Jundishapur Journal of Chronic Disease Care
Volume 14 · Issue 1 · e156556

OPEN PEER REVIEW

The Effectiveness of Transcranial Direct Current Stimulation (tDCS) on Severity of Obsessive-Compulsive Symptoms, Executive Functions and Rumination in People with Obsessive-Compulsive Symptoms: A Randomized Clinical Trial

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SUBMITTED	REVISED	ACCEPTED	DOI
5 Oct 2024	12 Jan 2025	13 Jan 2025	10.5812/jjcdc-156556

About this report

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1 Original submission

3 comments · 24 Nov 2024 – 24 Nov 2024

Referee 1 Reviewer

MAJOR REVISION 24 Nov 2024

Dear Authors
Thank you for submitting your manuscript. Introduction. Your article needs a major revision in all areas, including:

Introduction:
There is no background on the beneficial effects of tDCS on cognition and executive functioning in the introduction. Not enough research background is mentioned in the introduction. The references are not up-to-date. It is recommended to use new and related sources like https://doi.org/10.3389/fpsyt.2024.1338594 and https://doi.org/10.3390/brainsci8020037.
Method:
-What criteria were used to diagnose the patients, and who made the diagnoses? Who performed the assessments and tests?
-The TDS method used is not mentioned. The location of the anode and cathode is not mentioned. How was the location determined, and on what evidence was it based? Is there any evidence in favor of the choice?

- When after the sessions was the evaluation with the study tests performed?
- There is a fundamental flaw in the inclusion criteria of the study: it has not been determined whether these patients were receiving anti-obsessional drug treatment. Pharmacotherapy or the variety of drug treatments, dosages, etc., seriously affect the study results:
It is mentioned in the results section that some patients had a history of drug use, while a history of drug use and psychiatric illness were mentioned as exclusion criteria. The patients' substance abuse status during treatment is not clear. Were they still using? In any case, the results of the study were affected by this issue.
Instruments
-The instruments have inadequate descriptions. Each instrument needs a paragraph about what it measures and references to its reliability and validity in the original and Iranian versions. For example, what does the MOCI measure?
-Why is it necessary to use both the MOCI and Y-BOCS instruments?
-It is not clear whether the Executive Functions Questionnaire has been validated in Persian. Given its large number of items, if the Persian version has not been validated, it was not a suitable test for this study.

Results:
- Tables 2 to 5 can be merged.
Discussion
The discussion of the underlying mechanisms of tDCS effects on obsessions and cognition has been very general. Comparisons of the results of this study with previous studies are superficial. Overall, the article needs a major revision. The article needs to be edited in English. The referencing is incorrect (using and) and sometimes in Persian.

Associate Editor

MAJOR REVISION 24 Nov 2024

Dear Author,
Based on our reviewers' comments, your manuscript needs some revision in all sections. Please revise and

resubmit.
Thank you

Editor-in-Chief MAJOR REVISION 24 Nov 2024

Dear Author,
Based on our reviewers' comments, your manuscript needs some revision in all sections. Please revise and resubmit.
Thank you

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Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Reviewer 1:	Author's response
1- . Title: The title of the study needs to be corrected. It is recommended to mention the type of study in the title.	With greetings and respect, and with thanks for your valuable comments The title was corrected according to your comment. The -1 study is a randomized clinical trial, and given that you mentioned that the type of study should be added to the .title, the title was corrected according to your comment The effectiveness of Transcranial direct current stimulation (tDCS) on severity of obsessive-compulsive symptoms, executive functions and rumination in people with obsessive-compulsive symptoms: A Randomized Clinical Trial The present study is a randomized clinical trial (RCT), which in terms of aim falls into the category of applied research and in terms of the method of data collection falls into the category of experimental designs. Because of the use of random assignment of subjects to the study groups, this study was an experimental study with a pre-test–post-test design with two groups, which was carried out in the form of a randomized clinical trial
2- about of double blindness, it is better to determine what you mean? Who were blind in the study?	The study was a double-blind clinical trial because the -2 study subjects and the observers (researchers) do not know who is in which group. The assessments were carried out by an independent person. A double-blind study or trial is a study in which two groups of people are studied, but neither the study subjects nor the researchers know which person is .in which group
Sample size: How was the sample size determined? It can be written clearly.	The sample size was set at 15 people for each group -3 based on previous studies that show a large effect size according to Cohen's criteria for the treatments under study, and considering a test power of 0.80 and a significance level of 0.95. Regarding the selection of the sample, it should be noted that in the experimental method each subgroup should have at least 15 people, so that the selected sample is a true representative of the population .and the study has high external validity (40 and 41)

