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Improving Emotional Self-Regulation in Bipolar Disorder Through Cognitive-Behavioral Intervention: Multivariate Evidence from a Controlled Study

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A B S T R A C T

Objective: The purpose of the present study was to investigate the effectiveness of cognitive behavioral therapy on emotional self-regulation and its components in patients with bipolar disorder.

Methods and Materials: This quasi-experimental study used a pre-test and post-test design with experimental and control groups. The population included bipolar patients referred to the Rehabilitation and Treatment Center for Chronic Mental Patients in Zahedan, Iran, in 2023. Thirty patients were randomly assigned to experimental and control groups (15 each). The Emotion Regulation Questionnaire by Marqués et al. (2005), with 25 items and five subscales (controllability, disclosure of feelings, needs, assertiveness, and well-being seeking), scored on a 5-point Likert scale, was used. The experimental group received eight 60-minute CBT sessions, while the control group received no intervention. Data were analyzed using multivariate analysis of covariance (MANCOVA) in SPSS version 26.

Findings: The results showed that CBT significantly improved emotion regulation and its components in bipolar patients (P<0.001). Effect sizes indicated that 62.5% of the variance in emotion regulation, 28.4% in controllability, 47.7% in disclosure of feelings, 48.3% in needs, 37.5% in assertiveness, and 54.7% in well-being seeking were due to the intervention.

Conclusion: Cognitive-behavioral therapy is an effective intervention for improving emotion regulation in bipolar patients. These findings highlight the need to integrate this approach into their treatment plans.

Keywords: *Cognitive-behavioral Therapy, Emotion Regulation, Bipolar Disorder, Therapeutic intervention, Bipolar Patients.*

1. Introduction

Bipolar disorder is a chronic and severe psychiatric condition characterized by recurrent fluctuations in mood, energy, cognition, and behavior, ranging from manic or hypomanic episodes to periods of major depression (Ma, 2022; Millett et al., 2025). According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), bipolar disorder involves persistent disturbances in mood regulation accompanied by alterations in activity level, impulsivity, sleep, cognition, and emotional functioning that significantly impair social, occupational, and interpersonal performance (Ma, 2022). The disorder is generally classified into bipolar I disorder, bipolar II disorder, and cyclothymic disorder, each differing in symptom severity and duration but sharing a common feature of emotional instability and impaired affective regulation (Li et al., 2024; Ma, 2022). Recent epidemiological findings indicate that bipolar disorder affects millions of individuals worldwide and remains one of the leading causes of psychiatric disability because of its chronic course, recurrent relapses, and high rates of psychosocial dysfunction (Goodwin et al., 2016; Li et al., 2024). Beyond mood instability, bipolar disorder is increasingly conceptualized as a multidimensional disorder involving neurobiological, cognitive, and emotional dysregulation mechanisms that profoundly affect quality of life and long-term functioning (Carminati et al., 2025; Millett et al., 2025).

The clinical burden associated with bipolar disorder extends far beyond episodic mood changes. Individuals with bipolar disorder frequently experience difficulties in interpersonal relationships, occupational functioning, emotional adaptation, and self-management of stressors (Goodwin et al., 2016). During manic episodes, impulsive decision-making, heightened irritability, emotional overreactivity, and risky behaviors often result in severe financial, social, and legal consequences, whereas depressive episodes are associated with hopelessness, withdrawal, suicidal ideation, and diminished functioning (Azevedo et al., 2025; Carminati et al., 2025). Evidence also suggests that patients with bipolar disorder exhibit elevated rates of comorbid anxiety disorders, substance abuse, cognitive impairment, metabolic abnormalities, and emotional dysregulation, all of which complicate treatment and worsen prognosis (Li et al., 2024; Millett et al., 2025). Moreover, recurrent episodes may progressively impair neurocognitive functioning through neurophysiological changes involving emotional processing systems and neural connectivity patterns (Carminati et al., 2025; Kjaerstad et al., 2025). Consequently, researchers and clinicians increasingly emphasize the importance of psychological interventions that specifically target emotion regulation capacities and adaptive self-management skills in bipolar disorder (Azevedo et al., 2025).

Emotion regulation is considered one of the core psychological processes underlying adaptive mental functioning and emotional stability (Gross, 2015). Gross conceptualized emotion regulation as the processes through which individuals influence the experience, intensity, expression, and duration of their emotions in order to adapt effectively to environmental demands (Gross, 2015). Effective emotion regulation involves emotional awareness, cognitive flexibility, impulse control, emotional acceptance, and the ability to employ adaptive coping strategies during emotionally challenging situations (Gross, 2015). In contrast, deficits in emotion regulation are associated with impulsivity, emotional instability, maladaptive coping, and vulnerability to psychopathology (Schmeichel & Zell, 2007). Emotional self-regulation specifically refers to the capacity to consciously monitor and manage emotional responses in ways that support personal adjustment, social functioning, and psychological well-being (Marques et al., 2005). The concept encompasses several dimensions including controllability, emotional expression, assertiveness, well-being seeking, and adaptive response to emotional needs (Marques et al., 2005). Previous studies have demonstrated that individuals with stronger self-regulation abilities show better resilience, improved psychological adjustment, and healthier behavioral functioning (Grossarth-Maticek & Eysenck, 1995; Schmeichel & Zell, 2007).

