



Impact Of MBRP On Executive Function Of Opioid Disorder Patients: A Study Of Kota, Rajasthan

By: Rajnish Mehra,

Career Point University, Kota, Rajasthan

Abstract

Mindfulness is best viewed as a state of being rather than a specific activity. With conscious awareness, almost any action may be performed. The term "mindfulness," which was originally connected with Buddhist psychology, derives from the Sanskrit word "Smti," which literally translates to "that which is remembered." Mindfulness might thus be defined as remembering to pay attention to our present moment experience. Mindfulness is one of the earliest meditation approaches based on Buddhist traditions. Several studies have shown that it is effective for schizophrenia, depression, social anxiety disorder, drug use disorder, and other conditions. It also has an impact on the cognitive function of drug users and persons suffering from psychiatric illnesses. The current study was done in Kota, Rajasthan, with the goal of determining the efficacy of mindfulness-based relapse prevention therapy (MBRP) on executive function (EF) in opioid use disorder patients. A total of 40 patients were drawn from the OPD, Department of Psychiatry (n=20 for the intervention group and n=20 for the control group). The DSM 5 diagnostic criterion for opioid use disorder was used, and patients were chosen for the study based on inclusion and exclusion criteria. To determine the efficacy of MBRP on EF, data was analysed using the Wilcoxon matched pair sign rank test and the Mann-Whitney U test. Conclusion and Results: The study's findings suggested that MBRP is an effective intervention strategy for improving EF in opioid addicts in Kota, Rajasthan.

Key words: Mindfulness, Depression, Social Anxiety, Substance, Executive Function

Introduction

Drug addiction is a compulsive drug-seeking behaviour characterised by high longing followed by drug intake. This sort of conduct might reoccur even after a lengthy time of sobriety. Prolonged drug use may affect cognitive function. Certain brain areas, such as the striatum, prefrontal cortex, amygdala, and hippocampus, have been found in studies to change following drug addiction, and these brain regions also operate for cognitive tasks such as memory, learning, attention, reasoning, and problem solving. People use medicines despite their harmful effects. According to the National House Survey, the prevalence rate of opiate usage in India is 0.8%, and it is steadily growing. Substance use disorder treatment options include medicine, a 12-step group programme, cognitive behaviour therapy, and motivational therapy.

Mindfulness therapy is a type of psychotherapy in which the individual acts as an outside observer of his or her own activities, behaviours, thoughts, feelings, sensations, and emotions. The origins of mindfulness may be traced in Buddhist literature, notably the "Satipatthana Sutra" and the Abhidharma. Since then, mindfulness has been practised in the form of mindfulness meditation, and it has been proven to be an effective treatment for substance dependency, anxiety, depression, alcohol and other drug usage, and sleep issues. Mindfulness treatment was also proven to be effective in treating cognition-related disorders. Mindfulness treatment has been shown to improve long-term memory, working memory, attention, visual spatial speed, and executive functioning, according to Zeidan et al. In light of past research, the current study sought to investigate the effect of Mindfulness-Based Relapse Prevention (MBRP) on Executive Function (EF), with the following goals in mind.

Objectives

1. To study the effect of MBRP on executive function.
2. To assess the Executive Function (EF) of opioid disorder patients.
3. To compare the patients receiving MBRP with the patients received Treatment as Usual (TAU) on EF after MBRP intervention.

Hypotheses

1. There is significant relationship between Opioid use disorder with the affects Executive Function.
2. There is significant difference between MBRP therapy and TAU to improves Executive Function of opioid users.
3. There is significant difference between MBRP group and control group after 2 months of MBRP intervention

Methodology

The current study was carried out in Kota, Rajasthan, to determine the efficacy of MBRP on opioid use disorder patients. As a result, a sample of 40 male opioid users was drawn at random from the OPD. After meeting the DSM-5 diagnostic criteria for opioid use disorder, the patients were chosen for the study using the inclusion and exclusion criteria listed below.

