

The Effectiveness of Mindfulness-Based Cognitive Therapy on Psychological Symptoms and Anxiety Sensitivity in Women with Panic Disorder

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ABSTRACT

Objective: The present study aimed to determine the effectiveness of mindfulness-based cognitive therapy on psychological symptoms and anxiety sensitivity in women with panic disorder.

Methods and Materials: The research employed a quasi-experimental design with pre-test and post-test assessments. The statistical population included women with panic disorder who attended counseling centers in Tehran in 2023. A total of 30 participants were selected through convenience sampling and were then randomly assigned to an experimental group (15 participants) and a control group (15 participants). Data were collected using questionnaires on psychological symptoms and anxiety sensitivity. The experimental group underwent an eight-session, two-hour mindfulness-based cognitive therapy intervention, while the control group received no intervention. After the intervention, both groups were reassessed in the post-test phase.

Findings: The findings indicated that the mean scores of psychological symptoms and anxiety sensitivity in the experimental group showed a significant reduction in the post-test compared to the pre-test.

Conclusion: Therefore, mindfulness-based cognitive therapy is effective in reducing psychological symptoms and anxiety sensitivity in women with panic disorder.

Keywords: Mindfulness-Based Cognitive Therapy, Psychological Symptoms, Anxiety Sensitivity, Panic Disorder.

1. Introduction

Anxiety is an integral part of human life, present in all individuals, and is considered an adaptive response when experienced in moderation. It can be stated that without anxiety, we might become lethargic in our daily activities. The absence of anxiety could expose us to significant challenges and dangers. Panic disorder is a type of anxiety disorder characterized by an intense fear of unexpected and uncontrollable anxiety attacks that peak within a few minutes (Huan et al., 2021; Sarem et al., 2024).

Panic disorder results from recurrent and sudden episodes of fear and anxiety that reach their peak within a few minutes. This disorder is unique among anxiety disorders, as its primary symptoms have a physical nature (Chan & Sun, 2021). Individuals with this disorder exhibit a heightened sensitivity to unpredictable events and situations. The symptoms of panic disorder are categorized into different systems: autonomic nervous system (e.g., heart palpitations, sweating), respiratory system (e.g., shortness of breath, chest tightness), and cognitive system (e.g., depersonalization, fear of losing control, fear of death). Panic disorder is among the most prevalent conditions in healthcare systems (Zhang et al., 2022).

Psychological symptoms encompass states of stress, depression, and psychological anxiety that arise from real or imagined problems (Chester et al., 2018). Depression is an unpleasant mental state characterized by apathy, hopelessness, and fatigue, often accompanied by varying degrees of anxiety. It leads to reduced self-esteem, impairments in emotional expression and self-disclosure, and psychomotor retardation. This retardation slows individuals' responses to stimuli (Wang, 2013). According to the World Health Organization, depression is one of the leading causes of disability and ranks as the fourth major contributor to the global burden of disease (World Health Organization, 2017).

Anxiety sensitivity refers to the fear of anxiety and its associated symptoms, which stems from the belief that these symptoms may lead to potentially harmful physical, psychological, and social consequences (Abadi et al., 2024; Bükürük & Aldemir, 2024). Individuals with high anxiety sensitivity frequently respond negatively to anxiety symptoms, whereas those with low anxiety sensitivity may experience these symptoms as unpleasant but do not perceive them as threatening (Hatami Nejad et al., 2024; Mrayyan et al., 2024). Anxiety sensitivity exacerbates symptoms related to physiological arousal in anxiety

disorders. It is a cognitive construct in which individuals fear bodily sensations associated with anxiety arousal (e.g., increased heart rate, shortness of breath, dizziness) based on the belief that these sensations could lead to severe social, cognitive, and physical consequences, such as heart attacks. High anxiety sensitivity makes individuals feel distressed by even minor physical sensations linked to anxiety, increasing their likelihood of experiencing panic attacks. This phenomenon predisposes them to heightened anxiety and actual panic attacks (Farhadmanesh et al., 2017). Individuals with high anxiety sensitivity often believe that such sensations may result in fatal outcomes, insanity, or social rejection. These catastrophic misinterpretations reinforce anxiety sensitivity, as individuals become more alarmed by anxiety-related sensations, leading to increased anxiety upon experiencing such feelings (Hatami Nejad et al., 2024; Mrayyan et al., 2024; Sara Aman Alah Khani et al., 2024).