	40- Gall MD, Borg WR, Gall JP. Educational research: An introduction. Longman Publishing; 1996. 41- Cohen L, Manion L, Morrison K. Research methods in education. routledge; 2013 Mar 7.
4- -Demographic information can be summarized in the table. -Table 1 can be better designed and written. -Tables 2, 3, 4, and 5 can be combined and summarized in one table.	Dear reviewer, demographic information is usually -4 presented in this same way. Usually it also makes no .difference whether you present it as a table or in this way Regarding Tables 2, 3 and 4, we presented the results of the analysis of covariance for each variable separately so that it would be clearer and more distinct, and also, according to the opinion of the statistical consultant, there is no need for merging, and in various articles the results of different .variables are presented in different tables
5- References: Most references are a little old	Dear reviewer, as presented below, most of the -5 references are recent. Given that there is no study on the effect of tdcs on executive functions in obsessive .individuals, we face limitations in this area 43- Brunelin J, Mondino M, Bation R, Palm U, Saoud M, Poulet E. Transcranial direct current stimulation for obsessive-compulsive disorder: a systematic review. Brain sciences. 2018 Feb 24;8(2):37. 42- Harika-Germaneau G, Heit D, Drapier D, Sauvaget A, Bation R, Chatard A, Doolub D, Wassouf I, Langbour N, Jaafari N. Treating refractory obsessive compulsive disorder with cathodal transcranial direct current stimulation over the supplementary motor area: a large multisite randomized sham-controlled double-blind study. Frontiers in Psychiatry. 2024 May 17;15:1338594. 27- Flett GL, Nepon T, Hewitt PL, Zaki-Azat J, Rose AL, Swiderski K. The Mistake Rumination Scale: development, validation, and utility of a measure of cognitive perfectionism. Journal of Psychoeducational Assessment. 2020 Feb;38(1):84-9828- -28- Hajloo N, Pourabdol S, Beyki M, Gharibzadeh R. Psychometric Properties of the Persian Version of the Mistake Rumination Scale. Qom Univ Med Sci J 2023; 17 : 2542.4. 29- Asadollahzadeh Shamkhal F, Moghimi A, Kobravi H, Salehi Fadardi J. The Effect of Transcranial Direct Current Stimulation on Linear and Nonlinear EEG Signal Characteristics in Contamination Obsessive-Compulsive Disorder Patients. Shefaye Khatam 2023; 12 (1) :22-33 Wallace A, Hoskyn M. Validation of the executive function strategy awareness and use questionnaire (SAUQ) in a university student population. Journal of American College Health. 2020 Oct 9:1-9. Maye CE, Wojcik KD, Candelari AE, Goodman WK, Storch EA. Obsessive compulsive

	disorder during the COVID-19 pandemic: A brief review of course, psychological assessment and treatment considerations. Journal of Obsessive-Compulsive and Related Disorders. 2022 Apr 1;33:100722.. https://doi.org/10.1016/j.jocrd.2022.1007222. - Tandt HL, Van Parys H, Leyman L, Purdon C, Lemmens GM. How are OCD patients and their families coping with the COVID-19 pandemic? A qualitative study. Current Psychology. 2022 Jan;41(1):505-15. Asghar MA, Rehman AA, Shafiq Y, Siddiq A, Zehravi M, Khan K, et al. Relationship of obsessive-compulsive disorders with religion and psychosocial attitude among local medical college students of Karachi: an epidemiological study. JPMA 2020;70(1563). https://doi.org/10.5455/jpma.34245. 4- Raynal P, Melioli T, Chabrol H. Personality disorder traits in young adults with subclinical obsessive-compulsive symptoms: not just traits related to obsessive-compulsive personality. Bull Menninger Clin. 2019;83(4):433–52. https://doi.org/10.1521/bumc_2019_83_05. 5- Huang L, Lei W, Xu F, Liu H, Yu L. Emotional responses and coping strategies in nurses and nursing students during Covid-19 outbreak: a comparative study. PLoS One. 2020;15(8):e0237303. https://doi.org/10.1371/journal.pone.0237303. 6- M Ebrahim S, Diab Abd-el Wahab S, A Shokr E, A Radwan H. Effectiveness of mindfulness skills on self-efficacy and suicidal ideation among first-year nursing students with obsessive-compulsive symptoms during COVID-19 pandemic. Int Egypt J Nurs Sci Res. 2022;3(1):221-39. https://doi.org/10.21608/ejnsr.2022.247075.
6- There is no background on the beneficial effects of tdcs on cognition and executive functioning in the introduction. Not enough research background is mentioned in the introduction. The references are not up-to-date. It is recommended to use new and related sources	Harika et al.(42) studied the effectiveness of 10 sessions -6 of tdcs in the treatment of resistant obsessive-compulsive disorder. 80 treatment-resistant outpatients with obsessive-compulsive disorder were randomly selected to receive active or sham transcranial direct current stimulation. Patients were assessed at baseline, at the end of treatment, and at one-month and three-month follow-up. A significant interaction between time and treatment was observed, but the primary endpoint - measuring the change in Yale-Brown Obsessive Compulsive Scale scores after two weeks - was not achieved. Conversely, the secondary endpoint, which concerned the change in Yale-Brown Obsessive Compulsive Scale scores after three months, was successfully met. The results of Harika et al.(42) indicate the importance of studying the placebo effect in transcranial direct current stimulation and the need to consider a long follow-up time to assess the best effects of the intervention.

Harika et al.(42) studied the effectiveness of 10 sessions of tdcs in the treatment of resistant obsessive-compulsive disorder. 80 treatment-resistant outpatients with obsessive-compulsive disorder were randomly selected to receive active or sham transcranial direct current stimulation. Patients were evaluated at the beginning, end of treatment, one-month and three-month follow-up. A significant interaction between time and treatment was observed, but the primary endpoint—a measure of change in Yale-Brown Obsession Scale scores after two weeks—was not achieved. Conversely, the secondary endpoint, which was the change in Yale-Brown Obsessive Compulsive Scale scores after three months, was successfully met. The results of Harika et al. (42) indicate the importance of studying the placebo effect in direct transcranial current stimulation and the need to consider a long follow-up time to evaluate the best effects of the intervention.

42- Harika-Germaneau G, Heit D, Drapier D, Sauvaget A, Bation R, Chatard A, Doolub D, Wassouf I, Langbour N, Jaafari N. Treating refractory obsessive compulsive disorder with cathodal transcranial direct current stimulation over the supplementary motor area: a large multisite randomized sham-controlled double-blind study. Frontiers in Psychiatry. 2024 May 17;15:1338594.

