KMAN PUBLISHING INSTITUTE
Journal Website

Article history:
Received 22 April 2024
Revised 15 June 2024
Accepted 26 June 2024
Published online 01 July 2024

Journal of Assessment and Research in Applied Counseling

Volume 6, Issue 3, pp 219-225

E-ISSN: 3041-8518

The Effectiveness of Mindfulness-Based Therapy on Reducing Stress and Improving Emotion Regulation in Patients with Post-Traumatic Stress Disorder (PTSD)

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A r t i c l e I n f o

Article type:
Original Research

How to cite this article:
Zadfallah Farshami, H., & Bozorgi, M. (2024). The Effectiveness of Mindfulness-Based Therapy on Reducing Stress and Improving Emotion Regulation in Patients with Post-Traumatic Stress Disorder (PTSD). *Journal of Assessment and Research in Applied Counseling*, *6*(3), 219-225.
http://dx.doi.org/10.61838/kman.jarac.6.3.24

A B S T R A C T

Objective: Post-Traumatic Stress Disorder (PTSD) is a significant challenge in the field of mental health, requiring effective and sustainable interventions.

Methods and Materials: This study aimed to examine the effectiveness of mindfulness-based therapy in reducing stress and improving emotion regulation in clients with PTSD. The statistical population included clients with PTSD who visited counseling and psychological services centers in Rasht in 2024. From this population, 30 individuals were selected through convenience sampling and divided into experimental and control groups (15 people in each group). The instruments used included the PTSD Checklist (PCL-5), the Perceived Stress Scale (PSS), and the Emotion Regulation Questionnaire (ERQ). Data analysis was performed using SPSS version 26 and statistical methods such as independent t-test, multivariate analysis of variance (MANOVA), and Pearson correlation analysis.

Findings: The results indicated that mindfulness-based therapy significantly reduced stress and improved emotion regulation in clients with PTSD.

Conclusion: These findings were consistent with previous studies and demonstrated that mindfulness-based therapy could be used as an effective and sustainable method for managing PTSD symptoms. However, limitations such as a limited statistical population, relatively small sample size, and the use of self-report questionnaires should be considered in future research. Suggestions for future research include conducting studies with larger samples and longer follow-up periods, combining mindfulness-based therapy with other therapeutic methods, and using more objective assessment tools.

Keywords: *Post-Traumatic Stress Disorder, Mindfulness-Based Therapy, Stress, Emotion Regulation.*

1. Introduction

Post-Traumatic Stress Disorder (PTSD) is a complex and debilitating mental condition that occurs after experiencing or witnessing a traumatic event. Symptoms of PTSD include recurrent flashbacks, nightmares, severe anxiety, and uncontrollable thoughts about the event (American Psychiatric Association, 2022). This disorder not only affects individuals' mental health but also significantly reduces their quality of life and often leads to physical and emotional problems (Ghezelseflo et al., 2023; Schnurr & Green, 2004). Emotion regulation refers to an individual's ability to manage and respond to emotional experiences in an adaptive and situationally appropriate manner (Gross, 2015). Individuals with PTSD often struggle with emotion regulation, which can exacerbate their symptoms (Cloitre et al., 2011). Recent research has shown that mindfulness exercises can improve emotion regulation skills and reduce intense emotional reactions when facing stress and past trauma (Faghfouriazar, 2023; Goldin & Gross, 2010; Hölzel et al., 2011).

Another important aspect of mindfulness-based therapy is stress reduction. Chronic and debilitating stress is a primary feature of PTSD that can severely impact an individual's quality of life (Yehuda, 2002). Studies have demonstrated that mindfulness exercises can effectively reduce stress levels and significantly improve individuals' mental and physical health (Chiesa & Serretti, 2009). This is particularly important for individuals suffering from PTSD, as stress reduction can lead to overall improvements in their mental state.