Inclusion criteria

- Male age between 18-40 years
- Education from primary level to graduate
- Ready to give written consent

Exclusion criteria

- Co-morbidity of any medical or psychiatric condition, mental retardation, withdrawal symptoms, and numerous drug use disorders are all possible.
- refused to provide formal permission Following that, patients were randomly separated into intervention and control groups and these instruments were provided to collect data.

Tools

- Socio-demographic and Clinical Data Sheet - Semi-structured clinical and personal data sheets were used to obtain clinical and personal information from patients.

This sheet includes information such as age, socioeconomic situation, education, place of residence, religion, marital status, and a family history of substance abuse. It also questioned about sickness duration, onset, co-morbidity, and past treatment history.

Procedure

First, all of the patients were diagnosed with opioid use disorder using the DSM 5 criteria. Following that, its socio-demographic information was gathered utilising a socio-demographic and clinical data sheet. Patients who met the inclusion criteria were given information about the MBRP programme. Patients who consented to participate in the treatment session and were willing to give written consent to be a part of the MBRP were included in the study. The patients were then given both of the instruments stated above before to the therapy sessions to collect baseline data. For two months, each patient received one session each week according to the MBRP module developed by the researchers. Therapy module Patients were given MBRP sessions based on the module listed below.

1st Week: This week, patients were taught how to analyse their own ideas, which had been taken over by their imaginations. Patients were taught to capture the flow of thinking without using force by doing a comprehensive "body scan" in which they softly focused on each and every body component, feelings within and outside the body. They were also told to pick a regular activity for cultivating mindfulness.

2nd Week: This week, "breath mindfulness" and "sitting meditation" were performed. Patients employed this strategy to focus their attention on each individual area involved in breathing. Patients practising seated meditation explored focusing their consciousness to sensations inside the body, then expanding their awareness to the entire body sequentially.

3rd Week: This week, patients learned to practise mindfulness by listening to the noises around them. It was accomplished by sitting and focusing their attention on their breath for a few minutes before progressively focusing their attention on the sound and its qualities. This class also included the practise of "three minutes breathing space." Patients learned to broaden and restrict their awareness of themselves and their surroundings in this practise. This session also included "mindfulness walking," in which patients walked attentively.

4th Week: Patients were taught mindfulness here by envisioning themselves "walking along the street." They learned about their thoughts and feelings, as well as how they might impact their mood, via this exercise. This session concluded with being aware of thoughts and feelings without being emotionally overwhelmed.

5th Week: In the sixth session, patients learned to practise mindfulness whenever there is an emergency. They practised "coping breathing" for this purpose, in which they expanded their awareness beyond breath to sensations, feelings, thoughts, and emotions to the entire body. This exercise was designed to be practised in a difficult scenario.

6th Week: In this session, patients learned "awareness with silence" after learning mindfulness of bodily sensations, thoughts, emotions, and mind. They also learned "love and compassion," in which their love experience ranges from loving persons close to them to loving the entire planet.

7th Week: Patients learned to pay attention to them this week. They were taught self-care and were advised to live a healthy lifestyle. They also practised "choiceless awareness," in which they would sit or lie down and bring consciousness to any random thought that came to mind.