Brunelin et al. (43), in a systematic study, investigated the effect of tdcs on obsessive-compulsive disorder. 12 studies and a total of 77 patients were examined. Brunelin et al. (43) showed that, despite methodological limitations and the heterogeneity of stimulation parameters, tDCS appears to be a promising tool for reducing obsessive-compulsive symptoms as well as accompanying depression .and anxiety in patients with treatment-resistant OCD

Brunelin et al. (43) investigated the effect of tdcs on obsessive-compulsive disorder in a systematic study. 12 studies and a total of 77 patients were examined. Brunelin et al. (43) showed that despite methodological limitations and heterogeneity of stimulation parameters, tDCS appears to be a promising tool for reducing obsessive-compulsive symptoms as well as co-occurring depression and anxiety in

	patients with treatment-resistant OCD. 43- Brunelin J, Mondino M, Bation R, Palm U, Saoud M, Poulet E. Transcranial direct current stimulation for obsessive-compulsive disorder: a systematic review. Brain sciences. 2018 Feb 24;8(2):37.
7- -The diagnosis of patients was based on what criteria and by whom? Who performed the assessments and tests?	Dear reviewer, our aim was not to examine the diagnosis -7 of the disorder, and our study was not on people with obsessive-compulsive disorder. Rather, our study examined the effectiveness of tdcs in people with obsessive-compulsive symptoms. Our criterion for entering people into the study was obtaining a cut-off score of 11 or more on the Maudsley obsessive-compulsive questionnaire.The cut-off point of the questionnaire was 11 and above. The assessment for entering people into the study was carried out by the researcher, and after 30 people with the cut-off point and above were selected, they were randomly divided into two groups. The researcher was not aware of which person entered which group, and because both the researcher and the subjects were unaware, the study is double-blind. The pre-test and post-test assessments were carried out by one of the hospital psychologists who was not among the members of the project.
8- The TDS method used is not mentioned. The location of the anode and cathode is not mentioned. How was the location determined and based on what evidence it was done. Is there any evidence in favor of the choice?	We evaluated the efficacy of transcranial direct current -8 stimulation (tDCS) applied with the cathode over the orbitofrontal cortex (OFC) and the anode over the right cerebellum for reducing OCD symptoms. The location was based on previous studies and on sources showing that these structures are involved in obsessive-compulsive symptoms. tDCS : tDCS is one of the tools of non-invasive brain stimulation that is performed by applying a weak direct current (1-2 mA) between two electrodes placed on the scalp. Neurophysiological studies show that, depending on the polarity of the electrode and the current intensity, tDCS may

	increase cortical excitability in the vicinity of the anode, whereas cathodal tDCS may reduce excitability. The effect of tDCS is not only on the area where the electrode is placed, but it can also affect the cortical network and the subcortical areas connected to the target areas. It should be noted that the details of microscopic brain processes, as well as the effect of tDCS on brain function and its molecular mechanisms, still remain .largely unclear(31)
9- Evaluation with study tests, when was it done after the sessions?	The assessment was carried out first before receiving -9 tdcs, and the post-test assessments were carried out after .the last session of receiving tdcs
10- - There is a fundamental flaw in the inclusion criteria of the study: it has not been determined whether these patients were under anti-obsessional drug treatment. Pharmacotherapy or the variety of drug treatments, dosage, etc., seriously affect the study results: It is mentioned in the results section that some patients had a history of drug use, while a history of drug use and psychiatric illness were mentioned as exclusion criteria. It is not clear what these patients were	Substance use was among our exclusion criteria, and -10 anyone who used substances did not enter the study. None of our 30 subjects had substance abuse. In the results there is also nothing referred to as substance abuse, and it is only .mentioned that 5 people were receiving medication As mentioned in the results, of the 30 subjects, 25 were not taking medication and only 5 were taking medication, which were ssri drugs. Given that the subjects were randomly divided into two groups, and the purpose of randomization is precisely to eliminate the effect of such issues as age, education, occupation, etc., therefore, given the randomization, the use of medication, which is only in 5 people, does not create a problem. However, it would have .been better if this had been considered before the study

like in terms of substance abuse during treatment. Were they still using? In any case, the results of the study were affected by this issue.	Not controlling the medication used has been addressed in the limitations and has been mentioned in the suggestions for future studies.
11- -The instruments have inadequate descriptions. Each instrument needs a paragraph about what it measures and a reference to its original and Iranian reliability and validity. For example, what does the MOCI measure? -What is the need to use the two instruments MOCI and Y-BOCS? -It is not clear whether the Executive Functions Questionnaire has been validated in Persian. Due to the large number of its items, if Persian is not validated, it was not a suitable test for this study.	Dear reviewer, the Yale-Brown obsessive-compulsive -11 questionnaire and the Maudsley obsessive-compulsive symptoms questionnaire are the most widely used questionnaires throughout the world for measuring obsessive-compulsive symptoms, and they have been used in perhaps more than 700 studies in our own country alone and have been normed in several studies. The reason for using both of them is that, when in clinical trial studies of effectiveness you use multiple instruments to measure one variable, the work is more robust and stronger. These two scales have good validity and reliability in Iran.The psychometric properties of the executive functions questionnaire were examined by the researchers of this study themselves, in a study on students of Ahvaz University of Medical Sciences, and it has appropriate psychometric properties; its article has been sent to a journal but has not yet been accepted and published.
12- - Tables 2 to 5 can be merged.	Regarding Tables 2 and 5, we presented the results of -12 the analysis of covariance for each variable separately so that it would be clearer and more distinct, and also, according to the opinion of the statistical consultant, there

