

# The Effectiveness of Mindfulness-Based Cognitive Therapy on Anxiety and Rumination in Women with Body Dysmorphic Disorder

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Article type:  
Original Research

Article history:  
Received 21 October 2024  
Revised 14 December 2024  
Accepted 24 December 2024  
Published online 28 December 2024

## ABSTRACT

The present study aimed to examine the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) on anxiety and rumination levels in women diagnosed with Body Dysmorphic Disorder (BDD). This study employed a quasi-experimental design with pre-test and post-test measures to assess changes in both the experimental and control groups. The statistical population consisted of all women diagnosed with BDD who attended counseling centers in Tehran in 2024. A sample of 30 women with this disorder was voluntarily and non-randomly selected from the counseling centers in Tehran and then randomly assigned to two groups: an experimental group (n = 15) and a control group (n = 15). The instruments used in this study were the Beck Anxiety Inventory and the Ruminative Response Scale developed by Nolen-Hoeksema and Morrow. For data analysis, multivariate analysis of covariance (MANCOVA) was employed. The results revealed a significant difference between the experimental and control groups at the post-test stage in the variables of anxiety and rumination. It can be concluded that Mindfulness-Based Cognitive Therapy is effective in reducing anxiety and rumination in women with Body Dysmorphic Disorder.

**Keywords:** Mindfulness-Based Cognitive Therapy, Anxiety, Rumination, Body Dysmorphic Disorder

## How to cite this article:

Haghdooost, F., & Giti Ghoreishi, A. (2024). The Effectiveness of Mindfulness-Based Cognitive Therapy on Anxiety and Rumination in Women with Body Dysmorphic Disorder. *Mental Health and Lifestyle Journal*, 2(4), 56-65. <https://doi.org/10.61838/mhlj.2.4.7>

## Introduction

Body Dysmorphic Disorder (BDD) is a chronic and debilitating mental disorder categorized under obsessive-compulsive and related disorders. Individuals with BDD experience psychological distress or impairment due to perceived minor or even non-existent physical defects (1). In other words, these individuals suffer from persistent mental preoccupation and severe anxiety about perceived flaws in their physical appearance and attractiveness, which are either negligible or not noticeable to others (2, 3). BDD is a relatively common psychiatric condition, with a prevalence of 1.7% to 2.9% in the general population (4).

However, among individuals seeking cosmetic surgery, its prevalence ranges between 6% and 54%. The onset of BDD typically occurs between the ages of 16 and 17, with the most common age of onset between 12 and 13. Subclinical concerns may gradually escalate into a full-fledged disorder (5, 6). In Iran, the prevalence of BDD has been reported as 1.7% (4). Notably, Iran ranks first globally in the number of rhinoplasty surgeries (7). Studies have consistently shown that the most common areas of concern in BDD include the skin, hair, nose, and abdomen (8). Generally, BDD remains an underdiagnosed condition. In the general population, BDD prevalence ranges from 0.5% to 3.2%, with higher prevalence rates observed among dermatology patients (4.9–21.1%) and cosmetic surgery patients (2.9–57%) (9).