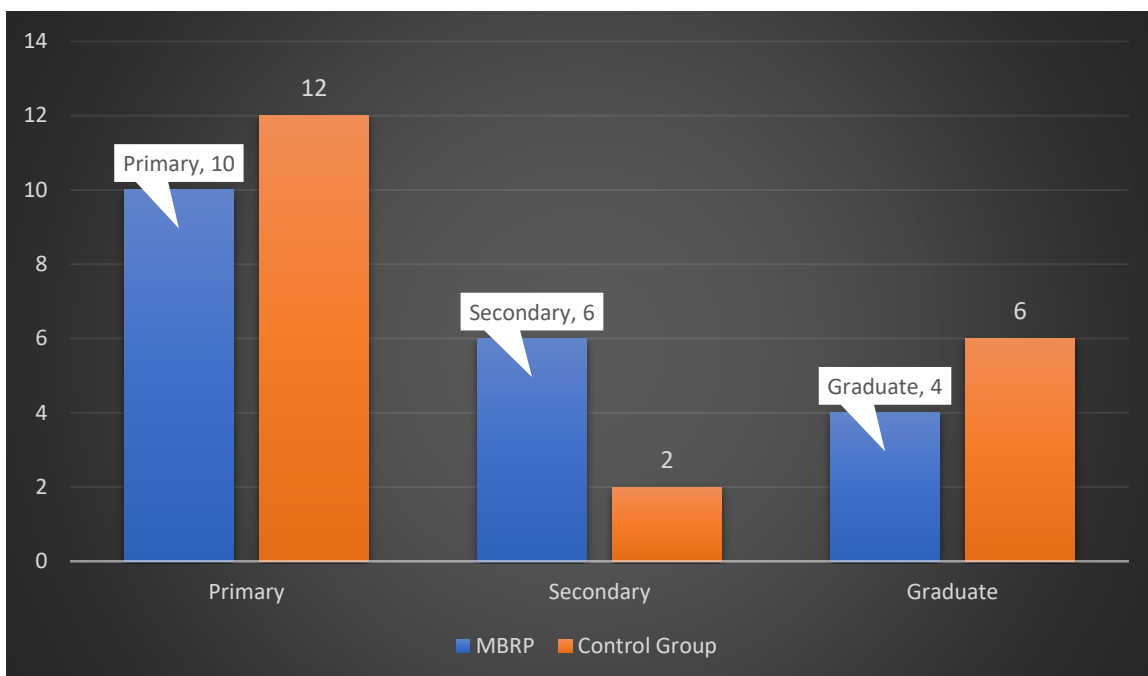
8th Week: In the last session, patients were briefed on all of the practises and advised to perform them on a regular basis, whether they needed it or not. Patients in the control group were not exposed to MBRP and instead got only TAU. Following the completion of all MBRP sessions, both groups were assessed using the same techniques, and data was gathered for statistical analysis.

Statistical analysis

The Chi square test was performed to determine within-group variations in socio-demographic characteristics between patients. The **Wilcoxon matched pair sign rank test** was used to examine the change in scores as a result of intervention at two periods in time. **Mann-whitney U test** was used to compare the MBRP group to the control group at the beginning and end of the study.

Table 1-6 shows the number and percentage of patients assigned to the intervention and control groups. Education ($X^2 = 3.42$, $p = 0.28$), married status ($X^2 = 0.10$, $p = 1.00$), religion ($X^2 = 0.90$, $p = 0.48$), occupation ($X^2 = 1.11$, $p = 0.57$), residence ($X^2 = 3.43$, $p = 0.07$), and socioeconomic position ($X^2 = 1.43$, $p = 0.62$) reveal no significant difference between the two groups.

