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Transcranial Direct Current Stimulation (tDCS) Used at Home for People with Self-Reported Depression: Impact on Self-Reported Concentration Problems

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Abstract

Background: There is a high prevalence of concentration and cognitive functioning problems in people with depression. Research evidence indicates that transcranial direct current stimulation (tDCS) can improve cognitive functioning, and an aspect of cognitive functioning is the ability to concentrate. Flow FL-100 is a tDCS device self-administered at home. **Purpose/Aim:** To investigate the impact of 1, 2, 3, 6 and 10 weeks of Flow Neuroscience AB FL-100 tDCS use on self-reported concentration problems in people with depression, using the Montgomery-Åsberg Depression Rating Scale Self (MADRS-S) concentration problem question. **Methods:** A retrospective analysis of MADRS-S self-report data collected between 2020 and 2024. **Results:** Out of 20197 tDCS users with self-reported depression at baseline, 10,888 had concentration problems (53.9%). Among those who adhered to the tDCS protocol, the proportion who moved from having concentration problems to not having them was 29.3% at one week, 37% at two weeks, 45.2% at three weeks, 54.7% at six weeks, and 57.4% at ten weeks. Concentration problems strongly correlate with depression. **Conclusion:** The results show that tDCS can reduce concentration problems in those with self-reported depression. Some people experience concentration problems despite addressing lifestyle and environmental factors that can negatively affect concentration. There are negative side effects of some methods of improving concentration, for example, the use of stimulants. tDCS could be a valuable alternative approach to reducing concentration problems in people experiencing depression. Appropriately designed and powered randomised controlled trials (RCTs) are warranted to investigate the impact of tDCS on cognitive functioning and concentration.

Keywords

Depression, Transcranial Direct Current Stimulation (tDCS), Concentration, Cognitive Functioning

1. Introduction

Concentration is defined as sustained attention, or the ability to focus on a particular stimulus for an extended period (Marziale et al., 2023). Concentration has two key elements: focusing on pertinent stimuli over time and filtering out distractions or irrelevant stimuli (Schoenberg & Scott, 2011). Many people experience an inability to concentrate effectively which negatively affects their ability to carry out tasks in their daily lives; 15% of people living in the European Union (EU) report concentration issues (Eurostat, 2025). People may wish to enhance their ability to concentrate to better undertake tasks and achieve their goals, in an increasingly complex information and technology based society demands on cognitive functioning are high (Dresler et al., 2018). People employ various biochemical, physical, and behavioural strategies to enhance their cognitive functioning; evidence for and possible negative effects of these strategies are required to enable people to make the best choices (Dresler et al., 2018).

Concentration deficits may be attributable to a wide range of psychiatric and systemic illnesses (Millan et al., 2012). Problems with concentration are mentioned in the DSM-5-TR in relation to depressive disorders (major depressive disorder [MDD], dysthymia, and premenstrual dysphoric disorder), generalized anxiety disorder, bipolar disorder, post-traumatic stress disorder (PTSD), traumatic brain injury (TBI), acute stress disorder, dissociative identity disorder, sleep disorders (insomnia, normal sleep variation, hypersomnolence disorder, and nightmare disorder), stimulant use disorder, and attenuated psychosis syndrome (American Psychiatric Association, 2022). Cognitive impairment and concentration difficulties are features of unipolar depressive disorders, partially independent of the severity of other symptoms, and they can have a unique negative impact on quality of life (Fattori et al., 2017). Cognitive deficits (including concentration problems) often persist despite reduction in depression, indicating need for interventions to address these problems (Rock et al., 2014).

Problems with concentration may be due to lifestyle factors (Marziale et al., 2023). Lifestyle factors that can contribute to concentration problems include poor quality sleep, poor diet (high sugar intake, low nutrient intake, consumption of highly processed foods, and a lack of fresh food), lack of physical activity, cannabis use, and alcohol use (McCormick, 2022). Dehydration can also negatively affect concentration (Grandjean & Grandjean, 2007).

Concentration problems can be caused by environmental factors that negatively affect sleep: noise, light exposure, disturbances from other people, temperature, and an uncomfortable bed (Griffiths & Hina, 2021). Wake-time environmental

factors that can negatively impact concentration include excessively cold or hot temperatures and high humidity (Taylor et al. 2016). Other factors include distractions due to noise, technological devices (e.g. mobile phones, computers), and other people (Van Der Stigchel, 2020).

