

EFFICACY OF MINDFULNESS-BASED COGNITIVE THERAPY (MBCT) INTERVENTION FOR EMOTION DYSREGULATION AMONG PATIENTS WITH SUBSTANCE USE DISORDER: AN EXPERIMENTAL STUDY CONDUCTED IN ISLAMABAD, PAKISTAN

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ABSTRACT

The present study examined the efficacy of Mindfulness-Based Cognitive Therapy (MBCT) in reducing emotion dysregulation among patients with SUD. A randomized controlled trial with a pre-test and post-test design was conducted at Umeed-e-Shifa Rehabilitation Centre, Bani Gala. Forty male participants aged 20–40 years meeting DSM-5-TR criteria for SUD were selected through purposive sampling and randomly assigned to an experimental group (MBCT + Treatment as Usual [TAU]) and a control group (TAU only). Emotion dysregulation was assessed using the Difficulties in Emotion Regulation Scale–18 (DERS-18). Data were analyzed using paired-sample t-test and independent-sample t-tests on gain scores in IBM SPSS Version 27. Results indicated a significant reduction in emotion dysregulation among participants who received MBCT, with mean scores decreasing from pre-test ($M = 49.40$, $SD = 13.38$) to post-test ($M = 37.30$, $SD = 8.62$), $p < .001$. Independent sample t-test comparisons showed significantly greater improvement in the experimental group compared to the control group ($p < .001$).

1. INTRODUCTION

Substance use disorder (SUD) is defined as a cluster of cognitive, behavioral, and physiological symptoms characterized by continued substance use despite significant impairment (American Psychiatric Association, 2022). Diagnosis is based on criteria such as impaired control, social dysfunction, risky use, tolerance, and withdrawal. SUD is widely conceptualized as a chronic and relapsing condition, often requiring long-term management due to cycles of remission and recurrence (Volkow et al., 2016). Globally, approximately 2.2% of the population is affected by substance use disorders, with alcohol use disorders (1.5%) being more prevalent than drug use disorders (0.8%), including cannabis (0.32%), opioids (0.29%), amphetamines (0.10%), and cocaine (0.06%) (GBD 2016 Alcohol and Drug Use Collaborators, 2018). In Pakistan, SUD prevalence is estimated at 6% of the population, with higher rates among adult males (9%) compared to females (2.9%), affecting approximately 6.7 million individuals (United Nations Office on Drugs and Crime [UNODC], 2013). SUD is frequently comorbid with mood and anxiety disorders, which is associated with poorer treatment outcomes and increased relapse risk (McHugh et al., 2015). These comorbid conditions share underlying vulnerability factors, including impaired emotion regulation, heightened stress sensitivity, and maladaptive coping strategies (McHugh, Hearon, & Otto, 2010). Contemporary

neurobiological models further conceptualize addiction as a disorder of disrupted reward, stress, and executive control systems. Chronic substance use produces neuroadaptations in prefrontal and limbic circuits, leading to impaired inhibitory control, increased stress reactivity, and diminished sensitivity to natural rewards (Volkow, Koob, & McLellan, 2016). These alterations contribute to compulsive substance-seeking behavior and reduced self-regulation, reinforcing the cycle of addiction.

Emotion dysregulation refers to difficulties in understanding, accepting, and managing emotional experiences, as well as in flexibly modulating emotional responses in accordance with situational demands (Gratz & Roemer, 2004). In contemporary models, emotion regulation is viewed as a multi-dimensional construct comprising of emotional awareness, emotions acceptance, clarity of emotion recognition and goal pursuit despite distress (Gross, 2015). Within substance use disorders (SUD), emotion dysregulation is considered a key mechanism contributing to the initiation and maintenance of substance use. Individuals with heightened emotional reactivity and limited regulatory capacity are more likely to rely on maladaptive coping strategies, including substance use, to alleviate psychological distress. Empirical evidence suggests that negative affect increases craving intensity, while impaired regulatory capacity reduces the ability to tolerate distress without engaging in substance use, thereby increasing relapse vulnerability (Sinha, 2008; Witkiewitz et al., 2014). Neurobiological models further support this association, indicating that chronic substance use disrupts prefrontal–limbic circuitry involved in emotional regulation, resulting in heightened stress reactivity, reduced inhibitory control, and increased compulsive substance-seeking behavior (Koob & Volkow, 2016). These neuroadaptations weaken self-regulatory control and reinforce reliance on substances as a maladaptive coping strategy.