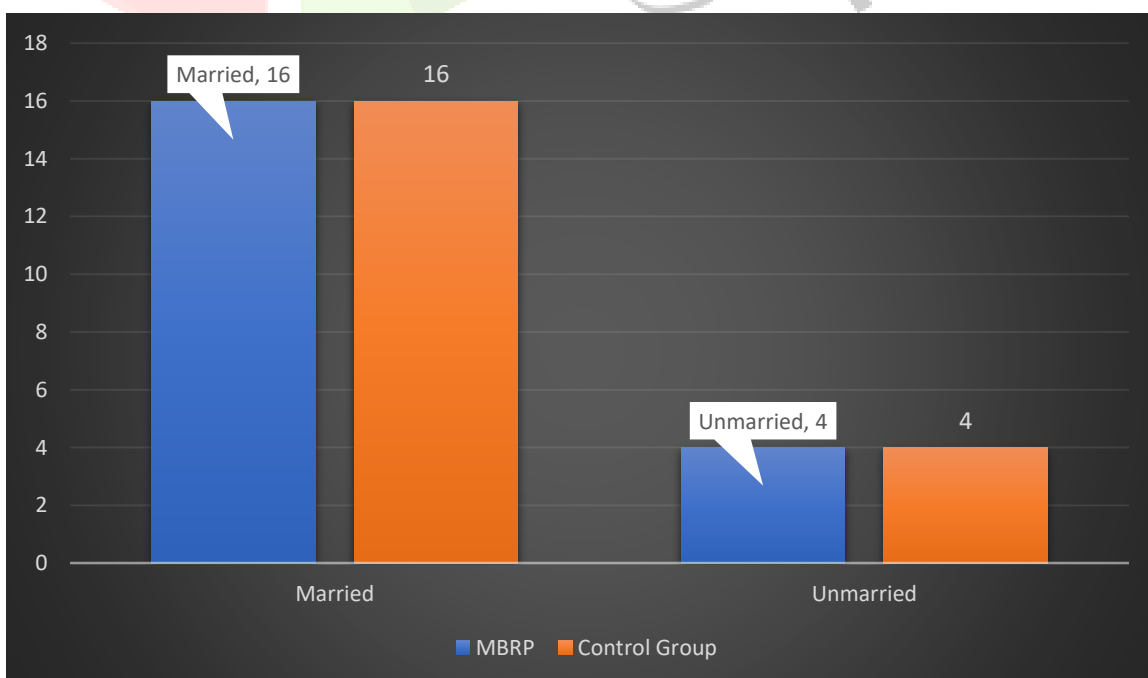
Table-1. Difference between MBRP group and control group on Education



S. No	Particulars	MBRP (n=20)	Percentage	Control group (n=20)	Percentage	Chi-square	Sig.
1.	Primary School	10	50%	12	60%	3.42	0.28
2.	Secondary School	6	30%	2	10%		
3.	Graduate	4	20%	6	30%		

(Source: Primary Data)

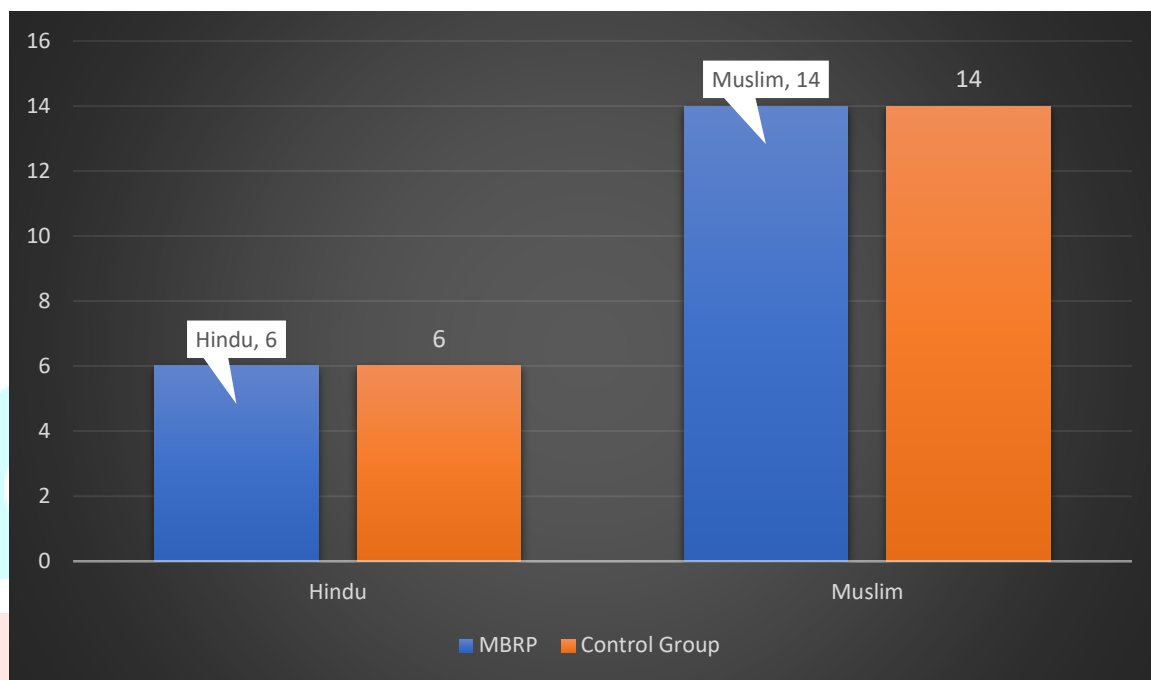
Table-2. Difference between MBRP group and control group on Marital Status