The primary goal of mindfulness-based cognitive therapy is to help participants develop a connection with their thoughts, emotions, and bodily sensations while breaking ineffective habitual cycles, such as rumination, that increase vulnerability to psychological disorders (Goldberg et al., 2018). Mindfulness-based cognitive therapy, as one of the third-wave cognitive-behavioral therapy approaches, has been effective in addressing a wide range of psychological disorders (Shaban et al., 2020). Originally introduced by Williams et al. for preventing depression relapse, mindfulness-based cognitive therapy integrates aspects of cognitive therapy with meditation techniques to enhance patients' attentional control, enabling them to recognize minor mood changes and prevent relapse. This approach increases cognitive flexibility, reduces rumination, overgeneralization in autobiographical memory, and self-critical evaluation, while enhancing beneficial cognitive processes such as non-judgmental observation of mental content. In this method, clients are encouraged to process their experiences as they arise without judgment, altering their relationship with distressing thoughts and emotions and fostering acceptance (Oraki et al., 2022).

Thus, the present study seeks to answer the following question: Does mindfulness-based cognitive therapy affect psychological symptoms and anxiety sensitivity in women with panic disorder?

2. Methods and Materials

2.1. Study design and Participant

The present study employed a quasi-experimental design with pre-test and post-test assessments. The statistical population consisted of women with panic disorder who sought counseling services in Tehran in 2023. A total of 30 participants were selected using convenience sampling and were then randomly assigned to an experimental group (15 participants) and a control group (15 participants). Data were collected using questionnaires measuring psychological symptoms and anxiety sensitivity. The experimental group underwent an eight-session, two-hour mindfulness-based cognitive therapy (MBCT) intervention, while the control group received no intervention. After the intervention, both groups were reassessed in the post-test phase.

2.2. Measures

2.2.1. Psychological Symptoms

To assess psychological symptoms in this study, the Depression, Anxiety, and Stress Scale (DASS-21) developed by Lovibond and Lovibond (1995) was used. This questionnaire consists of 21 items covering three subscales: anxiety, depression, and stress, measured using a Likert scale ranging from "Not at all" (1) to "Very much" (4) (Brown, Ryan, & Creswell, 2007). Among the 21 items, 7 measure stress, 7 measure anxiety, and 7 measure depression. The reliability and validity of this questionnaire have been confirmed in previous studies, with reported Cronbach's alpha coefficients of 0.73 for depression, 0.81 for anxiety, and 0.71 for stress. Additionally, Alizadeh et al. (2014) conducted a factor analysis of this scale, confirming the presence of three distinct factors: depression, anxiety, and stress. Their findings indicated that these three factors accounted for 68% of the total variance in the scale. The eigenvalues for stress, depression, and anxiety were 9.07, 2.89, and 1.23, respectively, with Cronbach's alpha coefficients of 0.97, 0.92, and 0.95 for these factors (Shirkhanzadeh et al., 2021). In the present study, the reliability of the questionnaire was assessed using Cronbach's alpha, yielding coefficients of 0.79 for anxiety, 0.81 for depression, and 0.83 for stress.

2.2.2. Anxiety Sensitivity

To measure anxiety sensitivity, the Anxiety Sensitivity Index (ASI-16) developed by Floyd et al. (2005) was used. This index consists of 16 items rated on a five-point Likert scale ranging from "Very little" (0) to "Very much" (4). Each

item reflects the belief that anxiety symptoms are experienced as unpleasant and may lead to harmful consequences. Higher scores indicate greater fear of anxiety symptoms, with a total possible score ranging from 0 to 64. The structure of this index comprises three factors: fear of physical concerns (8 items), fear of cognitive control loss (4 items), and fear of publicly observable anxiety symptoms (4 items). The psychometric evaluation of this index demonstrated high internal consistency, with a Cronbach's alpha of 0.90. The test-retest reliability was reported as 0.75 over two weeks and 0.71 over a three-year period. The validity of this index in an Iranian sample was examined using three methods: internal consistency, test-retest reliability, and split-half reliability, with reported coefficients of 0.93, 0.95, and 0.97, respectively. The validity of this measure was further confirmed by significant correlations between subscales and the total score, ranging from 0.74 to 0.88. In the study conducted by Meshkati and colleagues (2013), the Cronbach's alpha for this index was reported as 0.87 (Farhadmanesh et al., 2017; Morvaridi et al., 2019). In the present study, the test reliability using Cronbach's alpha for the total scale was found to be 0.86.