Higher Difficulties in Emotion Regulation Scale (DERS) scores have been linked to more severe substance dependency, intense cravings, and poorer treatment outcomes. Emotion dysregulation is also becoming more of a primary maintaining factor in addiction science, and not a secondary symptom (Fox et al., 2008; Weiss & Tull, 2012). Given its central role in addiction maintenance, emotion dysregulation has emerged as an important intervention target. Evidence suggests that improvements in emotion regulation represent a key mechanism through which mindfulness-based interventions reduce craving and relapse risk in individuals with SUD (Witkiewitz et al., 2014). Mindfulness-based interventions target these transdiagnostic mechanisms by enhancing present-moment awareness, attentional control, and cognitive flexibility (Chiesa et al., 2013). Theoretical frameworks suggest that mindfulness operates through mechanisms such as decentering, reduced cognitive reactivity, and increased emotional acceptance, thereby improving adaptive responses to distressing internal states (Hölzel et al., 2011). Mindfulness-Based Cognitive Therapy (MBCT), originally developed by Segal, Williams, and Teasdale (2013), is an 8-week structured group intervention designed to cultivate decentering and prevent maladaptive cognitive and emotional responses. In the context of SUD, MBCT is particularly relevant as it may reduce relapse vulnerability by improving emotion regulation and decreasing automatic reactive responses to craving and stress.

Although international evidence supports the effectiveness of mindfulness-based interventions, including Mindfulness-Based Cognitive Therapy (MBCT), in improving emotion regulation and reducing relapse risk among individuals with substance use disorders (SUD), there remains limited controlled research examining these effects in low- and middle-income countries such as Pakistan. In most rehabilitation settings in Pakistan, treatment is primarily based on treatment as usual (TAU), including routine counselling and psychoeducation, which does not directly target underlying emotion regulation deficits. MBCT intervention, with its strong theoretical foundation, targets maladaptive cognitive patterns, enhances emotion regulation, and reduces craving-related reactivity, making it particularly relevant for individuals with SUD. Therefore, examining its effectiveness within the Pakistani context is both timely and necessary. This study aims to address this treatment gap by providing culturally relevant empirical evidence and contributing to the existing body of literature. Furthermore, delivering MBCT intervention in group settings may enhance therapeutic outcomes by promoting shared experiences, peer support, and adaptive coping strategies (Marlatt & Donovan, 2005), thereby supporting recovery and long-term relapse prevention.

Hypotheses

1. Substance Use Disorder patients who receive Mindfulness-Based Cognitive Therapy intervention show a significant reduction in emotion dysregulation compared to those in the control group after 8 sessions.

2. Substance Use Disorder patients receiving Mindfulness-Based Cognitive Therapy intervention show a significant reduction in emotion dysregulation from pre-test to post-test.

II. METHOD

Participants

The total of 40 male volunteers with Substance Use Disorder (SUD), were recruited from the Umeed-e-Shifa Rehabilitation Centre in Bani Gala, Islamabad. The study utilized a randomized controlled trial with pre-test and post-test designs for both experimental and control groups. The sample was divided into two groups: the experimental group ($n = 20$) which received MBCT in addition to TAU and the control group ($n=20$) which continued to receive TAU only, with two measurement points (pretest and posttest). A non-probability purposive sampling technique was used for initial screening who met the inclusion criteria from the rehabilitation center and then the selected participants were randomly assigned to either the experimental group or the control group using simple random assignment through the fish-bowl (lottery) method. Before recruitment, participants were screened according to predefined eligibility criteria. Eligible participants were male inpatients aged 20–40 years who met the DSM-5 criteria for mild to severe Substance Use Disorder (SUD), were medically stable and had completed 7–14 days of detoxification as verified by the clinical team, were literate in Urdu or English to complete the study questionnaires, were currently admitted to Umeed-e-Shifa Rehabilitation Centre, and were able to attend all eight MBCT sessions and complete the pre- and post-intervention assessments. Individuals were excluded if they had active psychosis, mania, severe cognitive impairment, or untreated schizophrenia; acute suicidal intent requiring emergency psychiatric care; were currently receiving another psychological intervention; or had medical instability that could interfere with participation. Participants who were unable or unwilling to provide informed consent were also excluded from the study.

