Clinical Trial Protocol
Iranian Registry of Clinical Trials

28 Jun 2026

Effect of Transcranial direct-current stimulation on improvement of cognitive biases and coherence pattern of cortex in patients with major depression

Protocol summary

Study aim
Effect of Transcranial direct-current stimulation on improvement of cognitive biases and coherence pattern of cortex in patients with major depression

Design
Of all major depressive patients in Tabriz, 30patients were selected using Purposive sampling and randomly assigned in experimental, sham and control groups(n=10)

Settings and conduct
The cognitive function of each group was assessed using cognitive tests of Eriksen Folanker test and Corsi block-tapping test. Also, brain activity of each group was recorded by electroencephalography. Then, on the experimental group, tDCS was applied with an anodic electrode in the left DLPFC region and a cathode electrode in the right DLPFC region for 10continuous days, with direct electric current, at 2mA with a duration of 20minutes per session. also, In the placebo group (sham), the intervention was conducted for 10continuous days as a silent device, so that the subjects were unaware of this topic and the treatment protocol. So this study is a single blind. Finally, the mentioned cognitive tests were performed again from the groups and their brain activity was recorded by electroencephalography

Participants/Inclusion and exclusion criteria
Inclusion criteria: Age range 18to40 years, having Major Depression Disorder Based on DSM5 Criteria, Minimum education middle school, dextrality. exclusion criteria: Having psychotic diseases and coincidence with other disorders, Concurrent use of drug and medicine, and The subject's dissatisfaction of collaborate

Intervention groups
The experimental group receiving the intervention, the group that receives intervention as a sham and the control group that does not receive an intervention

Main outcome variables
Improvement of depression and cognitive biases; Improvement of Cortical Coherence Pattern interhemispheric and intrahemispheric between different parts of the brain in differen bands of electrical activity

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20180704040344N1**
Registration date: **2018-08-05, 1397/05/14**
Registration timing: **retrospective**

Last update: **2018-08-05, 1397/05/14**
Update count: **0**

Registration date
2018-08-05, 1397/05/14

Registrant information

Name
Ali Arabi

Name of organization / entity
Azarbaijan Shahid Madani University

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Iran (Islamic Republic of)

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2017-09-23, 1396/07/01

Expected recruitment end date
2018-02-20, 1396/12/01

Actual recruitment start date
2017-12-16, 1396/09/25
Actual recruitment end date
2018-05-05, 1397/02/15
Trial completion date
empty

Scientific title
Effect of Transcranial direct-current stimulation on improvement of cognitive biases and coherence pattern of cortex in patients with major depression

Public title
Effect of Transcranial direct-current stimulation on cognitive biases and coherence pattern of cortex
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
Age range 18 to 40 years, having Major Depression Disorder Based on DSM5 Criteria, Minimum education middle school, dextrality.
Exclusion criteria:
Having psychotic diseases and coincidence with other disorders, Concurrent use of drug, Concurrent use of medicine, and The subject's dissatisfaction of Continue to collaborate.
Age
From **18 years** old to **40 years** old
Gender
Both

Phase
N/A
Groups that have been masked

- Participant

Sample size
Target sample size: **30**
Actual sample size reached: **24**
Randomization (investigator's opinion)
Randomized
Randomization description
Of patients with major depression in Tabriz, 30 patients were selected using Purposive sampling. Then, 10 patients in the experimental group, 10 patients in the sham group (placebo) and 10 patients in the control group were randomly (Using random numbers table) selected.
Blinding (investigator's opinion)
Single blinded
Blinding description
In this study, there are three groups of experimental, sham (placebo) and control groups that the placebo group is not aware of because they are in the placebo group (sham) and are not being treated; because it is known whether the effect of the intervention is solely due to Therapeutic tool (tDCS) or the induction of placebo has also been effective in the treatment.
Placebo
Used
Assignment
Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics committee of Tabriz University of Medical Sciences
Street address
Deputy of research and technology, Third floor, Central building number 2, Tabriz University of Medical Sciences, Golgasht Street.
City
Tabriz
Province
East Azarbaijan
Postal code
5166/15731
Approval date
2017-07-31, 1396/05/09
Ethics committee reference number
IR.TBZMED.REC.1396.385

Health conditions studied

1

Description of health condition studied
Major Depression Disorder
ICD-10 code
ICD-10 code description

Primary outcomes

1

Description
Improvement of Cognitive biases due to Depression
Timepoint
Before applying tDCS and 10 sessions after applying tDCS
Method of measurement
Cognitive tests of Eriksen Folanker and Corsi block-tapping

2

Description
Improvement of Cortical Coherence Pattern interhemispheric and intrahemispheric between different parts of the brain in differen bands of electrical activity
Timepoint
Before applying tDCS and 10 sessions after applying tDCS
Method of measurement
Electroencephalography(EEG)

Secondary outcomes

1

Description
Improvement of Depression
Timepoint
Before applying tDCS and 10 sessions after applying tDCS
Method of measurement
Beck Depression Inventory

Intervention groups

1

Description
Intervention group: tDCS was applied with an anodic electrode in the left DLPFC region and a cathode electrode in the right DLPFC region for 10 continuous days, with direct electric current, at 2 mA with a duration of 20 minutes per session.
Category
Treatment - Other

2

Description
Placebo group: tDCS electrodes were placed on the head for 10 consecutive sessions and with a duration of 20 minutes, but the device was turned off and not stimulated.
Category
Treatment - Other

Recruitment centers

1

Recruitment center
Name of recruitment center
Bozorgmehr Clinic
Full name of responsible person
Dr. Gholamreza Chalabianloo
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South Army Street, opposite the Central Post Office
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
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Full name of responsible person
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Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Deputy of Research _ Azarbaijan Shahid Madani University
Proportion provided by this source
100
Public or private sector
Public
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact
Name of organization / entity
Azarbaijan Shahid Madani University
Full name of responsible person
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Position
Master's student of cognitive science-cognitive psychology
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Sharing plan

Deidentified Individual Participant Data Set (IPD)
No - There is not a plan to make this available
Justification/reason for indecision/not sharing IPD
There is no more information.
Study Protocol
No - There is not a plan to make this available
Statistical Analysis Plan
No - There is not a plan to make this available
Informed Consent Form
No - There is not a plan to make this available
Clinical Study Report
No - There is not a plan to make this available
Analytic Code
No - There is not a plan to make this available
Data Dictionary
No - There is not a plan to make this available