This disorder is associated with impaired functioning and a chronic course, and it shares significant comorbidity with obsessive-compulsive disorder, major depressive disorder, social anxiety disorder, anorexia nervosa, schizophrenia spectrum disorders, and personality disorders (Tschizener, 2023). BDD can overshadow numerous aspects of an individual's life. Many individuals with BDD experience severe depression, stress, and anxiety. Their body image is severely distorted (10). Reports indicate that between 53% and 81% of individuals with BDD also suffer from major depressive disorder or anxiety disorders (11). For a better understanding of BDD, it is suggested that comorbid disorders, particularly anxiety, be examined (James et al., 2020). Anxiety disorders are the most common psychiatric conditions, with a global prevalence rate of 7.3%. Specific phobias are the most prevalent (10.3%), followed by panic disorder (with or without agoraphobia) at 6%, social phobia at 2.7%, and generalized anxiety disorder at 2.2%. There is no conclusive evidence as to whether these disorders have become more prevalent in recent decades. In general, women are more prone to emotional disorders beginning in adolescence and are 1.5 to 2 times more likely than men to suffer from anxiety disorders (12). Social anxiety disorder is considered one of the most chronic and common anxiety-related disorders (13). In social situations, individuals who perceive themselves as worthless, unattractive, and dull often experience anxiety and may avoid social interactions, potentially leading to depression or isolation. In contrast, individuals who view themselves as attractive, likable, and valuable tend to welcome social interactions, form close relationships, and do not experience social anxiety related to fear of judgment by others (14, 15). Girls with social anxiety and a heightened sensitivity to others' judgments tend to suffer more from negative body image and undergo cosmetic procedures more frequently than girls with lower social anxiety levels (14).

There are overlapping pathological features between BDD, obsessive-compulsive disorder, and anxiety disorders. Due to their strong similarities, BDD is sometimes conceptualized as part of the obsessive-compulsive spectrum (16). One of the primary components in the onset and maintenance of anxiety and mood disorders is rumination. Rumination is defined as the persistent preoccupation with a particular thought or subject and the repeated thinking about it. It represents a category of conscious thoughts that revolve around a specific theme and are repetitively activated regardless of external demands (17). Rumination can be distressing and interfere with daily activities. Specifically, it reflects the tendency to repeatedly focus on distressing symptoms, both stemming from and contributing to stress (18, 19). A core feature of BDD is rumination and obsessive concern about an imagined physical defect. Individuals with BDD exhibit rumination about their perceived flaws in appearance or facial features, which results in significant psychological distress and impairs important functions. Even when the defect is minor, the concern and anxiety about it are excessive and tormenting (20). Rumination, characterized by persistent,

intrusive, and unpleasant self-referential thoughts, is commonly observed in individuals with BDD and leads to elevated anxiety levels. Rumination and anxiety mutually reinforce each other: rumination about a negative body image induces anxiety, while awareness of the inability to stop the ruminative cycle exacerbates the anxiety (21).

Experts believe that primary prevention for BDD has not always been effective; however, secondary prevention and therapeutic interventions can significantly reduce future complications for individuals with BDD (22). In recent years, new therapeutic models such as Mindfulness-Based Cognitive Therapy (MBCT) have emerged, marking a significant advancement in the treatment of such conditions (23). MBCT combines cognitive behavioral therapy with mindfulness practices and has shown positive effects on attention, mood, self-regulation, executive functioning, behavioral issues, and quality of life (24). MBCT may be particularly suitable for reducing core symptoms and comorbidities in patients with BDD because one of its proposed mechanisms of action is enhancing emotional regulation (25). MBCT incorporates traditional cognitive-behavioral strategies with mindfulness meditation. While their foundational elements are similar, MBCT offers several unique advantages (26). MBCT may be effective in helping individuals with BDD change their relationship with their emotions. This approach encourages individuals to accept and compassionately examine unwanted feelings instead of avoiding or suppressing them (27), potentially fostering more compassionate and constructive self-relations, which act as antidotes to perfectionistic and self-critical attitudes (28, 29).

MBCT stems from extensive research into cognitive factors and processes that predict the recurrence of psychopathological symptoms. It represents a significant advancement in cognitive-behavioral therapy for treating psychological disorders. Through mindfulness training, combined with metacognitive awareness and new behavioral strategies for attentional control, MBCT promotes the development of new thoughts, reduces unpleasant emotions, and enhances emotional regulation and anxiety responses. Mindfulness is described as a consciously regulated and effortful mode of information processing, which contrasts with inattentiveness (29). MBCT is designed to reduce the recurrence of psychopathological symptoms such as anxiety. During therapy, individuals learn to observe their thoughts and feelings without judgment and to view them simply as transient mental events that are not necessarily reflective of the self or reality. The core assumption of MBCT is that individuals can learn not to become entangled in ruminative thinking patterns and thus avoid the anxiety that arises from intrusive, negative thoughts associated with mental rumination (29).