In bipolar disorder, impairments in emotional self-regulation are particularly pronounced because of the intensity and unpredictability of emotional experiences (Azevedo et al., 2025). Patients often struggle to manage emotional arousal during both manic and depressive phases, resulting in unstable mood patterns, impulsive behaviors, interpersonal conflicts, and impaired decision-making (Carminati et al., 2025). Neurophysiological evidence indicates that dysfunctions in brain regions associated with cognitive control and emotional processing, such as the prefrontal cortex, limbic system, and amygdala, contribute to impaired emotional regulation in bipolar disorder (Carminati et al., 2025; Kjaerstad et al., 2025). Carminati et al. reported that bipolar I disorder is associated with distinct behavioral and neurophysiological signatures reflecting

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deficits in emotional modulation and adaptive emotional processing (Carminati et al., 2025). Similarly, Kjaerstad et al. identified neural abnormalities related to emotion regulation even among unaffected first-degree relatives of bipolar patients, suggesting that emotional dysregulation may represent a fundamental vulnerability marker for the disorder (Kjaerstad et al., 2025). These findings emphasize that emotional dysregulation is not merely a secondary symptom but a central pathological process contributing to the persistence and recurrence of bipolar symptoms.

The significance of emotional self-regulation in bipolar disorder has generated substantial interest in therapeutic approaches capable of improving adaptive emotional functioning. Among psychological interventions, cognitive-behavioral therapy (CBT) has emerged as one of the most evidence-based and effective approaches for treating mood disorders and enhancing emotional adjustment (Beck, 2020; Parker et al., 2024). CBT is grounded in the premise that dysfunctional cognitions influence emotional experiences and behavioral responses, and that modifying maladaptive thought patterns can improve emotional functioning and psychological well-being (Beck, 2020). Through techniques such as cognitive restructuring, behavioral activation, emotional monitoring, problem-solving, and skills training, CBT aims to help individuals recognize distorted cognitions and replace them with more adaptive interpretations and coping strategies (Beck, 2020). Because emotional dysregulation in bipolar disorder is strongly associated with maladaptive cognitive processes and dysfunctional behavioral responses, CBT appears particularly relevant for this population (Parker et al., 2024).

Recent developments in bipolar-specific CBT interventions have further strengthened the therapeutic relevance of this approach. Parker et al. highlighted the effectiveness of CBT-based approaches in reducing distressing mood swings and enhancing emotional coping among young individuals at high risk for bipolar disorder (Parker et al., 2024). Richardson and Amann also emphasized the adaptability of CBT frameworks in addressing trauma-related symptoms and emotional instability in bipolar populations (Richardson & Amann, 2024). In addition, psychoeducational CBT interventions have demonstrated long-term effectiveness in improving psychosocial functioning and reducing relapse rates among individuals with severe mood disorders (Schaub et al., 2024). These findings support the notion that CBT not only alleviates acute psychiatric symptoms but also contributes to improved emotional management and adaptive functioning over time.

Several empirical investigations have specifically explored the relationship between CBT and emotional regulation outcomes. Kazempour et al. found that group CBT significantly improved cognitive emotion regulation strategies among adolescents with bipolar disorder during euthymic phases (Kazempour et al., 2018). Hassani Ardekani et al. similarly reported that recovery-focused CBT effectively reduced anxiety and difficulties in emotion regulation while improving quality of life in bipolar patients (Hassani Ardekani et al., 2018). Karimi and Zargarshirazi further demonstrated that CBT improved cognitive emotion regulation and distress tolerance among women with substance-dependent spouses (Karimi & Zargarshirazi, 2024). These studies collectively suggest that CBT can positively influence emotional adaptation across different clinical populations by strengthening cognitive flexibility and self-regulatory capacities.

More recent evidence continues to reinforce the role of CBT-based interventions in enhancing emotional functioning. Alkasir et al. compared mindfulness-based stress reduction and CBT among female patients with rheumatoid arthritis and found that CBT significantly improved emotion regulation and cognitive-executive functioning (Alkasir et al., 2025). Wu also demonstrated that cognitive-behavioral emotion regulation training improved emotional intelligence, resilience, and emotional regulation abilities among vulnerable children receiving educational welfare support (Wu & P, 2024). Although these studies were conducted in populations other than bipolar patients, their findings provide further evidence that cognitive-behavioral approaches are capable of strengthening emotional self-management capacities across diverse psychological and medical contexts.