S. No	Particulars	MBRP (n=20)	Percentage	Control group (n=20)	Percentage	Chi-square	Sig.
1.	Married	16	80%	16	80%	0.10	1.00
2.	Unmarried	4	20%	4	20%		

(Source: Primary Data)

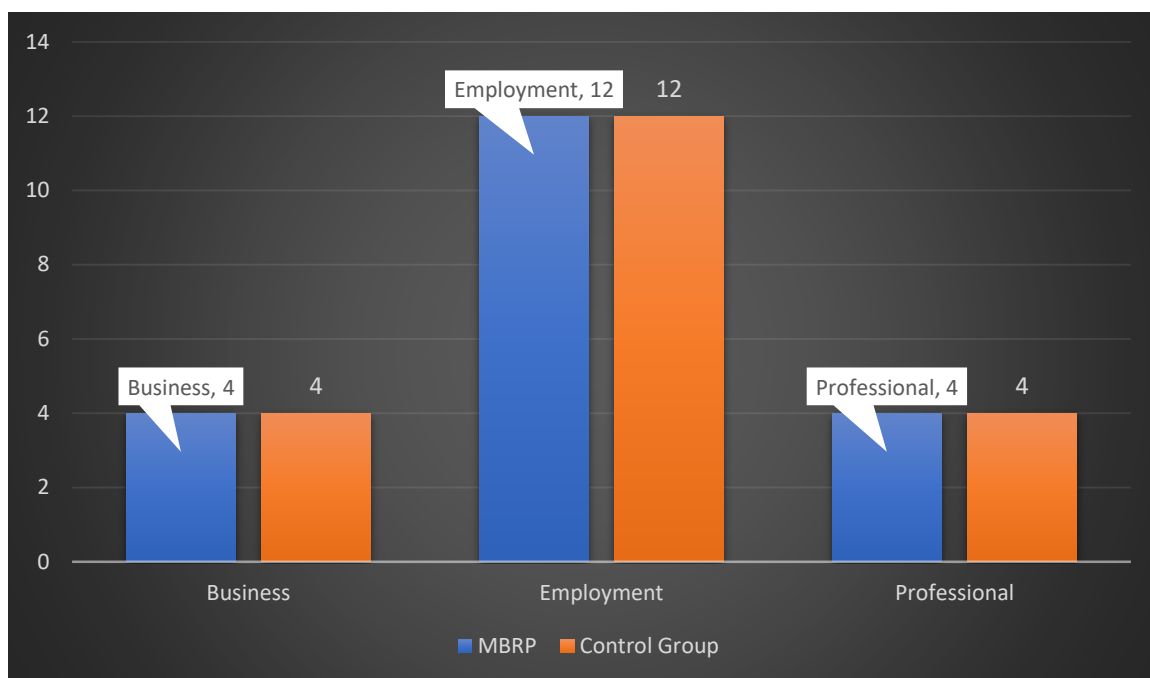
Table-3. Difference between MBRP group and control group on Religion



S. No	Particulars	MBRP (n=20)	Percentage	Control group (n=20)	Percentage	Chi-square	Sig.
1.	Hindu	6	30%	6	30%	0.90	0.48
2.	Muslim	14	70%	14	70%		