Many people can experience concentration problems despite addressing lifestyle and environmental issues. Natural stimulants, such as ginkgo biloba and ginseng, may improve concentration, but not all people find them helpful, and effects may be temporary, with a subsequent drop in concentration following initial stimulation (Smith et al., 2014). Caffeine is widely used to enhance cognitive functioning and concentration (Cooper Jr. et al., 2021). Caffeine can improve cognitive functioning and concentration, but negative effects of caffeine can include anxiety, jitteriness, and sleep problems, and at larger doses cardiac arrhythmias and tachycardia (Cooper Jr. et al., 2021). Various food supplements have some evidence for improving concentration, including omega-3 fatty acids, iron and B vitamins (B12, B6, and B9); ensuring a diet contains sufficient amounts is advantageous (Andreeva et al., 2011; Jáuregui-Lobera, 2014).

Various forms of skills training are effective in enhancing cognitive functioning and concentration (Dresler et al., 2018). Tactics include computer gaming, sudoku, crosswords, and musical activities (Dresler et al., 2018). Specific 'brain-training' interventions can improve performance on the trained tasks, but there is less evidence that training improves everyday cognitive performance (Simons et al., 2016). A systematic review of strategy-based cognitive training specifically targeted at people experiencing depression revealed significant improvements in cognitive and affective outcomes (Woolf et al., 2022).

Several drugs used for the treatment of attention deficit hyperactivity disorder (ADHD) are recreationally used to improve concentration and cognitive functioning; for example, drugs such as Adderall (mixed amphetamine salts) and Ritalin (methylphenidate) (Wilens et al., 2008). Some people find that through taking such drugs they can improve cognition, including working memory, concentration, and memory consolidation, as well as increased wakefulness and motivation (Wilens et al., 2008). However, such drugs can lead to addiction and physical dependence, cardiovascular problems (high blood pressure, increased heart rate), psychosis (hallucinations, paranoia), anxiety, and irritability, and there is potential for overdose and serious harm to health (with very rare cases of death) (Simola & Carta, 2016).

Modafinil is a central nervous system (CNS) stimulant eugeroic that directly increases cortical catecholamine levels, indirectly upregulates cerebral serotonin, glutamate, orexin, and histamine levels, and indirectly decreases cerebral gamma-aminobutyric acid levels (Battleday & Brem, 2015; Müller et al., 2013). In healthy non-sleep-deprived individuals, modafinil can enhance attention, executive functions, and learning (Battleday & Brem, 2015; Müller et al., 2013). Modafinil can improve executive function in currently depressed patients (DeBattista et al., 2004). Compared to other CNS drugs such as Adderall and Ritalin, Modafinil has

a lower risk of dependency and fewer negative side effects, but these risk factors are still present (Griffiths & Girardi, 2018).

Non-invasive brain stimulation (NIBS) techniques can improve cognition in people experiencing depression; for example, transcranial magnetic stimulation (TMS) can improve concentration, executive functioning, and working memory (Morriss et al., 2024). Transcranial direct current stimulation (tDCS) is a type of NIBS that uses mild electric currents to modulate brain activity and treat neurological and mental disorders (Razza et al., 2020). tDCS devices are easy to use, have relatively low cost and can be used at home while maintaining an excellent safety and tolerability profile (Borrione et al., 2021; Moffa et al., 2020). tDCS treatment has only a few negative side effects (Borrione et al., 2021); the most reported side effect is a mild headache lasting less than an hour (Razza et al., 2020). There is evidence for the use of tDCS in the effective treatment of depression (Borrione et al., 2024; Griffiths et al., 2023; 2024a; 2024b; 2024c; 2025; Razza et al., 2020), anxiety (Sagliano et al., 2019; Stein et al., 2020), tinnitus (Yuan et al., 2018), and pain (Lloyd et al., 2020). The tDCS protocol of bi-directional via anode (which increases cortical arousal) and cathode (which decreases cortical arousal) over left and right dorsolateral prefrontal cortex (DLPFC), F3 and F4 electrodes on a standard electroencephalogram (EEG) positioning, respectively, with stimulation at 2 mA, has been found to be safe and well-tolerated, with mild temporary physical sensations (Razza et al., 2020).