Mindfulness-oriented and embodiment-based approaches have also been integrated into contemporary interventions for emotional dysregulation. Michalak et al. emphasized the role of mindfulness and bodily awareness in improving emotional adaptation and reducing depressive vulnerability (Michalak et al., 2012). Nobakht et al. similarly reported that mindfulness-based treatment significantly enhanced emotional self-regulation among patients with bipolar depression (Nobakht et al., 2024). While mindfulness interventions have demonstrated promising outcomes, CBT remains particularly valuable because of its structured framework, empirical support, and direct focus on identifying and modifying maladaptive cognitions

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associated with emotional instability (Beck, 2020). Consequently, examining the effectiveness of CBT on emotional self-regulation in bipolar disorder remains highly relevant for both theoretical understanding and clinical application.

The theoretical foundations supporting the effectiveness of CBT on emotional self-regulation are strongly linked to contemporary models of cognitive-affective processing. According to Gross's process model of emotion regulation, adaptive emotional functioning depends on the individual's ability to identify, reinterpret, and modulate emotional responses before they escalate into maladaptive behavioral patterns (Gross, 2015). CBT facilitates these processes by teaching individuals to recognize cognitive distortions, challenge irrational beliefs, and replace maladaptive appraisals with more balanced interpretations (Beck, 2020). In bipolar disorder, where emotional experiences are often amplified and unstable, these cognitive-behavioral mechanisms may help patients develop improved emotional awareness, greater impulse control, and more adaptive coping responses (Azevedo et al., 2025; Carminati et al., 2025). Furthermore, self-regulation theories emphasize that individuals with stronger self-control capacities are more capable of resisting impulsive behaviors and maintaining emotional stability under stress (Schmeichel & Zell, 2007). CBT directly contributes to these capacities through behavioral practice, emotional monitoring, and cognitive restructuring exercises.

Despite the growing body of evidence supporting psychological interventions for bipolar disorder, important research gaps remain. Much of the existing literature has focused on symptom reduction, relapse prevention, or general psychosocial functioning rather than specifically examining emotional self-regulation and its multidimensional components in bipolar populations (Azevedo et al., 2025). Moreover, relatively few studies have simultaneously investigated the impact of CBT on distinct dimensions of emotional self-regulation such as controllability, emotional expression, assertiveness, and well-being seeking among bipolar patients. Given that emotional dysregulation represents a central mechanism underlying many of the interpersonal, behavioral, and psychological difficulties associated with bipolar disorder, further investigation into targeted interventions remains necessary. Additionally, advances in neurophysiological research highlighting the role of emotional processing abnormalities in bipolar disorder underscore the need for interventions capable of addressing both cognitive and emotional dysfunctions (Kjaerstad et al., 2025; Millett et al., 2025).

Another important consideration is the increasing recognition that emotional self-regulation is associated not only with symptom management but also with long-term psychological resilience and quality of life. Individuals capable of effectively regulating emotions are better able to maintain interpersonal relationships, engage in adaptive problem-solving, and cope with stressful life events (Besharat, 2012; Grossarth-Maticek & Eysenck, 1995). Besharat confirmed the psychometric strength and clinical relevance of self-regulation assessment tools in Iranian populations, emphasizing the importance of emotional self-regulation as a measurable and therapeutically modifiable construct (Besharat, 2012). Consequently, interventions aimed at improving emotional self-regulation may have broad implications for psychological functioning, relapse prevention, and social adaptation in bipolar disorder.

Considering the chronic nature of bipolar disorder, the central role of emotional dysregulation in its pathology, and the growing evidence supporting cognitive-behavioral approaches in enhancing emotional functioning, further research examining the effectiveness of CBT on emotional self-regulation among bipolar patients appears essential. Therefore, the present study aimed to investigate the effectiveness of cognitive-behavioral therapy on emotional self-regulation and its components in patients with bipolar disorder.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a quasi-experimental design with a pretest-posttest control group structure to investigate the effectiveness of cognitive-behavioral therapy on emotional self-regulation in patients with bipolar disorder. The statistical population consisted of patients diagnosed with bipolar disorder who were referred to the Hayat Rehabilitation and Treatment Center for Chronic Mental Patients in Zahedan, Iran, during 2023. The sample size was determined based on Cohen's sample size table by considering an effect size of 0.70, statistical power of 0.91, and a significance level of 0.05. In addition, methodological recommendations for quasi-experimental research suggest that a minimum of 15 participants per group is sufficient for detecting meaningful intervention effects. Accordingly, a total of 30 participants were selected through convenience sampling and randomly assigned into an experimental group