(Source: Primary Data)

Table-4. Difference between MBRP group and control group on Occupation



S. No	Particulars	MBRP (n=20)	Percentage	Control group (n=20)	Percentage	Chi-square	Sig.
1.	Business	4	20%	4	20%	1.11	0.57
2.	Employment	12	60%	12	60%		
3.	Professional	4	20%	4	20%		

(Source: Primary Data)

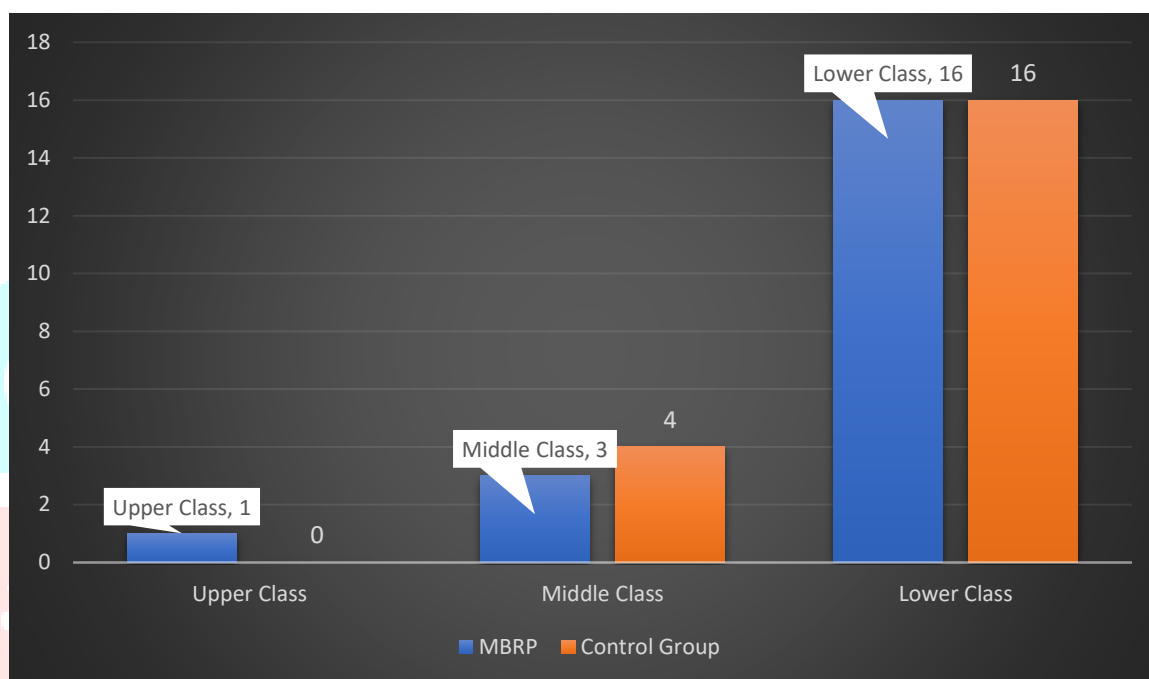
Table-5. Difference between MBRP group and control group on Area of Resident



S. No	Particulars	MBRP (n=20)	Percentage	Control group (n=20)	Percentage	Chi-square	Sig.
1.	Town	6	30%	0	00%	3.43	0.07
2.	Village	14	70%	20	100%		

(Source: Primary Data)

Table-6. Difference between MBRP group and control group on Socio economic Class



S. No	Particulars	MBRP (n=20)	Percentage	Control group (n=20)	Percentage	Chi-square	Sig.
1.	Upper Class	1	5%	0	0%	1.43	0.62
2.	Middle Class	3	15%	4	20%		
3.	Lower Class	16	80%	16	80%		

(Source: Primary Data)

For categorical data, an independent t test was used to examine the difference in age and duration of sickness between the two groups. **Table 7** shows that neither group differs from the other in terms of age ($t = 0.550$, $p = 0.77$) or length of sickness ($t = 0.986$, $p = 0.49$).