Research evidence shows that tDCS can enhance cognitive performance in healthy and clinical populations (Pisoni et al., 2018). A systematic review and meta-analysis revealed significant tDCS effects on various cognitive functions, specifically improvements in working memory, reaction time (RT), inhibition RT, flexibility RT, theory of mind RT, working memory accuracy, theory of mind accuracy and flexibility accuracy (Narmashiri & Akbari, 2025). tDCS can effectively enhance cognitive task performance (Narmashiri & Akbari, 2025), and the ability to concentrate is a factor in effectively engaging and performing many cognitive tasks.

tDCS may improve concentration problems, but there is a need for more evidence. This large-scale retrospective data analysis study investigated the impact of Flow FL-100 tDCS on the self-reported concentration problems of people self-reporting that they have depression. This study addresses the question of "what is the impact of tDCS on concentration problems as measured by the concentration question of the Montgomery-Åsberg Depression Rating Scale Self (MADRS-S) scale (Svanborg & Åsberg, 2001)?" The study investigates the change in concentration problems over a period of ten weeks of tDCS use.

2. Methods

2.1. Design

The study was a retrospective analysis of data collected by Flow Neuroscience AB between 2020 and 2024. Flow Neuroscience AB meet their legal obligations to

comply with UK and EU GDPR. All those providing data gave permission to do so to Flow Neuroscience AB.

All users are provided with Flow Neuroscience AB's privacy policy https://api.flowneuroscience.com/app/sign_up/privacy/en/.

Analysis was conducted on data from an anonymised database provided by Flow Neuroscience AB to University of Northampton, UK.

2.2. Approval

Approval was gained from the owners of the Flow Neuroscience AB data. The study was undertaken in accordance with the Declaration of Helsinki. The study was approved by the Research Ethics Committee at the Faculty of Arts, Science and Technology, University of Northampton. The ethics approval reference is FREC2425005.

2.3. Participants

The inclusion criteria to participate were individuals aged ≥ 18 with a MADRS-S total score of 13 or over, i.e. meeting the threshold for at least mild depression. The exclusion criteria were defined by Flow Neuroscience AB based on regulation approvals: medical reasons preventing wearing the devices (e.g., epilepsy, heart disease, an open wound in the area of the pad contact point on the forehead, a neurological or neuropsychiatric condition, recent or planned major surgical procedure, defect or implant), pregnancy (or suspected pregnancy), bipolar disorder or current suicidal ideation (thoughts about ending one's own life).

2.4. Measures

A self-rating version of the original clinician-rated Montgomery-Åsberg Depression Rating Scale Self (MADRS-S) (Svanborg & Åsberg, 2001) was used. It has 9 items; each one scored between 0 (minimum) and 6 (maximum). The person is asked to assess how he or she has felt during the previous 3 days. The scores for all 9 items are summed, and cutoff scores for the MADRS-S define the level of depression (total score of 0 - 12 = minimal depression, 13 - 19 = mild depression, 20 - 34 = moderate depression, ≥35 = severe depression). Remission is defined as a MADRS-S score change from 13 or over (have depression) to 12 or less (cut-off for self-reported depression). The MADRS-S scale has acceptable psychometric properties (validity, reliability, and sensitivity to change) (Fantino & Moore, 2009).

MADRS-S was completed at baseline (prior to starting tDCS) and then once every week over the course of tDCS use. Analysis was conducted on the scores specific to the MADRS-S concentration question. This measures self-perceived ability to focus and concentrate and carry out essential tasks (i.e. reading/talking). Question 5 on MADRS-S:

5. Concentration Difficulties representing: difficulties in collecting one's

thoughts mounting to incapacitating lack of concentration. Rate according to intensity, frequency, and degree of incapacity produced.

0 No difficulties in concentrating.

1/2 Occasional difficulties in collecting one's thoughts.

3/4 Difficulties in concentrating and sustaining thought which reduces ability to read or hold a conversation.

5/6 Unable to read or converse without great difficulty.

Having concentration problems was defined as scoring 3/4 or 5/6 and not having concentration problems was defined as scoring 0 or 1/2.

2.5. Intervention

Flow Neuroscience FL-100 is a BSI UKCA-certified and Conformité Européenne (CE) marked Class IIa medical device (UKCA 776047). Flow can be purchased directly by anyone over the age of 18 via the manufacturer's website in the European Union and other European countries.

The tDCS treatment consisted of five 2 mA, 30-minute sessions per week over three weeks, followed by two sessions per week for seven weeks. The tDCS device is a headset placed over the forehead with two pre-positioned, soft-padded foam electrodes, each measuring 23 cm^2. The anode was positioned over the left dorsolateral prefrontal cortex (DLPFC) (F3 on the international 10/20 EEG system) and the cathode over the right DLPFC (F4). In the treatment protocol, the user remains awake and self-administers at home or another convenient place.