Measures

A demographic form was used to collect demographic information from participants. The demographic form included the following information: age, level of education, socioeconomic status, marital status, substance-use history (main drugs, years of use), previous treatment history, mental comorbidity and current medications. The Difficulties in Emotion Regulation Scale – 18 (DERS-18) is an abridged version of the original DERS with 18 items, derived from the original DERS developed by Kimberly L. Gratz and Lizabeth Roemer (2004). It is intended to reduce participant's burden while maintaining psychometric integrity. Victor and Klonsky (2016) found that the DERS-18 had strong internal consistency (total $\alpha \approx 0.89-0.91$ across combined samples), maintained the six-factor structure, and demonstrated strong convergent validity with depression and anxiety measures. Only the total score was used for statistical analysis. It assesses six dimensions of emotion dysregulation: (1) non-acceptance of emotional responses, (2) difficulties engaging in goal-directed behavior, (3) impulse control difficulties, (4) limited access to emotion regulation strategies, (5) lack of emotional awareness, and (6) lack of emotional clarity. Items are rated on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always), with higher scores indicating greater difficulties in emotion regulation.

Procedure

Ethical approval for the study was obtained from the Institutional Review Board (IRB) of the National University of Medical Sciences. The study was conducted in accordance with internationally accepted ethical guidelines for research involving human participants. Written informed consent was obtained from all participants prior to data collection. Participation was voluntary, and participants were informed of their right to withdraw from the study at any time without affecting their treatment or rehabilitation services. Confidentiality was maintained by storing data securely, with access restricted to the researcher and supervisor. Participants were monitored for psychological distress during the intervention, and appropriate support and referral procedures were available when required. Following completion of the study, participants were debriefed regarding the purpose and objectives of the research. The current study employed the Randomised Controlled Trial (RCT) methodology, with two parallel groups: an experimental group receiving Mindfulness-Based Cognitive Therapy (MBCT) intervention in addition to Treatment as usual (TAU) and control group receiving only Treatment as usual which included routine rehabilitation services such as counseling, medical monitoring, and psychoeducation provided by the center. MBCT

involved eight formal sessions in four weeks that are two sessions a week and last approximately 45 to 60 minutes. In addition to the mindfulness exercises to be conducted in the session, the participants were provided with certain practices to enhance their abilities within rehabilitation setting. Below is the description of each session.

Session 1: Automatic Pilot

The aim was to introduce mindfulness and increase awareness of automatic behaviors in daily life and substance use patterns. The techniques that were used were body scan meditation (brief guided) and an awareness exercise focusing on automatic versus mindful activity. Participants were introduced to the concept of “automatic pilot” and how it relates to habitual substance use. A guided body scan was conducted to enhance awareness of bodily sensations. Group discussion focused on recognizing mindless patterns in daily routines and addiction-related behaviors. Treatment as usual (TAU) continued alongside.

Session 2: Dealing with Barriers

This session aimed to identify common obstacles to mindfulness practice and recognize emotional and cognitive barriers associated with substance use. Participants engaged in an extended body scan practice followed by a discussion of barriers, including intrusive thoughts, difficult emotions, physical discomfort, restlessness, cravings, and avoidance. The session emphasized that these experiences are a normal part of mindfulness practice and encouraged participants to adopt a non-judgmental and accepting attitude toward their internal experiences.