Table-7. Difference between MBRP group and control group on age and duration of illness

Variable	MBRP Group		Control group		t	P
	Mean	S.D.	Mean	S.D.		
Age (Years)	26.66	6.88	25.55	3.22	0.550	0.77
Duration of Illness (Years)	6.87	4.39	4.5	3.97	0.986	0.49

(Source: Primary Data)

Table-8. Comparison Between MBRP group and Control group at baseline

Variable	Group	Mean	S.D.	Z	p
Perseverative error	MBRP	45.31	31.36	-1.43	0.19
	Control	48.80	32.40		
Category Complete	MBRP	3.36	2.27	-0.38	0.89
	Control	3.32	2.14		
Total error	MBRP	68.86	34.03	-0.124	0.83
	Control	68.40	34.03		

(Source: Primary Data)

Table 8 compares the MBRP group to the control group in terms of executive function as measured. Scores on three categories, perseverative error, category complete error, and total error, were acquired and analysed at baseline using the Mann-Whitney U test to see if there was a difference between the two groups. At baseline, there is no significant difference between the groups in terms of perseverative error ($z=-1.43$, $p=0.19$), category complete ($z=-0.38$, $p=0.89$), or total error ($z=-0.124$, $p=0.83$).

Table-9. Comparison Between MBRP group and Control group at Post Assessment

Variable	Group	Mean	S.D.	Z	p	Effect Size
Perseverative error	MBRP	57.76	20.93	-0.32	0.048	0.05
	Control	67.80	29.58			
Category Complete	MBRP	4.50	2.57	-2.83	0.02	0.72
	Control	2.52	0.82			
Total error	MBRP	33.26	19.92	-1.85	0.19	1.49
	Control	62.61	17.98			

(Source: Primary Data)

After two months of MBRP intervention, a post-test was performed to determine the difference in executive function between the MBRP and control groups. On perseverative error, the MBRP group's mean value ($M=57.76$, $SD=20.93$) was found to be lower than the control group's mean value ($M=67.80$, $SD=29.58$), and the derived p value ($z=-0.32$, $p=0.048$) reveals a significant difference between both groups with a modest effect size (0.05). On category completion, the mean of the MBRP group was higher ($M=4.50$, $SD=2.57$) than the mean of the control group ($M=2.52$, $SD=0.82$), which was determined to be substantially different ($z=-2.83$, $p=0.02$) with a large effect size ($z=-2.83$, $p=0.02$) (0.72). In the last category, total error, the mean of the MBRP group ($M=33.26$, $SD=19.92$) was found to be lower than the mean of the control group ($M=62.61$, $SD=17.98$) and demonstrates a significant difference ($z=-1.85$, $p=0.19$) between both groups with a medium effect size ($z=-1.85$, $p=0.19$) (1.49).

Table No.10 reflects the difference before and post assessment scores between the MBRP and control groups. This table shows that the MBRP group's post assessment mean ($M=57.765$, $SD=20.93$) is lower than the pre assessment mean ($M=57.88$, $SD=19.50$) on perseverative error, which differs considerably ($z=0.87$, $p=0.003$) with a high effect size (0.87). The control group's post assessment mean ($M=57.88$, $SD=19.50$) was lower than the pre assessment mean ($M=58.85$, $SD=24.13$), but the difference was not significant ($z=-1.13$, $p=0.164$).

