Clinical Trial Protocol
Iranian Registry of Clinical Trials

07 Nov 2026

Effectiveness of transcranial direct current stimulation (tDCS) on craving of cannabis use in teenagers

Protocol summary

Study aim
Investigating the therapeutic effect of transcranial direct current stimulation on cannabis craving in adolescents

Design
A randomized, three-way blind, controlled clinical trial on 40 patients. Block randomization was used for randomization.

Settings and conduct
A total of 40 patients aged 12 to 18 years, referred to Beheshti Hospital in Zanjan with cannabis use disorder, were divided into two main groups and a control group.. In the main group, each individual receives 12 sessions of transcranial direct current stimulation with a 2 mA anodic current on the right dorsolateral prefrontal cortex and a cathodic current on the left dorsolateral prefrontal cortex. The control group receives sham transcranial direct current stimulation. The therapist and the patient are unaware of the type of stimulation, and only the device operator is aware of this.

Participants/Inclusion and exclusion criteria
Entry criteria -Patients diagnosed with cannabis use disorder -People aged 12 to 18 -Individuals who have completed an informed consent form or have had informed consent obtained from their parents or guardians. -Individuals should not receive any medication during treatment. -In the case of multi substance abuse, the main substance used should be cannabis. Non-entry criteria: - Simultaneous diagnosis of any psychiatric illness based on the Diagnostic and Statistical Manual of Mental Disorders 5 - Neurological illnesses such as seizures and strokes and brain disease - Presence of metal implants - Physical illness such as oppositional defiant disorder and malignancy or unstable medical conditions

Intervention groups
40 patients diagnosed with cannabis use disorder will be divided into two groups of 20. The first group will receive active transcranial direct current stimulation and the second group will receive a sham type.

Main outcome variables
Cannabis craving will be examined as the main variable.

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20250913067227N1**
Registration date: **2025-10-05, 1404/07/13**
Registration timing: **registered_while_recruiting**

Last update: **2025-10-05, 1404/07/13**
Update count: **0**

Registration date
2025-10-05, 1404/07/13

Registrant information

Name
Saeedeh Sotudehiean

Name of organization / entity

Country
Iran (Islamic Republic of)

Phone
+98 911 391 3882

Email address
ssotudehiean@gmail.com

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2025-09-22, 1404/06/31

Expected recruitment end date
2025-11-06, 1404/08/15

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Effectiveness of transcranial direct current stimulation (tDCS) on craving of cannabis use in teenagers

Public title
Effect of transcranial direct current stimulation in cannabis use disorder

Purpose
Treatment

Inclusion/Exclusion criteria

Inclusion criteria:
Adolescents with cannabis use disorder

Exclusion criteria:
Co-occurrence of other psychiatric disorders

Age
From **12 years** old to **18 years** old

Gender
Both

Phase
N/A

Groups that have been masked

- Participant
- Care provider
- Investigator
- Outcome assessor
- Data analyser
- Data and Safety Monitoring Board

Sample size
Target sample size: **40**

Randomization (investigator's opinion)
Randomized

Randomization description
Block randomization: In which a group of 40 patients is divided into two blocks of 20 and the treatment sequence is organized so that one randomly selected block receives the active form of transcranial direct current stimulation and the other block receives the passive form. This ensures that the sample size for both groups is equal.

Blinding (investigator's opinion)
Triple blinded

Blinding description
In this study, the participants; the principal investigator and supervisor, as well as the data and questionnaire assessors are kept blind. Only the operator of the transcranial direct current stimulation device knows which group (main or control) the participant is in.