2.3. Intervention

2.3.1. Mindfulness-Based Cognitive Therapy

The intervention in this study was based on mindfulness-based cognitive therapy (MBCT) and was conducted over eight sessions, each lasting two hours. The program aimed to help participants develop mindfulness skills to regulate their psychological symptoms and reduce anxiety sensitivity. In the first session, participants were introduced to the concept of mindfulness, its principles, and the rationale behind its application in psychological health. They engaged in exercises to become aware of their present-moment experiences without judgment. The second session focused on mindful breathing, teaching participants to anchor their attention to their breath and return to it whenever their mind wandered. This practice helped them cultivate attentional control and reduce automatic negative thinking. In the third session, participants learned body scan meditation, which involved systematically directing attention to different parts of the body to enhance bodily awareness and relaxation. The fourth session introduced mindful movement, incorporating gentle physical exercises, such as stretching or yoga, to connect mindfulness with physical sensations and promote relaxation. The fifth session explored cognitive reactivity and the impact of negative

thought patterns on emotional distress. Participants practiced recognizing and detaching from distressing thoughts rather than engaging with them reactively. In the sixth session, participants learned strategies for handling difficult emotions through mindfulness techniques, such as observing emotions without avoidance or suppression, fostering acceptance, and reducing emotional reactivity. The seventh session emphasized integrating mindfulness into daily life, encouraging participants to apply mindfulness skills in routine activities such as eating, walking, and social interactions to sustain their practice outside structured sessions. In the final session, participants reflected on their progress, discussed potential challenges in maintaining mindfulness practice, and developed personalized strategies for continued use of mindfulness techniques beyond the intervention. Throughout the program, participants were assigned mindfulness exercises to practice at home and were encouraged to share their experiences in subsequent sessions. This structured intervention aimed to enhance self-awareness, emotion regulation, and resilience, ultimately reducing psychological symptoms and anxiety sensitivity in women with panic disorder.

2.4. Data Analysis

The data analysis in this study was conducted using SPSS 26 software. Descriptive statistics, including means and

standard deviations, were used to summarize the demographic characteristics and research variables. To assess the assumption of normality, the Kolmogorov-Smirnov test was performed. The Levene's test was used to examine the homogeneity of variances to ensure that the assumption of equal variances was met for conducting parametric tests. To evaluate the effectiveness of mindfulness-based cognitive therapy, a one-way analysis of covariance (ANCOVA) was used to compare post-test scores of psychological symptoms and anxiety sensitivity between the experimental and control groups while controlling for pre-test scores. Effect sizes were also calculated to determine the magnitude of the intervention's impact. A significance level of 0.05 was set for all statistical analyses.

3. Findings and Results

As indicated by the data in Table 1, the mean scores for psychological symptoms and anxiety sensitivity in the pre-test and post-test for the control group remain the same. Additionally, the mean scores of psychological symptoms and anxiety sensitivity in the experimental group differ between the pre-test and post-test.

Table 1

Descriptive Statistics of Research Variables Before and After the Intervention

Variable	Group	Pre-Intervention Mean	Pre-Intervention SD	Post-Intervention Mean	Post-Intervention SD
Psychological Symptoms	Experimental	51.57	6.86	39.2	5.14
	Control	50.35	6.41	49.35	6.53
Anxiety Sensitivity	Experimental	57.12	6.35	41.10	5.41
	Control	54.74	6.14	55.16	6.28

The results of Levene's test indicated that the obtained F value was not significant, as the significance level (Sig) for all research variables was greater than 0.05. This finding

suggests that the variances are homogeneous. Therefore, the assumption of equal variances is met, allowing for the application of covariance analysis.

Table 2

One-Way ANCOVA Results for Differences Between the Experimental and Control Groups in Total Psychological Symptoms Scores

Source	Sum of Squares	df	Mean Squares	F Value	Significance Level	Effect Size
Pre-test	1859.856	1	1859.856	67.412	0.001	0.587
Group Membership	741.215	1	741.215	21.263	0.001	0.489
Error	510.963	27	18.92			

As seen in Table 2, the results of the covariance analysis for post-test psychological symptom scores, after adjusting

for pre-test scores, indicate that the effect of mindfulness-based cognitive therapy on post-test scores is significant. In

other words, mindfulness-based cognitive therapy has a significant effect on reducing psychological symptoms in women with panic disorder.

Table 3

One-Way ANCOVA Results for Differences Between the Experimental and Control Groups in Anxiety Sensitivity Scores

Source	Sum of Squares	df	Mean Squares	F Value	Significance Level	Effect Size
Pre-test	1952.841	1	1952.841	72.854	0.001	0.489
Group Membership	841.652	1	841.652	25.614	0.001	0.412
Error	689.412	27	25.53			

As seen in Table 3, the results of the covariance analysis for post-test anxiety sensitivity scores, after adjusting for pre-test scores, indicate that the effect of mindfulness-based cognitive therapy on post-test scores is significant. In other words, mindfulness-based cognitive therapy has a significant effect on reducing anxiety sensitivity in women with panic disorder.