	is no need for merging, and in various articles the results of different variables are presented in different tables.
13- The discussion of the underlying mechanisms of tDCS effects on obsessions and cognition has been very general. Comparisons of the results of this study with previous studies are superficial. Overall, the article needs a major revision. The article needs to be edited in English. The referencing is incorrect (using and) and sometimes in Persian.	13- Dear reviewer, the article was edited by an English language specialist who is a university faculty member. We tried to make the discussion of the article long, to compare it with similar studies, and to discuss the mechanisms of the effectiveness of tdcs in obsessive individuals, which is presented below. On the other hand, the word count of the article should not be high; given the number of variables, the method of implementation and the number of words of the discussion, it is among the articles with a very high word count. It is 5400 words, whereas the usual is 3500 words. Brunelin et al. (43) investigated the effect of tdcs on obsessive-compulsive disorder in a systematic study. 12 studies and a total of 77 patients were examined. Brunelin et al. (43) showed that despite methodological limitations and heterogeneity of stimulation parameters, tDCS appears to be a promising tool for reducing obsessive-compulsive symptoms as well as co-occurring depression and anxiety in patients with treatment-resistant OCD. Harika et al.(42) studied the effectiveness of 10 sessions of tdcs in the treatment of resistant obsessive-compulsive disorder. 80 treatment-resistant outpatients with obsessive-compulsive disorder were randomly selected to receive active or sham transcranial direct current stimulation. Patients were evaluated at the beginning, end of treatment, one-month and three-month follow-up. A significant interaction between time and treatment was observed, but the primary endpoint—a measure of change in Yale-Brown Obsession Scale scores after two weeks—was not achieved. Conversely, the secondary endpoint, which was the change in Yale-Brown Obsessive Compulsive Scale scores after

three months, was successfully met. The results of Harika et al. (42) indicate the importance of studying the placebo effect in direct transcranial current stimulation and the need to consider a long follow-up time to evaluate the best effects of the intervention.

. Fineberg et al. (30) indicate that tDCS treatment improves cognitive control in people with obsessive compulsive disorder.

Asadollahzadeh et al.(29) showed that tDCS has caused changes in the brain complexity of people with Contamination -OCD through influencing the interactions of brain neurons and balancing neuronal activity. Bation et al (32) showed that despite significant acute effects, tDCS was not effective in long-term reduction of symptoms in patients with treatment-resistant OCD. In another study (33), tDCS with the anode placed on the right cerebellum and the cathode placed on the left OFC is a safe, favorable and appropriate approach to reduce OCD symptoms in people with treatment-resistant OCD.

tDCS enables simultaneous stimulation of different regions and modulation of different brain regions involved in cortico-subcortical loops [36]. It has been suggested that tDCS may be useful in reducing symptoms in patients with treatment-resistant OCD [37], but the optimal target sites and stimulation parameters are still debated.

It can be considered that the brain activity becomes more regular due to the effect of tDCS, which leads to the reduction of obsessive-compulsive symptoms. Because previous studies have shown that tDCS can cause changes or improvement in people's symptoms by influencing the interactions and dynamics of brain neurons. It is also concluded here that tDCS in the direction of modulating the activity of brain neurons and bringing it closer to the normal state in people suffering from obsessive-compulsive disorder, causes changes in the complexity of the brain of people with obsessive-compulsive symptoms.

In explaining these findings, it can be stated that in obsessive-compulsive

	disorder, the executive functions of a person are disturbed, tDCS improves the executive functions in people with obsessive-compulsive disorder by stimulating the frontal lobe, and As a result, TDCS will have the ability to improve executive functions in people with obsessive-compulsive disorder.Considering that tDCS has the ability to modulate neuroplasticity by increasing the cortical excitability of the left DLPFC and decreasing the cortical excitability of the right DLPFC, it improves obsessive-compulsive symptoms.
14- The entire text of the article should be edited by an English language expert.	Dear reviewer, the entire text of the article was edited -14 by an English language specialist who was a university .faculty member
15- - In the findings section, the average of the interventions in different stages should be given.	.It was done -15 The means of MOCI, Y-BOCS, Mistake Rumination and Executive Functions in the pre-test of the Active tDCS group were 22.40, 22.33, 20.93 and 86.40, respectively, and in the sham treatment group 21.53, 20.33, 19.13 and 83.06, respectively. The means of MOCI, Y-BOCS, Mistake Rumination and Executive Functions in the post-test of the Active tDCS group were 14.46, 14.40, 11.46 and 102.86, respectively, and in the sham treatment .group 21.66, 18.13, 18.26 and 86.93, respectively The average of MOCI, Y-BOCS, Mistake Rumination and Executive Functions in the pre-test of the Active tDCS group was 22.40, 22.33, 20.93 and 86.40 respectively and in the sham treatment group was 21.53, 20.33, 19.13 and 83.06 respectively.The mean of MOCI, Y-BOCS, Mistake Rumination and Executive Functions in the post-test of the Active tDCS

	group was 14.46, 14.40, 11.46 and 102.86 respectively and in the sham treatment group was 21.66, 18.13, 18.26 and 86.93 respectively.
16- The conclusion should be given in more detail in the abstract section.	Dear reviewer, the length of the abstract is very large, -16 and the required material was presented in detail in the .method, results and conclusion parts
17- - There is no need to include the year of the research in the abstract.	Dear reviewer, with apologies, the year of the study and -17 the study setting are usually given, and the year of the study .was not removed from the abstract
18- In the introduction section of the article, bring the research gap that made you do this.	The research gap was presented in the introduction section, which is marked in yellow - The clinical literature related to the treatment of obsessive-compulsive disorder indicates that cognitive behavioral therapy, mostly in the form of exposure and response prevention, is the first choice for the treatment of this disorder (15). However, despite the important advances seen in the treatment of obsessive compulsive disorder, there are patients who either do not respond to treatment at all or their response to treatment is very small (16). Some patients recover a little with treatment, but the symptoms remain and show a high level of damage in function and quality of life. Another group of patients do not want or cannot bear the anxiety associated with exposure and response prevention. Some others give up the treatment or do not accept it (17). Obsessive compulsive disorder treatment is considered as a challenge in the field of psychological therapy. However, researches in order to achieve more effective methods are still the motivation for extensive and diverse researches in this field of treatment. Among the new treatment methods, we can mention brain stimulation, which has increased in recent years as an efficient and safe non-invasive technique. Especially brain stimulation from of Transcranial direct current stimulation (tDCS) has shown promising results (32). According to the above statements, the treatment of obsessive-compulsive disorder