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(n = 15) and a control group (n = 15) using a random number table. Before the intervention, all participants completed the study questionnaires during the pretest phase. The experimental group subsequently participated in eight weekly sessions of cognitive-behavioral therapy, each lasting 60 minutes, while the control group received no psychological intervention during the study period. Following completion of the intervention, both groups completed the questionnaires again during the posttest phase. The intervention sessions were conducted by a cognitive-behavioral therapist holding a PhD in clinical psychology under the supervision of the research team. To facilitate accurate data collection, participants with physical weakness or low literacy received assistance from trained therapist assistants who read the questionnaire items aloud and recorded their responses. In order to prevent contamination between groups, the control group did not attend the rehabilitation center during the intervention period. The inclusion criteria included a confirmed diagnosis of bipolar disorder by the center psychiatrist, age between 30 and 50 years, adequate mental and physical capacity to participate in treatment sessions, willingness of both participants and their families to participate, and absence of concurrent participation in other intervention studies. Exclusion criteria included absence from more than two therapy sessions, severe physical or psychiatric complications preventing continued participation, and unwillingness to continue the study. Ethical principles were strictly observed throughout the study process, including confidentiality of participant information, obtaining informed consent, and ensuring participants' right to withdraw from the research at any stage without negative consequences.

2.2. Instruments

Emotion Self-Regulation Inventory (SRI-25): Emotional self-regulation was assessed using the Self-Regulation Inventory developed by Marqués et al. in 2005. This instrument consists of 25 items scored on a five-point Likert scale ranging from 1 (completely inappropriate) to 5 (completely appropriate). The questionnaire evaluates five dimensions of emotional self-regulation, including controllability, expression of feelings and needs, assertiveness, well-being seeking, and positive functioning. Previous international studies have reported satisfactory psychometric properties for the instrument, with Cronbach's alpha coefficients ranging from 0.74 to 0.92 for the long form and from 0.68 to 0.84 for the short form, confirming acceptable internal consistency and reliability. Test-retest reliability over a one-month interval has also been reported as 0.87. The Persian version of the questionnaire demonstrated strong psychometric characteristics in Iranian samples, with Cronbach's alpha coefficients ranging from 0.90 to 0.97 across subscales and significant test-retest correlations over four to six weeks. In the present study, Cronbach's alpha coefficients ranged between 0.873 and 0.934 for the subscales, while the reliability coefficient for the overall questionnaire was 0.912, indicating excellent internal consistency.

2.3. Interventions

The cognitive-behavioral therapy program implemented in the present study was developed based on the protocols proposed by Stallard (2003) and Michael (2005), translated into Persian by Alizadeh et al. and Masoudi and Farnam, respectively. The intervention consisted of eight weekly sessions delivered in a group format, with each session lasting approximately 60 minutes. The primary objective of the intervention was to improve emotional self-regulation and its related cognitive-behavioral processes among bipolar patients. Sessions were conducted using question-and-answer methods, cognitive restructuring exercises, group discussion, behavioral practice, and homework assignments. At the beginning of each session, participants reviewed the previous session's assignments and discussed their experiences applying learned strategies in daily life. The first session focused on introducing participants to the therapeutic process, establishing group rules, clarifying treatment expectations, and conducting the pretest assessment. The second session introduced the concepts of thoughts, emotions, and behaviors, familiarized participants with maladaptive thinking styles and negative emotions, and explored the role of self-efficacy in emotional experiences. The third session emphasized identifying emotionally distressing situations and understanding the cognitive-behavioral model through examination of maladaptive beliefs and thoughts. During the fourth session, participants learned to identify automatic thoughts, recognize emotional and physical responses associated with beliefs, and initiate cognitive restructuring techniques. The fifth session focused on schema identification through techniques such as the vertical arrow method, examination of negative self-talk, and modification of maladaptive behavioral responses. In the sixth session, participants practiced identifying

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dysfunctional core beliefs and replacing maladaptive thoughts with more rational and adaptive cognitions through cognitive slowing and restructuring exercises. The seventh session concentrated on behavioral coping techniques, including relaxation training, delayed responding, breathing exercises, negotiation with destructive thoughts, and problem-solving strategies for emotionally provoking situations. Finally, the eighth session reviewed participants' progress, reinforced learned coping strategies, discussed application of therapeutic skills in real-life situations, explored emotional reactions to treatment termination, identified supportive individuals and situations, and administered the posttest assessment.