Session 3: Mindfulness of Breath

This session aimed to develop focused attention on the breath and introduce grounding skills for managing cravings and emotional distress. Participants engaged in a 10–15-minute breath-focused sitting meditation to anchor their attention in the present moment. The session also introduced the 3-minute breathing space as a brief mindfulness technique to help participants manage cravings, emotional distress, and other challenging situations encountered in daily life.

Session 4: Staying Present

This session aimed to strengthen present-moment awareness and reduce automatic reactivity to triggers and cravings. Participants engaged in mindful yoga involving gentle movements, followed by repeated practice of the 3-minute breathing space and a 10–15-minute sitting meditation. The session emphasized recognising early warning signs of relapse, including cravings and emotional distress, and responding to these experiences with mindful awareness rather than impulsive reactions.

Session 5: Allowing / Letting Be

This session aimed to cultivate acceptance of difficult thoughts, emotions, and cravings without avoidance or suppression. Participants engaged in a 15–20-minute sitting meditation focused on observing thoughts and emotions, followed by practice of the 3-minute breathing space with an emphasis on acceptance. The session highlighted how avoidance and suppression can contribute to relapse and encouraged participants to acknowledge internal experiences with openness, acceptance, and non-judgement rather than attempting to control or avoid them.

Session 6: Thoughts Are Not Facts

This session aimed to help participants develop cognitive decentring and reduce identification with maladaptive thoughts. Participants engaged in a sitting meditation focused on observing thoughts, followed by cognitive exercises designed to reinforce the understanding that thoughts are mental events rather than objective facts. The session encouraged participants to recognise the transient nature of thoughts, helping to reduce patterns of hopelessness, self-criticism, and other unhelpful thinking styles commonly associated with substance use.

Session 7: Self-Care and Relapse Prevention

This session aimed to promote self-care strategies and enhance awareness of relapse-related triggers. Participants practised applying the 3-minute breathing space in high-risk situations while identifying personal emotional, social, and environmental triggers, along with appropriate coping strategies. The session emphasised the application of mindfulness skills in challenging situations and highlighted the importance of self-care, healthy lifestyle habits, and balanced daily routines in supporting long-term recovery and preventing relapse.

Session 8: Maintaining and Extending Practice

This session aimed to consolidate learning and support the long-term maintenance of mindfulness practices following the intervention. Participants reviewed the key mindfulness skills acquired throughout the programme, engaged in relapse prevention planning, and reflected on their experiences through group discussion. The session focused on developing individualised plans for sustaining mindfulness practice, maintaining recovery, and preventing relapse following discharge.

III. RESULTS

Analyses were performed using SPSS Version 27, and parametric tests were applied, as assumptions of normality were met. The results are organized into the following sections: descriptive statistics of the demographic characteristics, within-group comparisons (paired-sample t-test) for experimental group; and between-group comparisons (independent-sample t-test conducted on gain scores) to examine the effect of MBCT relative to the control group.

Table I: Demographic Characteristics of the Participants (N=40)

Variable	Category	M	SD	n	%
Age	20-40	29.52	6.42		
Duration of drug use		8.43	7.5		
Education	Primary			11	27.5
	Secondary			7	17.5
	Intermediate			12	30
	Graduate			10	25
Marital status	Single			25	62.5
	Married			15	37.5
Occupation	Employed			28	70
	Unemployed			12	30
Type of drug use	Alcohol			1	2.5
	Cannabis			2	5.0
	Benzodiazepines			1	2.5
	Heroin			0	0
	Opioids			0	0
	Cocaine			0	0
	Meth/ice			0	0
	Poly drug use			36	90
Prior treatment	Yes			19	47.5
	No			21	52.5

Note. M= Mean, SD = Standard Deviation, n = Frequency

The total sample consisted of 40 participants, aged between 20 and 40 years (M = 29.52, SD = 6.42). The mean duration of drug use was (M= 8.43 years, SD = 7.50). Regarding educational level, 27.5% (n = 11) had primary education, 17.5% (n = 7) had secondary education, 30% (n = 12) had intermediate education, and 25% (n = 10) were graduates. Most participants were single (62.5%, n = 25), while 37.5% (n = 15) were married. The majority were employed (70%, n = 28), whereas 30% (n = 12) were unemployed. With respect to type of drug use, 2.5% (n = 1) reported alcohol use, 5% (n = 2) cannabis use, and 2.5% (n = 1) benzodiazepine use. The majority (90%, n = 36) reported poly-drug use. Nearly half of the participants (47.5%, n = 19) had received prior treatment, while 52.5% (n = 21) had not.