	as a complex disorder is known as the tenth leading cause of disability in patients and is one of the most common mental disorders in Iran with an estimate of 11.7 to 43.2(19). Due to the fact that common psychological treatments and drug treatments do not always lead to recovery and a significant percentage of patients are resistant to the above treatments, therefore, new treatment methods with a neuro-biological approach and the possibility of neurological adjustments have been the focus of researchers in recent years has taken (20). Considering the lack of sufficient researches in the field of effectiveness of interventions, this research was conducted with the aim of the effectiveness of tDCS on executive functions, severity of obsessive-compulsive symptoms and ruminations in people with obsessive-compulsive symptoms.
19- The limitations of the treatment methods should be mentioned and mention the advantage of the new treatment.	-19 The limitations of previous treatments and the advantage of treatment with the new method were mentioned in the introduction. The clinical literature related to the treatment of obsessive-compulsive disorder indicates that cognitive behavioral therapy, mostly in the form of exposure and response prevention, is the first choice for the treatment of this disorder (15). However, despite the important advances seen in the treatment of obsessive compulsive disorder, there are patients who either do not respond to treatment at all or their response to treatment is very small (16). Some patients recover a little with treatment, but the symptoms remain and show a high level of damage in function and quality of life. Another group of patients do not want or cannot bear the anxiety associated with exposure and response prevention. Some others give up the treatment or do not accept it (17). Obsessive compulsive disorder treatment is considered as a challenge in the field of psychological therapy. However, researches in order to achieve more effective methods are still the motivation for extensive and diverse researches in this field of treatment. Among the new treatment methods, we can mention brain stimulation, which has increased in recent years as an efficient and safe non-invasive technique. Especially brain stimulation from of Transcranial direct current stimulation (tDCS) has shown promising results (32). According to the above statements, the treatment of obsessive-compulsive disorder as a complex disorder is known as the tenth leading cause of disability in patients and is one of the most common mental disorders in Iran with an estimate of 11.7 to 43.2(19). Due to the fact that common psychological treatments and drug

	treatments do not always lead to recovery and a significant percentage of patients are resistant to the above treatments, therefore, new treatment methods with a neuro-biological approach and the possibility of neurological adjustments have been the focus of researchers in recent years has taken (20). Considering the lack of sufficient researches in the field of effectiveness of interventions, this research was conducted with the aim of the effectiveness of tDCS on executive functions, severity of obsessive-compulsive symptoms and ruminations in people with obsessive-compulsive symptoms.
20- - The goal should be clearly defined.	.The aim was stated clearly and plainly -20 Due to the fact that common psychological treatments and drug treatments do not always lead to recovery and a significant percentage of patients are resistant to the above treatments, therefore, new treatment methods with a neuro-biological approach and the possibility of neurological adjustments have been the focus of researchers in recent years has taken (20). Considering the lack of sufficient researches in the field of effectiveness of interventions, this research was conducted with the aim of the effectiveness of tDCS on executive functions, severity of obsessive-compulsive symptoms and ruminations in people with obsessive-compulsive symptoms.
21- The method of conducting the research is not clear. How did people become aware and enter the research.	.The method was described in detail -21 The current research is in the category of applied research from the point of view of the goal and in the category of experimental designs in terms of the method of data collection. This study was a randomized clinical trial with a pre and post-test design with two groups. The statistical population of the study included all people with obsessive-compulsive symptoms who referred to the psychiatric clinic of Golestan Hospital and the counseling center of Jundishapur University of Medical Sciences in Ahvaz in 1401-1402. 30 subjects who met the exclusion and inclusion criteria were randomly assigned to two groups. In a double-blind controlled randomized study, 30 patients with obsessive-compulsive symptoms (based on the Maudsley questionnaire cut-off point, which is 11) were assigned to receive 10 20-minute sessions (one session per day) of active tDCS (2 mA) or sham. . Of these, 15 patients received active tDCS and 15 patients received sham treatment. inclusion criteria: Obtaining a cutoff score in The Maudsley Obsessional-Compulsive Questionnaire (score higher than 11), readiness to participate in the research, not receiving simultaneous psychological treatments such as group