2.4. Data analysis

The collected data were analyzed using SPSS software version 26. Descriptive statistics including means and standard deviations were used to summarize participant characteristics and study variables. Inferential analyses were conducted using multivariate analysis of covariance (MANCOVA) to examine the effectiveness of cognitive-behavioral therapy on emotional self-regulation and its components while controlling for pretest scores. Prior to conducting the main analyses, the assumptions underlying multivariate statistical testing were evaluated. The Shapiro-Wilk test was used to assess normality of data distribution, Levene's test was applied to evaluate homogeneity of variances, and Box's M test was conducted to assess homogeneity of covariance matrices. In addition, homogeneity of regression slopes was examined to ensure appropriateness of covariance analysis procedures. After confirming that all statistical assumptions were satisfied, MANCOVA was performed to compare posttest scores between the experimental and control groups while controlling for baseline differences. A significance level of 0.05 was considered for all statistical analyses.

3. Findings and Results

Demographic findings indicated that among the 15 participants in the experimental group, 5 participants (33.3%) had a middle school education, 6 participants (40.0%) had a high school diploma, and 4 participants (26.7%) had university education. In the control group, 4 participants (26.7%) had a middle school education, 4 participants (26.7%) had a high school diploma, and 7 participants (46.6%) had university education. In addition, the mean age and standard deviation of participants in the experimental group were 39.83 ± 2.07 years, while the mean age and standard deviation in the control group were 38.69 ± 1.77 years.

Table 1 presents the descriptive statistics related to emotional self-regulation and its components in the experimental and control groups during the pretest and posttest stages.

Table 1

Descriptive Indicators of Emotional Self-Regulation and Its Components Across Intervention Stages

Variable	Group	Stage	Mean	SD
Emotion Regulation	Experimental	Pretest	50.07	5.27
		Posttest	92.13	5.81
	Control	Pretest	73.80	4.07
		Posttest	64.33	2.58
Controllability	Experimental	Pretest	10.86	1.19
		Posttest	21.40	2.35
	Control	Pretest	15.13	1.40
		Posttest	13.73	1.38
Expression of Feelings	Experimental	Pretest	8.93	1.90
		Posttest	20.26	1.98
	Control	Pretest	14.66	1.04
		Posttest	14.13	1.30
Needs	Experimental	Pretest	10.20	1.32
		Posttest	16.66	0.99
	Control	Pretest	14.73	1.79
		Posttest	11.93	1.16
Assertiveness	Experimental	Pretest	10.53	1.12
		Posttest	16.40	0.98

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	Control	Pretest	16.26	2.01
		Posttest	12.60	1.40
Well-Being Seeking	Experimental	Pretest	9.53	1.50
		Posttest	17.20	1.26
	Control	Pretest	13.00	1.96
		Posttest	11.93	1.48

The assumptions underlying covariance analysis were examined prior to conducting the inferential analyses. The results of the Shapiro–Wilk test indicated that the significance values were greater than 0.05 ($p > 0.05$), confirming the normal distribution of the data. Levene's test was used to assess the homogeneity of error variances, and the results revealed non-significant values ($p > 0.05$), indicating that the assumption of homogeneity of variances was satisfied. Furthermore, Box's M test was employed to evaluate the homogeneity of covariance matrices, and the obtained results showed that the Box's M statistic was non-significant at the 0.05 level ($p > 0.05$), confirming homogeneity of covariance matrices. Examination of the regression slope homogeneity assumption also demonstrated that this assumption was met. After confirming these assumptions, multivariate analysis of covariance (MANCOVA) was conducted to evaluate the effect of the independent variable on the dependent variables across the two measurement stages. The results are presented in Table 2.

Table 2

Results of Multivariate Analysis of Covariance with Pretest Control

Index	Value	F	Sig	Partial Eta Squared	Observed Power
Pillai's Trace	1.232	4.251	0.001	0.246	0.99
Wilks' Lambda	0.151	5.992	0.001	0.315	0.99
Hotelling's Trace	0.393	8.189	0.001	0.404	0.99
Roy's Largest Root	2.730	35.496	0.001	0.732	0.99

According to the results presented in Table 2, the Wilks' Lambda test revealed a statistically significant group effect ($p < 0.001$). These findings indicate that there was a significant difference between the experimental and control groups regarding emotional self-regulation and its components in the posttest stage after controlling for pretest scores.

To examine differences in individual dependent variables, univariate covariance analyses were conducted within the MANCOVA framework. The results are presented in Table 3.

Table 3

Results of Covariance Analysis within the MANCOVA Framework with Pretest Control

Variable	Source	SS	df	MS	F	Sig	Partial Eta Squared	Observed Power
Emotion Regulation	Group	2559.81	5	511.96	26.35	0.001	0.625	1.000
	Error	1534.83	79	19.42				
Controllability	Group	163.08	5	32.76	6.25	0.001	0.284	0.995
	Error	413.79	79	5.23				
Expression of Feelings	Group	176.73	5	35.34	14.38	0.001	0.477	1.000
	Error	194.06	79	2.45				
Needs	Group	113.23	5	22.64	14.73	0.001	0.483	1.000
	Error	121.38	79	1.53				
Assertiveness	Group	69.10	5	13.82	9.47	0.001	0.375	1.000
	Error	115.21	79	1.45				
Well-Being Seeking	Group	133.14	5	26.62	19.07	0.001	0.547	1.000
	Error	110.29	79	1.39				