Placebo
Not used

Assignment
Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
Research Ethics Working Group, Zanjan University of Medical Sciences

Street address
Shahid beheshti Hos.,Arg Sq., Zanjan City

City
Zanjan

Province
Zanjan

Postal code
4513956184

Approval date
2024-08-06, 1403/05/16

Ethics committee reference number
IR.ZUMS.REC.1403.121

Health conditions studied

1

Description of health condition studied
Cannabis use disorder

ICD-10 code
F12.90

ICD-10 code description
Cannabis use, unspecified, uncomplicated

Primary outcomes

1

Description
Craving of cannabis use

Timepoint
Craving of cannabis use before and after 12 section of using of trans cranial direct current stimulation

Method of measurement
Desire for Drug Questionnaire

Secondary outcomes

1

Description
Secondary anxiety symptoms

Timepoint
Anxiety symptoms before and after 12 sessions of transcranial direct current stimulation

Method of measurement
Depression and Anxiety and Stress Scale

2

Description
Secondary depression symptoms

Timepoint

Depression symptoms before and after 12 sessions of transcranial direct current stimulation

Method of measurement

Depression and Anxiety and Stress Scale

Intervention groups

1

Description

Intervention group: each individual received 12 sessions of transcranial direct current stimulation with a 2 mA anodic current on the right dorsolateral prefrontal cortex and a cathodic current on the left dorsolateral prefrontal cortex.

Category

Treatment - Devices

2

Description

Control group: They receive artificial transcranial direct current stimulation.

Category

Placebo

Recruitment centers

1

Recruitment center

Name of recruitment center
Shahid beheshti hospital

Full name of responsible person
Saeedeh Sotudehiean

Street address
Shahid beheshti hos., Arg Sq., Zanjan City

City
Zanjan

Province
Zanjan

Postal code
4513956184

Phone
+98 911 391 3882

Email
ssotudehiean@gmail.com

Sponsors / Funding sources

1

Sponsor

Name of organization / entity
Zanjan University of Medical Sciences

Full name of responsible person
Dr. Mehrdad Hamidi

Street address
Shahid beheshti Hos., Arg Sq., Zanjan City

City
Zanjan

Province
Zanjan

Postal code
4513956184

Phone
+98 911 391 3882

Email
ssotudehiean@gmail.com

Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?

Yes

Title of funding source
Zanjan University of Medical Sciences

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
Zanjan University of Medical Sciences

Full name of responsible person
Saeedeh Sotudehiean

Position
Resident

Latest degree
Medical doctor

Other areas of specialty/work
Psychiatrics

Street address
Shahid beheshti Hos., Arg Sq., Zanjan City

City
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Province
Zanjan

Postal code
4513956184

Phone
+98 911 391 3882

Email
ssotudehiean@gmil.com

Person responsible for scientific inquiries

Contact

Name of organization / entity
Zanjan University of Medical Sciences

Full name of responsible person
Saeedeh Sotudehiean

Position
Resident

Latest degree
Medical doctor
Other areas of specialty/work
Psychiatrics
Street address
Shahid beheshti Hos., Arg Sq., Zanjan City
City
Zanjan
Province
Zanjan
Postal code
4513956184
Phone
+98 911 391 3882
Email
ssotudehiean@gmail.com

Person responsible for updating data

Contact
Name of organization / entity
Zanjan University of Medical Sciences
Full name of responsible person
Saeedeh Sotudehiean
Position
Resident
Latest degree
Medical doctor
Other areas of specialty/work
Psychiatrics
Street address
Shahid beheshti Hos., Arg Sq., Zanjan City
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Province
Zanjan
Postal code
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+98 911 391 3882
Email
ssotudheiean@gmail.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)
Undecided - It is not yet known if there will be a plan to make this available
Study Protocol
Undecided - It is not yet known if there will be a plan to make this available
Statistical Analysis Plan
Undecided - It is not yet known if there will be a plan to make this available
Informed Consent Form
Undecided - It is not yet known if there will be a plan to make this available
Clinical Study Report
Undecided - It is not yet known if there will be a plan to make this available
Analytic Code
Undecided - It is not yet known if there will be a plan to make this available
Data Dictionary
Undecided - It is not yet known if there will be a plan to make this available