Based on the above, the primary research question of the present study is: Can Mindfulness-Based Cognitive Therapy effectively reduce anxiety and rumination in women with Body Dysmorphic Disorder?

## Methods and Materials

### *Study Design and Participants*

The present study is an applied research in terms of its objective. It employed a quasi-experimental design using a pre-test–post-test model with a control group. The statistical population included patients diagnosed with Body Dysmorphic Disorder (BDD) who visited psychology clinics in Tehran in 2024. The research sample consisted of 30 individuals selected through non-random voluntary sampling using the “Body Dysmorphic Disorder Questionnaire” and Cohen’s table, with an effect size of approximately 0.50 and

statistical power of 0.80. The participants were randomly assigned into two groups: experimental and control, each comprising 15 individuals.

Inclusion criteria were: age between 18 and 50 years, female gender (due to the higher prevalence of BDD in women), a confirmed diagnosis of BDD, a minimum of a high school diploma, and informed consent to participate. Exclusion criteria included: participation in other therapeutic sessions outside of Mindfulness-Based Cognitive Therapy (MBCT), absence from more than two sessions, failure to complete the questionnaires, and unwillingness to participate in the study.

Data collection tools included the Hamilton Anxiety Rating Scale (to assess anxiety levels in participants) and the Ruminative Responses Scale (to measure rumination levels). The experimental group participated in a course of MBCT, which consisted of 8 sessions, each lasting 90 minutes. The sessions were conducted by me, Fatemeh Haghdoust, a certified therapist, in a group format. Each session included various techniques to help participants observe their thoughts and emotions nonjudgmentally.

Prior to the intervention, pre-tests using the aforementioned scales were administered to all participants in both the experimental and control groups. After completing the therapy sessions, post-tests were administered to evaluate changes in anxiety and rumination levels.

### *Data Collection*

**Beck Anxiety Inventory (BAI):** The BAI is a 21-item self-report questionnaire designed to assess the severity of anxiety. It evaluates anxiety over the past week on a scale ranging from "not at all" to "severely," with each item scored from 0 to 3, leading to total scores ranging from 0 to 63. Higher scores indicate more severe anxiety. The inventory has demonstrated high internal consistency and a one-week test-retest reliability coefficient of approximately 0.75. Its correlation with the Hamilton Anxiety Rating Scale is 0.51, and with general anxiety measures, 0.48. It is suitable for use in both clinical and research settings (30). The instrument has confirmed validity ( $r = 0.72, p < .001$ ), reliability ( $r = 0.83, p < .001$ ), and a Cronbach's alpha coefficient of 0.92 (31).

**Ruminative Responses Scale (RRS):** This self-report scale was developed by Nolen-Hoeksema and Morrow (1991) and includes 22 items rated on a four-point Likert scale. It is designed to measure the degree of rumination when the respondent is feeling depressed (10). The scale has shown high internal consistency ( $\alpha = 0.89$ ) and good five-month test-retest reliability (18). The Persian version has shown internal consistency reliability ranging from 0.88 to 0.92 using Cronbach's alpha. Its intraclass correlation coefficient was reported to be 0.75 (32).

**Body Dysmorphic Disorder Scale:** This scale was developed by Rabiei, Salahians, Bahrami, and Palaahang (2012). It consists of 31 items and measures dissatisfaction with physical appearance and negative thoughts and beliefs about perceived body deformities. The items are scored on a Likert scale ranging from 1 to 4. The scale includes four subscales: metacognitive control strategies, objectification of thoughts, positive and negative beliefs, and safety behaviors related to body dysmorphia. Total scores range from 31 to 124, with higher scores indicating greater severity of BDD (33). The scale has demonstrated acceptable concurrent validity and reliability, with total and subscale reliability coefficients exceeding 0.70. Another study reported a Cronbach's alpha reliability of 0.73 (34).