	therapy, cognitive-behavioral psychotherapies, mindfulness, muscle relaxation and stress management, age Between 18 and 60 years old, and completing the company's written consent form. People who had a history of psychotic disorders, serious head injury or substance abuse, acutely committed suicide, and had implanted metal or devices in the brain were not included in the study. Pregnant women did not have the right to participate in the study. Patients previously exposed to tDCS were also excluded from the study. Exclusion criteria include lack of availability during the research, severe physical diseases such as cancer, use of cardiac pacemaker, severe organic brain disorder based on the history and psychiatric examination of the patient and family, having obvious bipolar and psychotic symptoms, Absence from tDCS sessions. After coordinating and obtaining the code of ethics from Ahvaz University (IR.AJUMS.HGOLESTAN.REC.1400.152) and the clinical trial code (IRCT20220220054069N1), the researcher entered the research environment with permission. The research environment was Golestan Hospital Psychiatry Clinic and Ahvaz University of Medical Sciences University Counseling Center. Before the preliminary evaluations, all the conditions of participating in the research were explained to the applicants so that they can enter the evaluation process if they wish. Full explanations about the purpose of the project were given to the participants before obtaining consent and completing the questionnaire. After explaining about the research and its conditions and other ethical matters, the people participating in the research were asked to fill the informed consent form. Regarding sample selection, it should be noted that in the experimental method, each subgroup should be at least 15 people so that the selected sample is a real representative of the community and the research has high external validity (22, 21). A total of 38 people were evaluated for eligibility. 8 people did not participate. A total of 30 people completed the study. Of these, 15 patients received active tDCS and 15 patients received sham treatment. In a randomized double-blind controlled study, 30 patients with obsessive-compulsive symptoms were assigned to receive 10 sessions (one session per day) of active tDCS (2 mA) or sham. Pre-test evaluations were carried out. After the end of the treatment, re-evaluation was done. It should be noted that no costs were imposed on the participants in this study. At the beginning of the research and after the end of the intervention, all the subjects were measured with The Maudsley Obsessional-Compulsive Questionnaire, Executive Functions Questionnaire, Yale-Brown Obsessive Compulsive Scale (Y-BOCS) and The Mistake Rumination Scale.

	The researcher invited people to participate in the study using announcements in virtual groups and networks, the university counselling centre and the Golestan psychiatric clinic. Our criterion for entering people into the study was obtaining a cut-off score of 11 or more on the Maudsley obsessive-compulsive questionnaire.The cut-off point of the questionnaire was 11 and above. The assessment for entering people into the study was carried out by the researcher, and after 30 people with the cut-off point and above were selected, they were randomly divided into two groups. The researcher was not aware of which person entered which group, and because both the researcher and the subjects were unaware, the study is double-blind. The pre-test and post-test assessments were carried out by one of the hospital psychologists who was not among the .members of the project
22- - It is not clear who made the evaluations. Was it by the researcher or someone else?	The researcher was not aware of which person entered -22 which group, and because both the researcher and the subjects were unaware, the study is double-blind. The pre-test and post-test assessments were carried out by one of the hospital psychologists who was not among the members .of the project
23- Specify the method of blinding.	The researcher was not aware of which person entered -23 which group, and because both the researcher and the .subjects were unaware, the study is double-blind
24- The discussion is not well explained and compared with other studies.	.The results were compared with other studies -24 Fineberg et al. (30) indicate that tDCS treatment improves cognitive control in people with obsessive compulsive disorder. Asadollahzadeh et al.(29) showed that tDCS has caused changes in the brain complexity of people with Contamination -OCD through influencing the interactions of brain neurons and balancing neuronal activity. Bation et al (32) showed that despite significant acute effects, tDCS was not effective

	in long-term reduction of symptoms in patients with treatment-resistant OCD. In another study (33), tDCS with the anode placed on the right cerebellum and the cathode placed on the left OFC is a safe, favorable and appropriate approach to reduce OCD symptoms in people with treatment-resistant OCD. tDCS enables simultaneous stimulation of different regions and modulation of different brain regions involved in cortico-subcortical loops [36]. It has been suggested that tDCS may be useful in reducing symptoms in patients with treatment-resistant OCD [37], but the optimal target sites and stimulation parameters are still debated. Harika et al.(42) studied the effectiveness of 10 sessions of tdcs in the treatment of resistant obsessive-compulsive disorder. 80 treatment-resistant outpatients with obsessive-compulsive disorder were randomly selected to receive active or sham transcranial direct current stimulation. Patients were evaluated at the beginning, end of treatment, one-month and three-month follow-up. A significant interaction between time and treatment was observed, but the primary endpoint—a measure of change in Yale-Brown Obsession Scale scores after two weeks—was not achieved. Conversely, the secondary endpoint, which was the change in Yale-Brown Obsessive Compulsive Scale scores after three months, was successfully met. The results of Harika et al. (42) indicate the importance of studying the placebo effect in direct transcranial current stimulation and the need to consider a long follow-up time to evaluate the best effects of the intervention.
25- Compare the discussion with the researches that have been done inside.	It was done. The study was compared with various -25 .studies
26- More restrictions	.More limitations were added to the study -26

should be imposed.	The effect of drugs was not considered in this study. The study subjects were not followed up. The effect of the drugs used by individuals should be considered in future studies. Follow-up periods should be considered to examine the .stability of the effectiveness The effect of drugs was not considered in this research. Study subjects were not followed up. The effect of drugs used in people should be considered in the next research. Follow-up periods should be considered to check the stability of effectiveness.
27- - Make suggestions for further research.	.Applied suggestions were added -27
28- Bring the table of averages in different stages according to the format.	The table of the means of the variables at the different -28 stages of the study has been presented according to the .format
29- Did you compare the groups before the intervention if there was no difference between them before?	The comparison of the pre-test of the variables of the -29 two groups before the intervention showed that there was .no significant difference between them
30- - How were the groups intervened so that they are not aware of the treatment process they are receiving?	Regarding how people became aware: as mentioned, -30 people who visited the psychiatric clinic of Golestan Hospital and the university counselling centre were referred for assessment on the basis of the announcement made by the researcher to faculty colleagues and the staff of the clinic and the university counselling centre. And people who obtained a score above the cut-off point and gave consent entered the study on the basis of the inclusion and .exclusion criteria
31- Cronbach's alpha bring the tools.	The Cronbach's alpha of the instruments was presented -31 . The Maudsley Obsessional-Compulsive Questionnaire(MOCI): In Iran, the reliability of this instrument was 0.85 by the test- retest method, and the reliability coefficient of the whole test was 0.84 (43). The Mistake Rumination Scale: the Cronbach's alpha coefficient was

