Clinical Trial Protocol
Iranian Registry of Clinical Trials

07 Nov 2026

The Evaluation of Neuroplasticity of Brain Areas Related to Short-term memory in Patients with Major Depressive Disorders before and after Repetitive Transcranial Magnetic Stimulation Using Functional Magnetic Resonance Imaging.

Protocol summary

Study aim
1.Comparison of left & right dorsolateral prefrontal cortex (DLPFC) region activity in Major Depressive Disorder(MDD) patients before and after Repetitive Transcranial Magnetic Stimulation treatment using Functional Magnetic Resonance Imaging (fMRI)while applying short-term memory relief

Design
In this study, we intend to use functional magnetic resonance imaging without a control group and perform a short-term memory task during imaging، Examine the short-term memory function before and after the same repetitive transcranial magnetic stimulation treatment on all patients with major depressive disorder and thus the activity of the DLPFC brain region

Settings and conduct
In general, this study consists of the following 7 stages: Step one: sample selection Step Two: Imaging before rTMS treatment Step Three: Selecting the Treatment Area for Repetitive Transmagnetic Magnetic Stimulation (Localization) Step four: rTMS treatment Step Five: Imaging after rTMS treatment Sixth step: preprocessing Step Seven: Data Analysis

Participants/Inclusion and exclusion criteria
inclusion criteria are: age range 18 to 65 years Being Iranian and fluent in Persian ermost possessing a minimum diploma The criteria for leaving the study are: Any metal in the body (such as orthodontics) Conception Patient's treatment during breastfeeding. claustrophobia A history of traumatic brain injury

Intervention groups
Transcranial magnetic stimulation (TMS) is known as a noninvasive and non-pharmacological stimulation method used to treat a wide range of brain problems , using magnetic fields and stimulating different areas of the brain Improves the symptoms of mental and neurological disorders.

Main outcome variables
Depression in patients before and after treatment Short-term memory activity of patients before and after treatment areas of assessment Cluster activation Response time target area rTMS

General information

Reason for update

Acronym
rTMS

IRCT registration information
IRCT registration number: **IRCT20250308064987N1**
Registration date: **2025-04-09, 1404/01/20**
Registration timing: **registered_while_recruiting**

Last update: **2025-04-09, 1404/01/20**
Update count: **0**

Registration date
2025-04-09, 1404/01/20

Registrant information

Name
anita ebrahimpoor

Name of organization / entity

Country
Iran (Islamic Republic of)

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+98 21 6643 9831

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2025-04-08, 1404/01/19
Expected recruitment end date
2026-04-08, 1405/01/19
Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
The Evaluation of Neuroplasticity of Brain Areas Related to Short-term memory in Patients with Major Depressive Disorders before and after Repetitive Transcranial Magnetic Stimulation Using Functional Magnetic Resonance Imaging.

Public title
Evaluation of brain regions associated with short-term memory in patients with recurrent transcranial magnetic stimulation before and after treatment using functional magnetic resonance imaging
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
age range 18 to 65 years Being Iranian and fluent in Persian ermost possessing a minimum diploma
Exclusion criteria:
Any metal in the body (such as orthodontics) Conception Patient's treatment during breastfeeding. claustrophobia A history of traumatic brain injury Neurodevelopmental disorders Systemic medical disease Having criteria for other psychiatric disorders, including alcohol and drug abuse disorders
Age
From **18 years** old to **65 years** old
Gender
Both

Phase
N/A
Groups that have been masked
No information
Sample size
Target sample size: **10**
Randomization (investigator's opinion)
N/A
Randomization description
Blinding (investigator's opinion)
Not blinded
Blinding description
Placebo
Not used
Assignment
Single
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Research ethics committees of medicine-Tehran university of medical science
Street address
Tehran University of Medical Sciences-Faculty of Medicine
City
tehran
Province
Tehran
Postal code
1461884513
Approval date
2025-02-25, 1403/12/07
Ethics committee reference number
IR.TUMS.MEDICINE.REC.1403.622

Health conditions studied

1

Description of health condition studied
Major depressive disorder
ICD-10 code
ICD-10 code description

Primary outcomes

1

Description
Depression in patients before and after treatment
Timepoint
During the treatment process for one month and periodically evaluated
Method of measurement
Based on Standard Psychological Scales of Depression (Testback)

Secondary outcomes

1

Description
Short-term memory activity of patients before and after treatment
Timepoint
During the one-month treatment period and periodically evaluated
Method of measurement
Designed according to Teske Stenberg

Intervention groups

1

Description
Intervention group: Patients with major depressive disorder
Category
Treatment - Devices

Recruitment centers

1

Recruitment center
Name of recruitment center
Iranian Specialized Neurology and Psychiatric Mind Clinic
Full name of responsible person
dr. mehrnaz jalalian
Street address
Tehran – Marzdaran Boulevard – between Marzdaran Metro Station , Alborz Ave – No 67
City
tehran
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Phone
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mahmoudbagheri68@gmail.com

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Tehran University of Medical Sciences
Full name of responsible person
Deputy of Research and Technology, Tehran University of Medical Sciences
Street address
Keshavarz Blvd, Qods Street, Central Organization of the University, Sixth Floor, Research and Technology Deputy
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141765383761
Phone
+98 21 8898 9664
Email
vcr@tums.ac.ir
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Tehran 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
Tehran University of Medical Sciences
Full name of responsible person
maryam zivari derakhshande
Position
Student
Latest degree
Master
Other areas of specialty/work
Medical Imaging Technology
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Master

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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

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

No - There is not 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