The Flow Neuroscience AB mobile phone software app is used to set up and control the Bluetooth-connected Flow FL-100 tDCS headset via the user's smartphone. Written instructions are provided, and the Flow Neuroscience AB website offers information, usage training, and email support.

2.6. Data Processing

All weekly data from MADRS-S (concentration item Q5 and total), Flow stimulations (counts), and user metadata (age, sex, diagnoses) were merged. MADRS-S entries with a completion time of 14 seconds or less were excluded to minimise invalid responses. Weeks were truncated at 10. This final, filtered dataset was then used for all analyses described in this paper.

2.7. Adherence Definitions

Adherence to the protocol was achieved when the users completed the following number of stimulations:

- Week 1, 2 and 3 adherence: 4 or 5 stimulations per week.
- Week 6 adherence: 4 or 5 stimulations in Weeks 1 to 3 and 2 stimulations per week in Weeks 4 to 6.
- Week 10 adherence: 4 or 5 stimulations in Weeks 1 - 3 and 2 stimulations per week in Weeks 4 to 10.

3. Results

Baseline Prevalence

Out of 20,197 tDCS users at baseline, 10,888 had concentration problems (53.9%).

Table 1 presents the prevalence of concentration problems split by user reported characteristics at baseline. Missing data is excluded. This shows that at baseline, concentration problems are more common in younger tDCS users, and it is less common with increasing age. Concentration problems are higher in females and people who report benzodiazepine use, ADHD or ADHD with anxiety, and anxiety with PTSD.

Table 1. Subgroup baseline for concentration problems.

Group	Group population size	Proportion reporting concentration problems
Age 18 - 20	282	64.2%
Age 21 - 30	1 751	59.4%
Age 31 - 40	3 573	57.5%
Age 41 - 50	3 438	55.0%
Age 51 - 60	2 087	50.3%
Age 61 - 70	854	44.6%
Age 71 - 80	256	43.8%
Age 81 - 100	39	43.6%
Female	6 844	57.8%
Male	6 237	51.6%
On antidepressants	5 913	54.7%
Not on antidepressants	14 024	54.6%
Any benzodiazepine	1 350	63.4%
No benzodiazepine	18 587	54.0%
Anxiety syndrome	971	47.8%
ADHD	399	69.7%
Bipolar	181	57.5%
PTSD	153	54.2%
Anxiety + long-term stress/exhaustion	119	54.6%
Anxiety + PTSD	131	67.9%
ADHD + anxiety	142	72.5%

Table 2 presents user sex percentage and percentage on antidepressants at Weeks 3, 6, and 10 of those who had reported a MADRS-S score at that week, excluding missing data. This shows that the proportions of men and women changed very

little over time, and that the dropout rates were similar. The proportions of those on antidepressants increased slightly over time.

Table 2. User characteristics at Weeks 3, 6, 10 (analysis population with MADRS-S score at that week).

Week	Men	Women	On antidepressants
3	4228 (47.9%)	4592 (52.1%)	4099 (34.0%)
6	2965 (48.1%)	3200 (51.9%)	2884 (35.6%)
10	2200 (47.1%)	2469 (52.9%)	2205 (36.6%)

Table 3 presents the user change from reporting concentration problems to not reporting concentration problems at specific usage weeks. There is a reduction in reporting concentration problems over time, indicating a cumulative positive effect over time of tDCS in reducing concentration problems.

Table 3. User change from reporting concentration problems to no concentration problems at specific weeks of usage.

Week	no concentration problems/reporting concentration problems at baseline	No longer reporting concentration problems %
1	2257/7710	29.3%
2	2186/5910	37.0%
3	1959/4335	45.2%
6	1122/2051	54.7%
10	565/984	57.4%

Results were split for the four most reported diagnoses and are listed in Table 4. This shows that the proportion no longer reporting concentration problems is generally lower when a person reports an additional diagnosis, with a self-reported diagnosis of ADHD showing the lowest proportion.

Table 4. User change from reporting concentration problems to no concentration problems at specific weeks of usage, split via the top four reported diagnoses.