4. Discussion and Conclusion

The findings indicated that the mean scores of psychological symptoms in the post-test for the experimental group were significantly different from the pre-test scores. Therefore, mindfulness-based cognitive therapy has an impact on the psychological symptoms of women with panic disorder. These results are consistent with prior findings (Dizaj Khalili et al., 2023; Elhai et al., 2018; Esmacilian et al., 2021; Farhadmanesh et al., 2017; Hajishabani, 2020; Kenne Sarenmalm et al., 2017; Otto et al., 2020; Qarib-Bolook et al., 2022; Salmani Cholabi et al., 2020; Soltani Panah et al., 2021; Zamani & Zolfaghari, 2022).

To explain this result, it can be stated that mindfulness exercises, with their two primary goals of focused attention and conscious monitoring, serve as a powerful method for improving mental and physical health. In these exercises, individuals select a focal point, such as their breath, body, or an object, and make a conscious effort to sustain their attention. Whenever their focus drifts, they are trained to intentionally redirect their attention to the focal point. This approach helps clients manage negative thoughts and emotions, fostering a more positive experience of life. A key aspect of this therapy is training individuals to cope with negative thoughts and stressful events through breathing exercises and mindfulness practices. Through this method, patients learn how to overcome negative aspects of their lives and instead focus on positive experiences. These mindfulness techniques enhance patients' control over their

minds and bodies, leading to overall improvements in their well-being.

Furthermore, mindfulness-based therapy emphasizes acceptance and present-moment awareness. This approach helps clients gain better control over their thoughts and behaviors by focusing on the present. For individuals with panic disorder, this treatment can increase motivation and effort toward achieving health-related goals. By practicing mindful meditation, patients learn to handle daily challenges with calmness and without anxiety, which in turn contributes to improved mental health and reduced stress and distress. Over time, this process leads to overall improvements in the psychological well-being and behaviors of individuals with panic disorder.

The findings also demonstrated that the mean scores of anxiety sensitivity in the post-test for the experimental group were significantly different from the pre-test scores. Therefore, mindfulness-based cognitive therapy has an impact on the anxiety sensitivity of women with panic disorder.

Mindfulness, which is founded on the acceptance of unpleasant thoughts and various emotional states, significantly enhances an individual's ability to regulate the influence of thoughts and emotions. This approach allows individuals to experience a broad spectrum of thoughts and emotions without emotional distress. Mindfulness exercises, such as breathing meditation, focus on awareness and regulation of breathing. In this method, individuals with panic disorder are encouraged to calm their minds by focusing on their inhalation and exhalation. This practice reduces distractions and intrusive thoughts, enabling individuals to concentrate on their breathing. Additionally, in body scan exercises, patients become aware of bodily sensations in different areas of their bodies and, if distracted, are trained to redirect their attention back to bodily sensations. These exercises help individuals develop greater awareness of their bodies and minds, allowing them to

manage stress more effectively. Mindfulness meditation exercises, including mindful breathing, eating, seeing, and listening, emphasize awareness in the present moment.

This heightened awareness enables patients to recognize their behavioral patterns and, rather than trying to control their emotions, use them as tools for deeper self-understanding. By engaging with and reinterpreting their emotions, individuals can leverage their experiences of anxiety and fear for personal growth and development, rather than avoiding them. This process encourages individuals to embrace and understand their emotions, leading to an increase in psychological resilience rather than merely reducing anxiety.

5. Limitations and Suggestions

One limitation of this study is the reliance on a convenience sampling method, which may limit the generalizability of the findings to broader populations. Additionally, the study focused exclusively on women with panic disorder, preventing conclusions about its applicability to men or individuals with other anxiety disorders. Another limitation is the short duration of the intervention and follow-up, as the long-term effectiveness of mindfulness-based cognitive therapy on psychological symptoms and anxiety sensitivity remains uncertain. Moreover, self-report questionnaires were used for data collection, which may introduce response bias due to participants' subjective perceptions and potential social desirability effects.

Future research should explore the long-term effects of mindfulness-based cognitive therapy by incorporating extended follow-up assessments to determine its sustained impact on psychological symptoms and anxiety sensitivity. Additionally, studies should include more diverse populations, including men and individuals with different anxiety disorders, to improve the generalizability of the findings. Further research can also employ objective physiological measures, such as heart rate variability or neuroimaging techniques, to assess the biological mechanisms underlying the effectiveness of mindfulness-based cognitive therapy. Moreover, integrating qualitative methods, such as in-depth interviews, could provide deeper insights into participants' experiences and the specific cognitive and emotional changes facilitated by the intervention.

Authors' Contributions

Authors contributed equally to this article.

Declaration

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

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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