Table-10. Comparison Between MBRP group and Control group on at two points of time

Variable	Group	Pre		Post		Z	P	Effect Size
		Mean	S.D.	Mean	S.D.			
Perseverative error	MBRP	54.55	21.36	57.76	20.93	0.87	0.003	0.87
	Control	58.80	23.48	57.88	19.50	0.48	0.350	0.48
Category Complete	MBRP	2.36	1.27	4.32	1.57	1.13	0.001	1.23
	Control	3.32	1.05	3.60	0.82	0.66	0.094	1.66
Total error	MBRP	58.85	24.13	43.26	19.92	1.13	0.001	1.04
	Control	58.45	24.12	62.55	17.78	0.56	0.164	1.56

(Source: Primary Data)

On category, the entire post assessment mean was found to be higher than the post assessment means of the MBRP group ($M=4.32$, $SD=1.57$), which showed a significant difference ($z=1.13$, $p=.001$). While the control group's pre-assessment mean ($M=3.32$, $SD=1.05$) was not found to be statistically different ($z=0.66$, $p=0.094$) from the post-assessment mean ($M=3.60$, $SD=0.82$).

On the third domain total error, the MBRP group's pre assessment mean ($M=58.85$, $SD=24.13$) was ($M=43.26$, $SD=19.92$), indicating a significant difference ($z=1.13$, $p=.001$). In the control group, the pre-assessment mean ($M=58.45$, $SD=24.12$) was higher than the post-assessment mean ($M=62.55$, $SD=17.78$), but the difference was not significant ($z=-0.56$, $p=0.164$).

Results and Discussion

Despite being aware of its harmful effects, many continue to consume substances on a daily basis. Opioid use has a wide range of physiological and psychological effects on humans. Another area that suffers when an individual begins using opioids for an extended length of time or in significant quantities is cognitive performance. Several empirical research have been conducted to demonstrate its influence on attention, working memory, recall, visuospatial abilities, psychomotor activities, and so on. Chronic drug abuse impairs people's attention, memory, and decision-making abilities. In early abstinence, opioid addicts had deficiencies in executive processes, working memory, and fluid intelligence. One research looked at the effects of amphetamines and opiates on memory and executive function. Opiate addicts' executive function was shown to be significantly impaired, according to the findings. Chronic drug users also had significant impairments in executive function.

The current study also shows that opioid users have modest impairment in executive function, which is consistent with earlier research. Just patients in the intervention group received MBRP, whereas the control group received only TAU. On the, there was a substantial difference between the MBRP group and the control group after two months of intervention. Furthermore, within-group differences were discovered in

the MBRP group, but not in the control group. The study's findings show that MBRP is a more effective strategy for improving executive function in opioid addicts than TAU alone.

Mindfulness is based on the concept of paying attention to one's inner and outer worlds and accepting them without judgement. Mindfulness has been demonstrated in studies to improve cognitive performance, including attention, EF, and memory. A relationship has been discovered between mindfulness techniques and alterations in brain structure. Data from magnetic resonance imaging (MRI) scans revealed that mindfulness meditators had distinct brain structures than nonpractitioners. Practitioners of mindfulness had thicker prefrontal cortex and anterior insula. Mindfulness methods have also been shown to engage other cortical areas from the malfunctioning prefrontal-limbic loop. One pre-post pilot research with active and passive control groups found that mindfulness training increases participants' sustained attention, cognitive flexibility, cognitive inhibition, and data-driven information process. A meta-analysis research that looked at the neurobiological changes associated with mindfulness meditation discovered that the practise activates the prefrontal cortex and anterior cingulate cortex. Mindfulness meditation has also been shown in studies to improve brain regions involved in the attention process.

Conclusion, Limitations and Suggestions

To summarise, MBRP is a more effective treatment than TAU for improving executive function in opioid users. Despite the fact that this study includes a control group, it has several drawbacks. One of them is a small sample size, which means we can't generalise our results to the entire population. Furthermore, because patients with different types of drug use disorders were not included in this trial, we cannot conclude which form of substance use disorder benefits the most from MBRP. Females were likewise excluded from the research. Future study may focus on whether females are less likely to use drugs than males or whether they are unwilling to seek treatment for substance use disorder. In the future, these restrictions might be the focus of study, allowing for more sound outcomes in the field of MBRP.

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