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The results presented in Table 3 indicate that after controlling for pretest scores, significant differences were observed between the experimental and control groups in emotional self-regulation and all of its components during the posttest stage ($p < 0.001$). Based on the obtained mean scores, it can be concluded that the cognitive-behavioral intervention had a significant positive effect on emotional self-regulation among patients with bipolar disorder. The reported effect sizes indicated that 62.5% of the variance in emotional self-regulation, 28.4% of the variance in controllability, 47.7% of the variance in expression of feelings, 48.3% of the variance in needs, 37.5% of the variance in assertiveness, and 54.7% of the variance in well-being seeking were attributable to the intervention effect.

4. Discussion

The present study aimed to investigate the effectiveness of cognitive-behavioral therapy on emotional self-regulation and its components in patients with bipolar disorder. The findings demonstrated that cognitive-behavioral therapy significantly improved overall emotional self-regulation as well as the dimensions of controllability, expression of feelings, needs, assertiveness, and well-being seeking among bipolar patients. The observed effect sizes further indicated that a substantial proportion of the variance in emotional self-regulation outcomes was attributable to the intervention, suggesting that CBT produced clinically meaningful changes in the emotional functioning of participants. These findings support the primary hypothesis of the study and emphasize the effectiveness of structured cognitive-behavioral interventions in addressing emotional dysregulation among individuals with bipolar disorder. The results are consistent with the growing body of evidence identifying emotional dysregulation as a core feature of bipolar disorder and emphasizing the importance of interventions that specifically target cognitive and emotional processes (Azevedo et al., 2025; Carminati et al., 2025).

One of the major findings of the present study was the significant improvement in overall emotional self-regulation following CBT intervention. This result is strongly aligned with the theoretical assumptions of cognitive-behavioral therapy, which propose that maladaptive emotions are maintained through dysfunctional cognitive patterns and ineffective behavioral responses (Beck, 2020). Bipolar patients frequently experience exaggerated emotional reactions, impulsive decision-making, and difficulty managing intense mood fluctuations because of distorted cognitive appraisals and reduced emotional control (Azevedo et al., 2025; Gross, 2015). CBT directly targets these dysfunctional processes through cognitive restructuring, emotional monitoring, behavioral experiments, and coping skills training. By helping patients identify irrational beliefs and reinterpret emotionally provoking situations more adaptively, CBT enables individuals to regulate emotional responses more effectively and reduce emotional instability. The significant enhancement observed in emotional self-regulation in this study therefore reflects the capacity of CBT to strengthen adaptive emotional processing mechanisms in bipolar patients.

The findings of the present study are highly consistent with previous research examining CBT-based interventions among bipolar populations. Kazempour et al. reported that group cognitive-behavioral therapy significantly improved cognitive emotion regulation strategies among adolescents with bipolar disorder during euthymic periods (Kazempour et al., 2018). Similarly, Hassani Ardekani et al. found that recovery-focused cognitive-behavioral therapy reduced emotional regulation difficulties and anxiety while improving quality of life in bipolar patients (Hassani Ardekani et al., 2018). The present study extends these findings by demonstrating that CBT not only improves general emotional functioning but also significantly enhances specific components of emotional self-regulation such as controllability, assertiveness, emotional expression, and well-being seeking. These outcomes collectively support the notion that cognitive-behavioral approaches are effective in addressing the multidimensional emotional impairments characteristic of bipolar disorder.

The significant improvement observed in the controllability dimension suggests that CBT enhanced participants' ability to regulate emotional impulses and manage emotional reactions more effectively. Emotional controllability is particularly important in bipolar disorder because patients often experience rapid shifts in emotional intensity that contribute to impulsive behaviors and impaired judgment (Carminati et al., 2025). Through techniques such as cognitive reframing, self-monitoring, and delayed behavioral responding, CBT teaches patients to pause, evaluate emotional triggers, and employ more adaptive coping strategies before reacting impulsively (Beck, 2020). This finding is theoretically supported by Gross's process model of emotion regulation, which emphasizes the role of cognitive appraisal and response modulation in adaptive emotional functioning (Gross, 2015). The improvement in

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controllability observed in this study indicates that participants became more capable of modulating emotional responses rather than reacting automatically to emotionally charged situations.