Between-Group Analysis

Substance Use Disorder patients who receive Mindfulness-Based Cognitive Therapy intervention show a significant reduction in emotion dysregulation compared to those in the Treatment as usual (TAU) group after 8 sessions.

Table II: Comparison of Experimental and Control Groups on Change in Emotion Dysregulation (N=40)

Variables	Group	N	M	SD	t	Df	p
DERS Change	Control	20	-.20	5.69	-5.97	38	.000
	Experimental	20	12.10	7.24			

Note. DERS = Difficulties in Emotion Regulation Scale. Change scores were calculated as pre-test minus post-test; positive values indicate reduction in symptoms. N= number of participants, M= Mean, SD= Standard Deviation, t= t-test value, df= degree of freedom, p= significance.

The MBCT group showed that the emotion dysregulation decreased significantly more in the MBCT group (M = 12.10, SD = 7.24) than in the Treatment as usual (TAU) group (M = -0.20, SD = 5.69). These findings support Hypothesis 1 and indicate that MBCT produced significantly greater reduction in emotion dysregulation compared to the control group.

Within-Group Analysis

Substance Use Disorder patients receiving Mindfulness-Based Cognitive Therapy intervention show a significant reduction in emotion dysregulation from pre-test to post-test.

Table III: Comparison of Pre–Post Differences in Emotion dysregulation in the MBCT Group (N = 20)

Variables	N	M	SD	t	p	95% CI	
						LL	UL
DERS_PRETEST	20	49.40	13.38	7.47	.000	8.71	15.49
DERS_POSTTEST	20	37.30	8.62	7.47	.000	8.71	15.49

Note. DERS = Difficulties in Emotion Regulation Scale. N= number of participants, M= Mean, SD= Standard Deviation, t= t-test value, p= significance, CI =confidence interval.

Emotion dysregulation significantly decreased from pre-test (M = 49.40, SD = 13.38) to post-test (M = 37.30, SD = 8.62). These findings support Hypothesis 2 and indicate significant reduction in emotion dysregulation in the MBCT group over time.

IV. DISCUSSION

The present study examined the efficacy of Mindfulness-Based Cognitive Therapy (MBCT) in reducing emotion dysregulation among individuals with Substance Use Disorder (SUD). It was hypothesized that participants receiving MBCT in addition to Treatment as Usual (TAU) would demonstrate greater improvements in emotion regulation compared to participants receiving TAU alone. The findings supported the hypothesis and indicated that MBCT was effective in significantly reducing emotion dysregulation among individuals undergoing treatment for substance use disorder. The results demonstrated that participants in the MBCT group showed significantly greater reductions in emotion dysregulation than those in the TAU group. Gain score analysis revealed substantial improvement in the experimental group, whereas minimal change was observed in the control group. Furthermore, paired-sample analyses indicated a significant reduction in emotion dysregulation from pre-test to post-test among participants who received MBCT. These findings suggest that MBCT provided benefits beyond those achieved through standard rehabilitation services alone. The findings are consistent with the theoretical foundations of MBCT, which emphasize the development of present-moment awareness and a non-judgmental relationship with internal experiences. Individuals with substance use disorders often struggle with identifying, accepting, and managing emotional states, leading them to rely on substances as maladaptive coping strategies. Through mindfulness practices, participants learn to observe emotions without impulsively reacting to them, thereby enhancing emotional awareness and self-regulation.