	0.93(28). Executive Functions Questionnaire: The reliability of the subscales using the Omega coefficient was between 0.82 and 0.94. (24) Yale-Brown Obsessive Compulsive Scale (Y-BOCS): In Iran, the findings showed a significant internal consistency in the two parts of symptom and severity, respectively (0.97) and (0.95), and its retest reliability was 0.99(26).
32- Use more keywords.	It is recommended that keywords be between 3 and 5, -32 and this number in our article is 5, and a new keyword, .effectiveness, was added Key words: Obsessive-Compulsive Symptoms, tDCS, Executive functions, Rumination, Effectiveness

2 Revision 1

2 comments · 1 Jan 2025 – 1 Jan 2025

Associate Editor

ACCEPT 1 Jan 2025

Dear Author,
Based on our reviewers' comments, your manuscript is acceptable for publication in this version.
Thank you.

Editor-in-Chief

MINOR REVISION 1 Jan 2025

Dear Author,
Thank you for revising your manuscript, but there are some comments that you should address before any further decision. Your manuscript reports an RCT, so you should use a CONSORT diagram to show the process of your study. Please see published articles in JJCDC.
-The CONSORT flow diagram is a critical component of transparent reporting in randomized controlled trials (RCTs), as it visually summarizes the flow of participants through each stage of the study (e.g., recruitment, randomization, allocation, follow-up, and analysis).
-The manuscript should use the format M±SD (Mean ± Standard Deviation) to report descriptive statistics such as means and standard deviations.

Please provide a CONSORT diagram and correct all tables to conform to the journal's standard presentation. Please see published RCT articles in JJCDC.
Thank you.

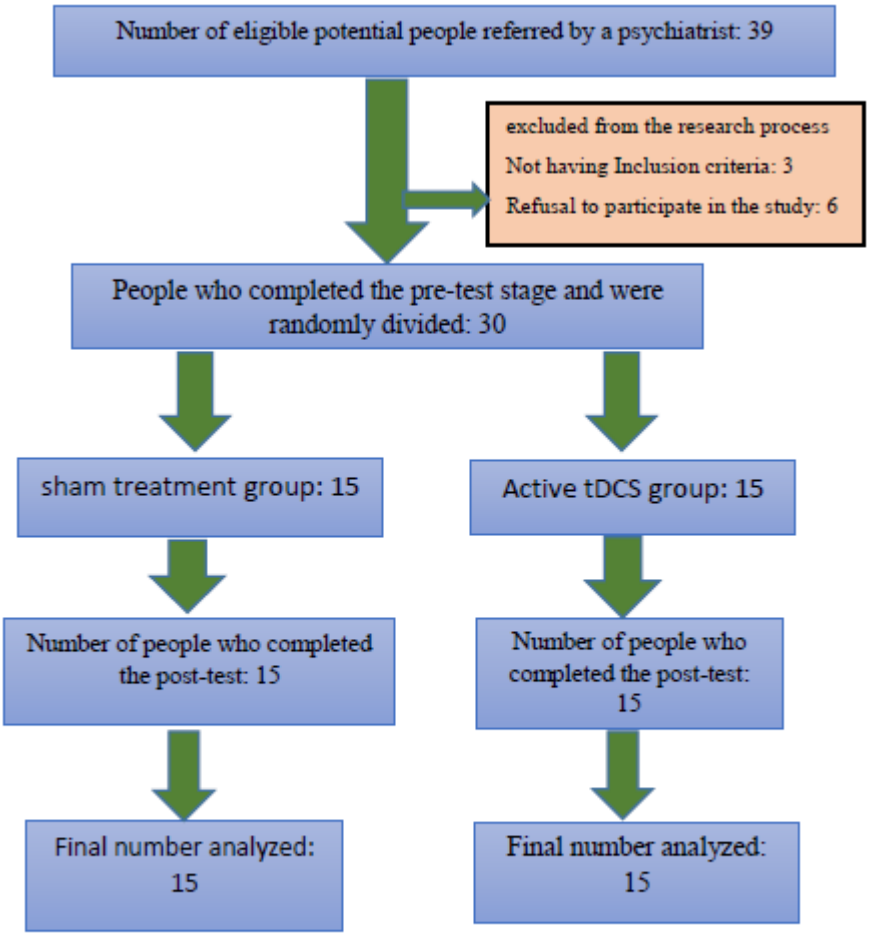
3

Revision 2

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Reviewer 1:	Author's response
1- . *Thank you for revising your manuscript, but there are some comments that you should revise before any other decision. You know your manuscript is RCT, then you should use a CONSORT diagram for showing the process of your study. Please see published articles in JJCDC.*	1- Greetings and thanks for your valuable comments  Figure 1: Flow diagram of the study process
2- *The manuscript should use the format M±SD (Mean ± Standard Deviation) to report descriptive statistics such as means and standard deviations*	-2 The average of MOCI, Y-BOCS, Mistake Rumination and Executive Functions in the pre-test of the Active tDCS group was 22.40 ± 2.09 , 22.33 ± 7.72, 20.93 ± 4.16 and 86.40 ± 14.38 respectively and in the sham treatment group was 21.53 ± 1.80 , 20.33 ± 6.89, 19.13 ± 5.34 and 83.06 ± 16.61 respectively.The mean of MOCI, Y-BOCS, Mistake Rumination and Executive Functions in the post-test of the Active tDCS group was 14.46 ± 3.06, 14.40 ± 2.99, 11.46 ± 2.13 and 102.86 ± 8.40 respectively and in the sham treatment group was 21.66 ± 1.54, 18.13 ± 6.99, 18.26 ± 4.89 and 86.93 ± 15.54 respectively.