Mental health diagnosis	Week	No concentration problems/ reporting concentration problems at baseline	No longer reporting concentration problems %
Anxiety			
	1	198/793	25.0%
	2	219/632	34.7%
	3	216/505	42.8%
	6	140/265	52.8%
	10	79/141	56.0%

Continued

ADHD			
	1	115/541	21.3%
	2	128/416	30.8%
	3	107/296	36.1%
	6	68/142	47.9%
	10	33/64	51.6%
Bipolar			
	1	46/166	27.7%
	2	46/137	33.6%
	3	34/102	33.3%
	6	34/60	56.7%
	10	15/32	46.9%
PTSD			
	1	133/630	21.1%
	2	161/508	31.7%
	3	142/391	36.3%
	6	93/197	47.2%
	10	53/103	51.5%

Correctly following the protocol of five sessions a week in the first three weeks means that a user would have had 15 sessions of tDCS. Table 5 presents the dose response by cumulative stimulations by week 3. This shows that there is a positive dose response for eight stimulations or more, with those using the recommended protocol of five sessions per week for three weeks gaining the most benefit.

Table 5. Dose response by cumulative stimulations by week 3.

Number of tDCS stimulations	Numbers of users reporting no problems with concentration	Week 3
1 - 3	35 out of 108	32.4%
4 - 7	99 out of 341	29.0%
8 - 14	1170 out of 2853	41.0%
15	1495 out of 3278	45.6%

A repeated-measures ANOVA was performed on the MADRS-S scores of 3645 users who submitted scores at all 6 time points: baseline, week 1, week 2, week 3, week 6, and week 10 and presented in Table 6. The analysis determined that mean MADRS-S Q5 concentration scores differed significantly across the six time points, as indicated by a large F-statistic ($F = 979.97$) and a low p-value ($p < 0.001$).

A pairwise comparison using Bonferroni correction shows a consistent pattern of significant reduction in concentration scores from baseline to all subsequent time points (Table 1). This indicates a general improvement in concentration over time. Additionally, the concentration score differences are significant between week 1 and week 2 ($p < 0.001$), week 2 and week 3 ($p < 0.001$), week 3 and week 6 ($p < 0.001$), but not significant between week 6 and week 10 ($p = 0.602$). This suggests the initial weeks of treatment were key to its effectiveness, while later weeks played a role in maintaining those benefits.

Table 6. A repeated-measures ANOVA results.

Groups		Mean difference	95% CI lower bound	95% CI upper bound	Adjusted *p*-value
Baseline	Week 1	0.619	0.557	0.681	<0.001
Baseline	Week 2	0.847	0.782	0.912	<0.001
Baseline	Week 3	1.056	0.988	1.124	<0.001
Baseline	Week 6	1.215	1.144	1.285	<0.001
Baseline	Week 10	1.253	1.181	1.326	<0.001
Week 1	Week 2	0.228	0.172	0.284	<0.001
Week 2	Week 3	0.209	0.155	0.263	<0.001
Week 3	Week 6	0.159	0.101	0.216	<0.001
Week 6	Week 10	0.039	-0.017	0.094	0.602

Table 7 shows the correlations between MADRS-S concentration question and total MADRS-S. This shows that concentration problems correlate strongly with depression scores.

Table 7. Pearson correlations between concentration question and total MADRS-S.

Time	n	Pearson r	95% CI	*p*-value
Baseline	20,197	0.65	(0.65 - 0.66)	<0.001
Week 1	15,739	0.74	(0.74 - 0.75)	<0.001
Week 2	14,242	0.77	(0.77 - 0.78)	<0.001
Week 3	12,065	0.79	(0.78 - 0.79)	<0.001
Week 6	8092	0.81	(0.80 - 0.82)	<0.001
Week 10	6019	0.81	(0.81 - 0.82)	<0.001

4. Discussion

This large-scale retrospective data analysis study found that Flow FL-100 tDCS had a positive impact on the self-reported concentration problems of those self-reporting depression using the Montgomery-Åsberg Depression Rating Scale Self (MADRS-S) scale (Svanborg & Åsberg, 2001). This study adds to existing evidence

of the significant positive effects of tDCS on various cognitive functions (Narmashiri & Akbari, 2025). In people who adhered to the minimum tDCS protocol for inclusion in the study, the proportion who moved from reporting concentration problems to not reporting concentration problems was 29.3% at week 1, 37% at week 2, 45.2% at week 3, 54.7% at week 6, and 57.4% at week 10. People can gain the most benefit from using tDCS when they adhere to the full recommended protocol and use tDCS for ten weeks (although there is less gain from six weeks to ten, so a treatment period of six weeks could be recommended).