The enhancement in the expression of feelings and needs also represents an important outcome of the intervention. Bipolar patients often struggle with communicating emotions effectively because of emotional volatility, fear of rejection, interpersonal sensitivity, or cognitive distortions associated with mood episodes (Azevedo et al., 2025). CBT sessions focusing on emotional awareness, identification of automatic thoughts, and assertive communication likely contributed to participants' improved ability to express feelings and needs constructively. Effective emotional expression is associated with healthier interpersonal functioning and reduced emotional suppression, both of which contribute to psychological adjustment (Gross, 2015). The findings are also consistent with previous evidence indicating that cognitive-behavioral interventions can improve emotional communication and adaptive coping skills across different populations (Karimi & Zargarshirazi, 2024; Wu & P, 2024). Wu demonstrated that cognitive-behavioral emotion regulation training improved emotional intelligence and emotion regulation abilities among vulnerable children, highlighting the broad applicability of CBT principles in strengthening emotional communication and self-management capacities (Wu & P, 2024).

The significant improvement in assertiveness among participants may also be interpreted within the cognitive-behavioral framework. Assertiveness involves the capacity to express thoughts, emotions, and personal boundaries appropriately while maintaining respect for oneself and others. Bipolar patients frequently experience interpersonal difficulties resulting from impulsivity, emotional overreactivity, or social withdrawal during depressive phases (Goodwin et al., 2016). CBT interventions encourage patients to recognize maladaptive interpersonal beliefs, challenge fears related to self-expression, and practice adaptive communication strategies. Behavioral rehearsal, role-playing, and cognitive restructuring techniques likely contributed to participants' increased assertiveness and interpersonal confidence. Enhanced assertiveness may in turn reduce interpersonal stressors and improve social functioning, both of which are important protective factors against relapse in bipolar disorder.

The improvement observed in well-being seeking further supports the effectiveness of CBT in enhancing adaptive psychological functioning. Well-being seeking refers to the individual's active engagement in behaviors and cognitions that promote psychological satisfaction, positive emotional experiences, and healthy coping (Marques et al., 2005). Bipolar disorder is often associated with reduced motivation, hopelessness, emotional exhaustion, and diminished capacity to pursue rewarding experiences, particularly during depressive episodes (Goodwin et al., 2016). CBT addresses these difficulties by encouraging behavioral activation, goal setting, cognitive flexibility, and adaptive engagement with daily life activities (Beck, 2020). As patients learn to reinterpret negative experiences and identify achievable coping strategies, they become more capable of pursuing emotionally rewarding and psychologically healthy behaviors. The significant increase in well-being seeking observed in the present study therefore reflects broader improvements in adaptive functioning and emotional resilience among participants.

The findings of this study are also supported by neurophysiological and cognitive research on bipolar disorder. Carminati et al. emphasized that bipolar disorder involves impaired emotion regulation associated with dysfunctions in neural systems responsible for emotional processing and cognitive control (Carminati et al., 2025). Similarly, Kjaerstad et al. demonstrated the existence of neural abnormalities related to emotion regulation even among unaffected relatives of bipolar patients, suggesting that emotional dysregulation reflects an underlying vulnerability mechanism (Kjaerstad et al., 2025). CBT may contribute to improved emotional regulation by strengthening prefrontal cognitive control processes responsible for emotional monitoring, behavioral inhibition, and adaptive cognitive appraisal. Through repeated cognitive and behavioral practice, patients gradually develop more organized and flexible emotional responses, potentially compensating for deficits in neural emotion regulation systems. These mechanisms may partially explain the significant emotional improvements observed following intervention in the present study.

Another important theoretical explanation for the findings relates to self-regulation theory. Emotional self-regulation is closely associated with self-control, cognitive flexibility, and adaptive coping abilities (Schmeichel & Zell, 2007). Individuals with stronger self-regulation capacities are generally more capable of managing distress, resisting impulsive behaviors, and maintaining psychological stability under stressful conditions (Grossarth-Maticek & Eysenck, 1995). Bipolar patients often exhibit impairments in these capacities because of emotional instability and

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dysfunctional cognitive patterns. CBT strengthens self-regulatory functioning by encouraging active cognitive engagement, emotional awareness, and behavioral planning. The structured nature of CBT sessions, including homework assignments, emotional monitoring, and problem-solving exercises, likely contributed to the development of greater self-regulatory competence among participants. The findings therefore support the broader conceptualization of CBT as a therapeutic approach capable of improving self-regulatory functioning in emotionally vulnerable populations.

The present findings also align with emerging perspectives emphasizing the integration of emotional regulation interventions into comprehensive bipolar disorder treatment programs. Azevedo et al. highlighted that emotional dysregulation remains one of the most challenging and persistent features of bipolar disorder despite pharmacological advances (Azevedo et al., 2025). Although medication remains essential for stabilizing mood symptoms, psychological interventions targeting emotional regulation may substantially improve long-term psychosocial outcomes and relapse prevention. Schaub et al. similarly reported that psychoeducational CBT interventions demonstrated sustained benefits for patients with severe psychiatric disorders over long-term follow-up periods (Schaub et al., 2024). The significant improvements observed in the present study therefore reinforce the importance of incorporating CBT into multidisciplinary treatment approaches for bipolar disorder.