3 Revision 2

1 comment · 10 Jan 2025

Editor-in-Chief

MINOR REVISION 10 Jan 2025

Hello
The diagram used should be based on CONSORT 2010. Please obtain the original CONSORT file from its official website and complete it exactly according to the CONSORT diagram. The tables still have problems. I previously said that the mean and
standard deviation should be in one column.
The manuscript text has been revised, but the diagram and tables need revision.
The mean and standard deviation should be presented in one column, for example:
36.50 ± 24.34
Please correct the standard diagram and tables and send them as soon as possible. Thank you.

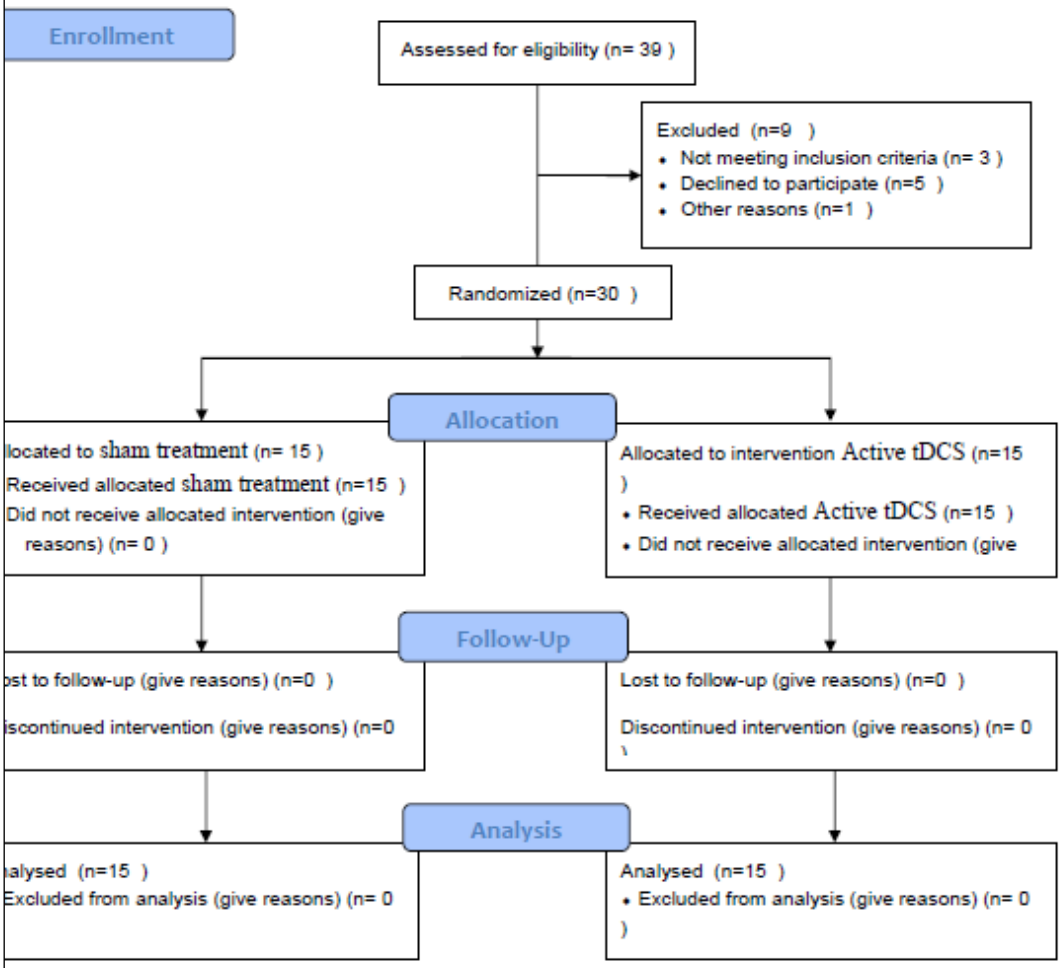
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Revision 3

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Reviewer 1:	Author's response
1- . *Thank you for revising your manuscript, but there are some comments that you should revise before any other decision. You know your manuscript is RCT, then you should use a CONSORT diagram for showing the process of your study. Please see published articles in JJCDC.*	1- Greetings and thanks for your valuable comments 
2- *The manuscript should use the format M±SD (Mean ± Standard Deviation) to report descriptive statistics such as means and standard deviations*	-2 The average of MOCI, Y-BOCS, Mistake Rumination and Executive Functions in the pre-test of the Active tDCS group was 22.40 ± 2.09 , 22.33 ± 7.72, 20.93 ± 4.16 and 86.40 ± 14.38 respectively and in the sham treatment group was 21.53 ± 1.80 , 20.33 ± 6.89, 19.13 ± 5.34 and 83.06 ± 16.61 respectively.The mean of MOCI, Y-BOCS, Mistake Rumination and Executive Functions in the post-test of the Active tDCS group was 14.46 ± 3.06, 14.40 ± 2.99, 11.46 ± 2.13 and 102.86 ± 8.40 respectively and in the sham treatment group was 21.66 ± 1.54, 18.13 ± 6.99, 18.26 ± 4.89 and 86.93 ± 15.54 respectively.

4 Revision 3

1 comment · 13 Jan 2025

Editor-in-Chief

ACCEPT 13 Jan 2025

Dear Author,
Thank you for submitting your revision to JJCDC. It should be noted that your manuscript in this version is acceptable for publication. I suggest changing the title of your manuscript to “The effectiveness of Transcranial direct current stimulation (tDCS) on executive functions, severity of obsessive-compulsive symptoms and rumination in people with obsessive-compulsive symptom: A Randomized Controlled Trial” in the proof version.
Thank you.