This study found that Flow FL-100 delivered tDCS can be used by patients at home with the instructions and support provided at their primary care provider and by the Flow Neuroscience website and software application. GP primary care services are well-placed to deliver tDCS depression treatment as they seek to understand a patient's individual circumstances, such as problems concentrating, and provide individualised support and treatment. GP primary care services have successfully offered tDCS for depression with clinically significant improvement rates of over 50% (Griffiths et al., 2023; Griffiths et al., 2024c). This study's results suggest that tDCS works relatively quickly, which is aligned with other tDCS studies that reported positive results after only a few tDCS sessions (Alfonsi et al., 2023; Charest et al., 2021; Frase et al., 2019). Therefore, tDCS could be considered as a treatment when a relatively quick relief of concentration problems is a key goal.

There was a clear association between depression and concentration problems in this study, and the link between depression and cognitive impairment is well documented (Fattori et al., 2017). This emphasises the importance of seeking to reduce depression to improve concentration and cognitive functioning. Addressing cognitive impairment in addition to depressive symptoms is important in improving functional outcomes for people with depression (Rock et al., 2014). In improving depression and reducing concentration problems, tDCS contributes to the reduction in impaired real world functioning (work, domestic activities, social activities, leisure activities, social relationships) seen in other studies (Griffiths, et al., 2023; 2024a; 2024b; 2024c; 2025).

Cognitive and concentration problems are a feature of mental health diagnoses other than depression (American Psychiatric Association, 2022). This study found that there was a reduction in concentration problems when users reported that they had an additional mental health diagnosis (bipolar disorder, PTSD, anxiety, ADHD), indicating the potential positive impact of tDCS where these diagnoses are the only or primary diagnosis. Concentration problems are a core feature of ADHD and, while the reduction in concentration problems was less in the group reporting this diagnosis it was still around 50% at week six and ten.

tDCS leads to modulations of all core components of executive functioning enabling assumptions about the cognitive mechanisms underlying these tDCS-related modulations (Strobach & Antonenko, 2017). The potential neurobiological mechanisms through which tDCS might improve concentration could be investi-

gated further. Future studies should seek to have an extended follow-up data collection period, to help determine longer term effects of tDCS and if "top up" treatments might be useful or required to sustain any benefits. Future studies could investigate tDCS as a method of reducing concentration problems where they occur without the presence of depression.

5. Limitations

The study had several limitations. The use of Flow FL-100 tDCS was "open-label" and adjunct to any existing other treatments or therapies and unmeasured factors such as lifestyle changes, which could influence depression and concentration. All data were self-reported. This study relied on a single concentration question (MADRS-S question 5). Future studies should incorporate standardised, valid and reliable cognitive function assessments (e.g., The Perceived Deficits Questionnaire-Depression (PDQ-D), Lam et al., 2018 and the THINC-Integrated Tool (THINC-it) screening assessment for cognitive dysfunction [McIntyre, 2017]). There can be a placebo effect of tDCS on cognitive functioning (Bin Dawood et al., 2020), but in this study, tDCS was not being given for improving cognitive functioning (it was given for addressing depression), and participants were not told that tDCS may improve concentration. The participant population was people who choose to buy Flow FL-100 for themselves or who had been given a Flow FL-100, this population may differ from broader clinical population with depression in terms of severity of depression, current treatment, sociodemographics, motivation, socioeconomic status, and treatment history.

6. Conclusion

This study is the first to report that greater adherence to the tDCS protocol and longer use are associated with greater improvement in the proportion of people reporting no concentration problems. tDCS can be used for a relatively quick reduction in concentration problems. It is important to be able to provide people with depression a treatment option for reducing their concentration problems. While tDCS treatment may have reduced concentration problems symptoms for some, it is unclear why some patients did not respond. Research is needed to understand individual differences in response, particularly regarding the mechanisms of tDCS action.

Flow tDCS can be purchased and used independently of healthcare services in several countries; however, its cost is prohibitive for many people, and awareness and availability within healthcare systems are low. Improving access through free universal healthcare systems like the UK's NHS would help address treatment inequality. Primary care general practices are well-placed to prescribe tDCS treatment as most people first seek help for depression through a GP, and many patients are treated by their GP for long-term or recurrent depression. Appropriately designed and powered RCTs are warranted to investigate the impact of tDCS on cognitive functioning and concentration.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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