This study followed a quasi-experimental design using a pre-test–post-test model with a control group. The purpose was to examine the impact of Mindfulness-Based Cognitive Therapy on anxiety and rumination in women diagnosed with Body Dysmorphic Disorder. The target population included women diagnosed with BDD who attended psychology clinics in Tehran in 2024. A total of 30 women were selected voluntarily and non-randomly using the Body Dysmorphic Disorder Scale and were then randomly divided into two groups of 15: one experimental and one control group. Participant selection was based on predefined inclusion and exclusion criteria.

### *Intervention*

The intervention consisted of eight structured sessions of Mindfulness-Based Cognitive Therapy (MBCT), each lasting 90 minutes and conducted weekly in a group setting. In the first session, participants completed the pre-test, introduced themselves, were oriented to the program's goals, and received psychoeducation about anxiety and its contributing factors, followed by a mindful raisin-eating exercise and assigned homework. The second session focused on mindful breathing techniques to enhance concentration, body scan exercises, and rationale behind the practices, with continued home assignments. The third session introduced foundational mindfulness concepts such as automatic pilot and different modes of mind, explained the logic and aims of MBCT (i.e., relating differently to the world), and included a guided mindfulness practice. In the fourth session, participants learned the three-minute breathing space, Beck's cognitive model of anxiety using the ABC model, and how to identify negative automatic thoughts, alongside exercises linking thoughts to emotional experiences. The fifth session emphasized mindfulness skills for responding to present-moment experiences, included acceptance meditations, and focused on identifying cognitive distortions. The sixth session involved reviewing challenges faced during home practice, sharing emotional experiences, and teaching strategies to respond effectively to negative automatic thoughts. In the seventh session, participants practiced meditation, repeated the three-minute breathing space, applied mindfulness to a real-life problem, and discussed how to maintain the progress and routine established during the program. Finally, the eighth session involved a comprehensive review and consolidation of skills learned, group feedback, strategies for applying mindfulness to manage negative moods, a closing ceremony, and the administration of the post-test.

### *Data analysis*

In this study, data were analyzed using multivariate analysis of covariance (MANCOVA) to examine the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) on anxiety and rumination among women with Body Dysmorphic Disorder. Before conducting MANCOVA, the assumptions of homogeneity of variances and equality of covariance matrices were tested using Levene's test and Box's M test, respectively. Descriptive statistics, including means and standard deviations, were calculated for both pre-test and post-test scores in the experimental and control groups. The significance level was set at  $p < .05$  for all statistical tests, and the effect size was evaluated using Eta squared ( $\eta^2$ ) to determine the proportion of variance explained by the intervention. All statistical analyses were performed using SPSS software.

### **Findings and Results**

As shown in Table 1, the mean scores of anxiety and rumination in the control group did not show substantial differences between the pre-test and post-test stages. However, in the experimental group, there was a noticeable decrease in the mean scores from pre-test to post-test.

**Table 1. Mean and Standard Deviation of Anxiety and Rumination Scores**

Variables	Stage	Experimental Group		Control Group	
		Mean	SD	Mean	SD
Anxiety	Pre-test	24.00	11.03	25.40	10.40
	Post-test	17.00	7.92	25.60	10.90
Rumination	Pre-test	60.80	10.97	61.60	9.24
	Post-test	49.66	13.02	61.86	9.30

Levene's test results indicated that the assumption of homogeneity of variances for the study variables was met ( $p > .05$ ).

Another assumption required for multivariate analysis of covariance (MANCOVA) is the homogeneity of covariance matrices, which was assessed using Box's M test. The F-value for this test was not statistically significant, indicating that the assumption of covariance matrix homogeneity was satisfied ( $p > .05$ ).