The findings may also be interpreted in relation to broader developments in emotion-focused and mindfulness-based interventions. Nobakht et al. demonstrated that mindfulness-based treatment improved emotional self-regulation in patients with bipolar depression (Nobakht et al., 2024). Likewise, Michalak et al. emphasized the role of mindfulness and embodiment in improving emotional awareness and psychological adjustment (Michalak et al., 2012). Although the present study specifically focused on CBT, some of the intervention components such as emotional awareness, monitoring automatic thoughts, and behavioral self-observation may overlap conceptually with mindfulness-oriented approaches. However, CBT differs in its more direct emphasis on cognitive restructuring and behavioral modification. The current findings therefore suggest that cognitive-behavioral techniques remain highly effective for enhancing emotional self-regulation in bipolar disorder while potentially complementing other contemporary psychological approaches.

Furthermore, the findings are important from a cultural and clinical perspective. Besharat confirmed the psychometric validity of emotional self-regulation assessment tools in Iranian populations, emphasizing the importance of emotional regulation as a culturally relevant construct within clinical settings (Besharat, 2012). The present study contributes to the literature by demonstrating the effectiveness of CBT for improving emotional self-regulation among Iranian bipolar patients specifically. This is particularly valuable because cultural, familial, and interpersonal contexts may influence emotional expression and coping strategies. The findings therefore provide evidence supporting the applicability of CBT interventions across diverse cultural contexts while highlighting the importance of culturally sensitive emotional regulation programs in psychiatric treatment settings.

5. Conclusion

Overall, the results of the present study provide strong evidence that cognitive-behavioral therapy is an effective intervention for improving emotional self-regulation and its components among patients with bipolar disorder. By targeting maladaptive cognitions, enhancing emotional awareness, strengthening coping skills, and promoting adaptive behavioral responses, CBT appears capable of addressing central emotional dysfunctions associated with bipolar disorder. The findings not only support previous empirical and theoretical literature but also highlight the importance of integrating emotion regulation-focused psychological interventions into comprehensive treatment frameworks for bipolar patients.

6. Limitations & Suggestions

One limitation of the present study was the relatively small sample size, which may reduce the generalizability of the findings to broader bipolar populations. In addition, the participants were recruited from a single rehabilitation and treatment center, which may limit the representativeness of the sample. Another limitation was the absence of a long-term follow-up phase; therefore, it remains unclear whether the observed improvements in emotional self-regulation would persist over time. The study also relied on self-report measures, which may be influenced by social desirability bias, memory inaccuracies, or subjective interpretations. Furthermore, the inclusion of participants within a restricted age range may limit the applicability of the findings to adolescents or older adults with bipolar disorder.

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Future research should investigate the long-term effectiveness of cognitive-behavioral therapy on emotional self-regulation through follow-up assessments conducted several months after treatment completion. Studies involving larger and more diverse samples from multiple clinical settings would improve the external validity of findings. Future investigations could also compare CBT with other therapeutic approaches such as mindfulness-based interventions, dialectical behavior therapy, or acceptance and commitment therapy in bipolar populations. Moreover, incorporating neuropsychological assessments, physiological indicators, or neuroimaging methods could provide deeper insight into the mechanisms underlying improvements in emotional self-regulation following psychotherapy. Researchers are also encouraged to examine the moderating effects of variables such as gender, illness duration, medication adherence, and comorbid psychiatric conditions on treatment outcomes.

From a practical perspective, the findings of this study support the integration of cognitive-behavioral therapy into routine psychiatric and rehabilitation services for patients with bipolar disorder. Mental health professionals should receive specialized training in CBT techniques focused on emotional regulation skills, cognitive restructuring, and adaptive coping strategies. Treatment programs for bipolar disorder may benefit from combining pharmacological interventions with structured psychological therapies targeting emotional functioning. In addition, psychoeducational workshops for patients and family members could improve awareness regarding emotional self-regulation and promote supportive interpersonal environments. Policymakers and healthcare administrators should also consider expanding access to evidence-based psychological interventions such as CBT within mental health systems to improve the long-term psychosocial outcomes and quality of life of individuals living with bipolar disorder.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. This study was approved by the Research Ethics Committee of the University of Sistan and Baluchistan with the ethics code IR.IAU.ZAH.REC.1401.067.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

H.N. contributed to the study design, participant coordination, CBT session implementation, and drafting of the manuscript. M.M.D.A. supervised the research process, guided the clinical and methodological framework, and critically revised the manuscript. F.S.K.H. conducted data analysis, interpreted the MANCOVA results, and contributed to final manuscript editing. All authors reviewed and approved the final version for publication.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

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