The significant improvement in emotion dysregulation observed in the present study is consistent with the model proposed by Gratz and Roemer (2004), which conceptualizes emotion dysregulation as difficulties involving emotional awareness, emotional acceptance, impulse control, goal-directed behavior, and access to adaptive emotion regulation strategies. MBCT directly targets many of these difficulties by encouraging mindful awareness, acceptance, and cognitive decentering. The findings are also supported by transdiagnostic research suggesting that

emotion dysregulation represents a core vulnerability underlying multiple forms of psychopathology (Aldao et al., 2010). Previous studies have demonstrated that mindfulness-based interventions improve emotional awareness and acceptance while reducing maladaptive emotional responses (Khoury et al., 2013; Goldberg et al., 2018). Similarly, Weiss et al. (2022) reported that difficulties in emotion regulation are strongly associated with substance use behaviors, highlighting the importance of interventions specifically targeting emotional processes.

The current findings are consistent with studies conducted among substance-using populations. Bowen et al. (2014) found that mindfulness-based relapse prevention improved emotional coping and reduced relapse vulnerability among individuals with substance use disorders. Likewise, Garland et al. (2014) reported that mindfulness-based interventions enhance self-regulation and reduce emotional reactivity associated with substance misuse. Roos et al. (2017) further demonstrated that improvements in emotion regulation contribute to better treatment outcomes among individuals receiving mindfulness-based interventions for addiction. From a neurobiological perspective, chronic substance use disrupts brain systems involved in emotional processing, stress regulation, and executive functioning (Koob & Volkow, 2016). Mindfulness training has been associated with increased prefrontal cortical regulation and reduced emotional reactivity, thereby strengthening an individual's ability to tolerate distress without engaging in substance use (Hölzel et al., 2011; Tang et al., 2015). These mechanisms may explain the significant reductions in emotion dysregulation observed in the present study.

Limitations and Implications

The present study had some limitations which should be taken in to consideration. First, the sample size was relatively small ($N = 40$), which may limit the generalizability of the findings. Although statistically significant results were obtained, studies with larger sample sizes would enhance statistical power and external validity. Second, the sample was recruited from a single rehabilitation center using purposive sampling, which may affect the representativeness of the sample. Individuals in other treatment settings or community populations may differ in clinical characteristics, thereby limiting broader applicability. Third, the duration of the intervention was relatively short, consisting of eight sessions over four weeks. While significant improvements were observed, it remains unclear whether these effects would be sustained over a longer period. Future research incorporating extended interventions and follow-up assessments would provide a clearer understanding of long-term effectiveness. Fourth, the study relied on self-report measure (DERS-18), which may be subject to response biases such as social desirability and limited self-awareness. Future studies may include clinician-rated assessments or physiological measures (e.g., heart rate, cortisol levels) to reduce reliance on self-report data and improve the objectivity of findings. Finally, the absence of long-term follow-up limits conclusions regarding relapse prevention and maintenance of treatment gains. Given the chronic and relapsing nature of substance use disorder, longitudinal research is necessary to examine sustained outcomes. The findings suggest that MBCT may serve as an effective adjunctive intervention for individuals receiving treatment for Substance Use Disorder. By targeting emotion dysregulation, MBCT addresses psychological vulnerabilities that often contribute to continued substance use and relapse. Given its structured and group-based format, MBCT may be feasibly integrated into rehabilitation settings with limited resources. The study also contributes to the limited evidence based on mindfulness-based interventions in Pakistan and highlights the value of incorporating transdiagnostic approaches that target underlying emotional processes within addiction treatment programs.

V. CONCLUSION

The present study provides evidence for the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) in reducing emotion dysregulation among individuals with Substance Use Disorder. Participants who received MBCT alongside Treatment as Usual demonstrated significantly greater improvements than those receiving Treatment as Usual alone. These findings support the integration of mindfulness-based interventions within rehabilitation settings and highlight the importance of addressing underlying emotional processes in addiction treatment. Further research using larger samples and longitudinal designs are recommended to establish the long-term effectiveness of MBCT in substance use populations.

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