**Table 2. Results of Multivariate Analysis of Covariance (MANCOVA)**

Test	Value	F	df	Error df	Sig.	Eta Squared
Pillai's Trace	0.538	14.53	2	25	0.000	0.538
Wilks' Lambda	0.462	14.53	2	25	0.000	0.538
Hotelling's Trace	1.162	14.53	2	25	0.000	0.538
Roy's Largest Root	1.162	14.53	2	25	0.000	0.538

According to Table 2, Mindfulness-Based Cognitive Therapy (MBCT) had a statistically significant effect on anxiety and rumination among women with Body Dysmorphic Disorder ( $p < .05$ ). Moreover, the Eta squared value indicates that MBCT accounted for approximately 53% of the variance in the dependent variables (anxiety and rumination).

**Table 3. Test of Between-Subject Effects**

Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Anxiety	444.685	1	444.685	10.113	0.004	0.280
Rumination	930.546	1	930.546	23.969	0.000	0.480

As presented in Table 3, there was a statistically significant difference between the experimental and control groups in both anxiety and rumination at a confidence level of 99% ( $p < .01$ ). Accordingly, it can be concluded that MBCT is effective in reducing anxiety and rumination among women with Body Dysmorphic Disorder. Additionally, the effect size was 0.280 for anxiety and 0.480 for rumination.

## Discussion and Conclusion

Based on the results obtained from the data analysis, the hypothesis was confirmed, indicating that Mindfulness-Based Cognitive Therapy (MBCT) had a significant effect on anxiety and rumination in women with Body Dysmorphic Disorder (BDD). The findings of this hypothesis are generally aligned with the results of prior studies conducted (24-27).

In interpreting this result, it can be explained that MBCT employs a combination of cognitive therapy techniques and mindfulness practices to enhance individuals' capacity for non-judgmental observation and acceptance of negative thoughts and emotions. This process significantly reduces the intensity of both

anxiety and rumination. One of the mechanisms through which MBCT exerts its influence is by enhancing emotional regulation, enabling individuals to develop greater awareness of anxious thoughts and avoid immediate emotional reactions. Mindfulness exercises activate brain regions associated with emotion regulation, contributing to reductions in anxiety. Mindful attention to the present moment and non-judgmental acceptance of thoughts help recalibrate neural processing systems and reduce sensitivity to ruminative thinking.

Moreover, MBCT promotes cognitive flexibility by teaching individuals to disengage from negative thought patterns. Over time, this leads to a reduction in repetitive, maladaptive cognitive cycles often associated with anxiety and rumination. Through regular mindfulness practice, patients learn to observe negative thoughts from a distance without becoming entangled in them, thereby reducing their emotional impact. This shift in perspective is particularly beneficial for individuals with BDD, as it helps them redirect focus away from perceived physical flaws. MBCT supports restructuring of cognitive frameworks involved in negative thinking and worry, fostering more compassionate self-appraisal in those with body image disturbances and reducing the anxiety these disturbances produce.

Research has demonstrated that MBCT reduces automatic negative responses and enhances the ability to observe thoughts and feelings objectively, thereby improving cognitive processing and alleviating anxiety (16).

This study faced certain limitations during implementation. Since responses to the questionnaires were self-reported, it is possible that some participants answered based on their momentary emotional state due to emotional or mood fluctuations, which may have influenced the study's results.

It is recommended that future researchers compare the effectiveness of MBCT and Mindfulness-Based Stress Reduction (MBSR) programs on anxiety and rumination among women with BDD to further explore differential impacts.

In light of the study's results and the demonstrated positive impact of MBCT in reducing anxiety and rumination, it is recommended that this approach be adopted as an effective intervention method for treating women with Body Dysmorphic Disorder in psychotherapy and counseling centers.

## **Acknowledgments**

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

## **Authors' Contributions**

All authors equally contributed to this study.

## **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. Written consent was obtained from all participants in the study.

### 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.

### Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

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