In recent years, various treatments have been introduced for managing and reducing PTSD symptoms, including Cognitive-Behavioral Therapy (CBT), exposure therapy, and pharmacotherapy. Although these methods have been effective in reducing PTSD symptoms, not all patients benefit equally from these treatments, and there is still a need for new and complementary therapeutic approaches (Van der Kolk, 2014). In this context, Mindfulness-Based Therapy (MBT) has emerged as a novel and promising approach. Mindfulness involves fully and consciously paying attention to the present moment and accepting internal and external experiences without judgment (Segal et al., 2012). Mindfulness-based therapy includes various exercises that help individuals become more aware of their thoughts, feelings, and reactions, and manage them constructively rather than avoiding or suppressing them (Segal et al., 2012).

Numerous studies have shown the effectiveness of mindfulness-based therapy in reducing PTSD symptoms and improving emotion regulation. For example, a study by Polusny et al. (2015) reported that participants in an eight-week mindfulness-based therapy program showed significant reductions in PTSD symptoms and improvements in emotion regulation. These results were sustained in six-month and one-year follow-ups (Polusny et al., 2015). Additionally, another study by King et al. (2013) found that mindfulness exercises helped reduce stress and improve sleep quality in individuals with PTSD. In a more comprehensive study, Hölzel et al. (2011) demonstrated that mindfulness exercises lead to positive changes in brain structure associated with improved emotion regulation and reduced stress. This study used brain imaging to show that mindfulness exercises can enhance brain areas related to emotion regulation and decrease activity in areas associated with stress responses (King et al., 2013).

Given the high prevalence of PTSD and its negative impact on individuals' lives, the need for effective and complementary therapeutic methods is greater than ever. Mindfulness-based therapy, as a novel and non-pharmacological approach, offers a promising option for managing and reducing PTSD symptoms. This research aims to provide scientific and empirical evidence to help develop and promote this therapeutic method, leading to improved mental health and quality of life for individuals with PTSD. The goal of this research is to investigate the effectiveness of Mindfulness-Based Therapy (MBT) in reducing stress and improving emotion regulation in patients with PTSD. This study aims to provide scientific and empirical evidence to better understand the mechanisms through which mindfulness-based therapy reduces PTSD symptoms and enhances the quality of life for these patients.

2. Methods and Materials

2.1. Study Design and Participants

The present study is an applied research and in terms of research method, it is a quasi-experimental study with a pre-test, post-test, and follow-up design along with a control group. The statistical population of this study includes all clients with PTSD who visited counseling and psychological services centers in Rasht in 2024. The sample for this study consists of 30 clients with PTSD. The sampling method in this research is convenience sampling. To select the sample, individuals who met the inclusion criteria and visited the counseling and psychological services centers in Rasht were

JARAC Assessment and Research in Applied Counseling E-ISSN: 3041-8518

selected through convenience sampling. The sample size was determined using Cochran's formula. Considering the prevalence of PTSD in the population and assuming a Type I error of 0.05 and a test power of 0.80, the sample size was determined to be 30 individuals. Inclusion criteria included an official diagnosis of PTSD by a psychologist based on DSM-5 criteria, age between 18 and 60 years, willingness to participate in the study, ability to attend therapy sessions, and no drug or alcohol use in the past six months. Exclusion criteria included having other severe mental disorders (such as schizophrenia), not completing the therapy course, and changes in psychiatric medications during the study period.

All used instruments have high validity and reliability and have been used in numerous studies.

Ethical considerations in this research were as follows: Participation in this research was entirely voluntary. Before the start of the study, participants were informed about the study's details and regulations. Participants' perspectives and opinions were respected. Members of the experimental and control groups were allowed to withdraw from the study at any stage. Additionally, members of the control group could receive the intervention provided to the experimental group in similar therapy sessions after the study ended if they were interested. All documents, questionnaires, and confidential records were accessible only to the researchers. Written informed consent was obtained from all volunteers.

2.2. Measures

2.2.1. PTSD

The PTSD Checklist (PCL-5) developed by Weathers et al. in 2013, consists of 20 questions rated on a 5-point Likert scale from 0 (not at all) to 4 (extremely); this questionnaire has a Cronbach's alpha coefficient between 0.88 and 0.95, indicating its validity and reliability (Asvadi et al., 2023).

