And there is no limitation of the type of drugs.

Comparator: drugs or no treatment.

Study designs to be included: Randomized controlled trials (RCTs) or Clinical Trial.

Eligibility criteria: 1、 Patients with Alzheimer's disease. There were no restrictions on age, gender or race; 2、 Alzheimer's disease without other organic diseases. 3、Outcome: Primary outcome measures such as MMSE and ADAS-cog. 4、 Studies that their full text was available. 5、Language is English.

Information sources: PubMed, Embase, Web of Science, Medline and the Cochrane Central Register of Controlled Trials will be searched to identify from inception to Dec 20.The search items included ("Alzheimer Disease" OR "Senile Dementia") AND ("tDCS" OR "transcranial direct current stimulation").

Main outcome(s): Mini-Mental State Examination (MMSE), Alzheimer's Disease Assessment Scale-cognitive subscale (ADAS-Cog), and Activities of Daily Living scale (ADL).And repored AE, SAE.

Quality assessment / Risk of bias analysis: Data extraction form will be designed including detailed information of each review.Data will be extracted independently by 2 authors. We will resolve any discrepancies by discussing with a third review author. The overview will contain a characteristics of included reviews table.

Strategy of data synthesis: All statistical analyses will be performed using Review Manager software(version5.3). Continuous data will be reported as mean difference with 95% CIs. For primary outcomes ,if the meta-analysis significantly heterogeneous, subgroup analysis will be performed as detailed below.We will use the GRADE software to determine the quality of evidence based on Cochrane Handbook for Systematic Reviews of Interventions to create a Summary of Findings table.

Subgroup analysis: If there is significant heterogeneity in the included trials, subgroup analysis will be carried out. According to subject characteristics (e.g., age, gender, and so on), subgroup analysis will be carried out according to the data retrieved.

Sensibility analysis: In the case of sufficient trials data, the risk of bias tool will be used to assess methodological quality. If low quality articles are deleted, a second meta-analysis will be performed. The results and effect size of the two meta-analyses will be compared and discussed.

Country(ies) involved: China.

Keywords: Alzheimer's disease, tDCS, efficacy, safety, meta-analysis,

Contributions of each author:
Author 1 - Chao LI - conceived the study, developed the criteria, will draft the protocol and revise the manuscript.
Author 2 - Jinyu Hao - conceived the study, developed the criteria, designed the inclusion/exclusion criteria and the searching strategy.
Author 3 - Chenlin Zhang - will search the literature, and analyze the data; draft the protocol and revise the manuscript.
Author 4 - Yunmeng Jia - will search for the literature and analyze the data.
Author 5 - Lirong Wang - will extract and analyze the data.