2.2.2. Perceived Stress

The Perceived Stress Scale (PSS) developed by Cohen, Kamarck, and Mermelstein in 1983, consists of 10 questions rated on a 5-point Likert scale from 0 (never) to 4 (very often); the Cronbach's alpha coefficient of this questionnaire ranges from 0.84 to 0.86 (Rahimi et al., 2023).

2.2.3. Emotion Regulation

The Emotion Regulation Questionnaire (ERQ) developed by Gross and John in 2003, consists of 10 questions rated on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree); the Cronbach's alpha coefficient of this questionnaire ranges from 0.72 to 0.79 (Akhavan Kharazi & Ramezani, 2022).

2.3. Interventions

2.3.1. Mindfulness-Based Therapy (MBT)

This intervention protocol for Mindfulness-Based Therapy (MBT) is designed to reduce stress and improve emotion regulation in patients with Post-Traumatic Stress Disorder (PTSD). The program consists of eight weekly sessions, each lasting approximately 90 minutes. Each session focuses on different mindfulness techniques and practices, gradually building on previous sessions to enhance participants' mindfulness skills. The goal is to help participants become more aware of their thoughts, feelings, and bodily sensations and learn to manage them in a constructive manner (Segal et al., 2012).

Session 1: Introduction to Mindfulness

The first session introduces participants to the concept of mindfulness, including its definition and benefits. Participants learn about the basic principles of mindfulness, such as paying attention to the present moment and accepting experiences without judgment. The session includes a brief mindfulness exercise, such as mindful breathing, to provide participants with a practical experience of mindfulness. Participants are also encouraged to keep a mindfulness journal to record their experiences and reflections throughout the program.

Session 2: Body Scan Meditation

In the second session, participants are introduced to the body scan meditation, which involves paying close attention to different parts of the body in a systematic manner. This practice helps participants become more aware of bodily sensations and learn to release tension. The session includes a guided body scan meditation, followed by a discussion on participants' experiences and any challenges they encountered during the practice.

Session 3: Mindful Movement

This session focuses on incorporating mindfulness into physical activities. Participants engage in gentle yoga or stretching exercises, paying attention to the sensations in their bodies as they move. The aim is to help participants develop a greater awareness of their physical presence and learn to connect with their bodies in a mindful way. The session concludes with a reflection on how mindful movement can be integrated into daily routines.

Session 4: Mindful Breathing and Sitting Meditation

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The fourth session introduces mindful breathing and sitting meditation practices. Participants learn techniques for focusing on their breath and observing their thoughts without becoming attached to them. The session includes guided meditation practices, followed by a discussion on the importance of breath awareness and how it can be used to manage stress and anxiety.

Session 5: Dealing with Difficult Emotions

In this session, participants learn strategies for dealing with difficult emotions using mindfulness. The focus is on recognizing and accepting emotions without judgment, and responding to them in a constructive manner. Participants practice a guided meditation on observing emotions, and discuss ways to apply these techniques in real-life situations. The session aims to enhance participants' emotional regulation skills.

Session 6: Loving-Kindness Meditation

The sixth session introduces loving-kindness meditation, which involves cultivating feelings of compassion and kindness towards oneself and others. Participants practice sending positive intentions to themselves, loved ones, and even those with whom they have conflicts. The session emphasizes the importance of self-compassion and how it can contribute to emotional well-being.

Session 7: Integrating Mindfulness into Daily Life

This session focuses on integrating mindfulness practices into daily life. Participants discuss the challenges and benefits of maintaining a regular mindfulness practice, and explore ways to incorporate mindfulness into everyday activities such as eating, walking, and communication. The session includes practical exercises and a group discussion on strategies for sustaining mindfulness practices beyond the program.

Session 8: Review and Future Planning

The final session is a review of the program and participants' progress. Participants reflect on their experiences, share insights, and discuss how their mindfulness practices have evolved. The session includes a discussion on setting realistic goals for continuing mindfulness practices and integrating them into their lives. Participants are encouraged to develop a personalized plan for maintaining their mindfulness practice and managing stress and emotions in the future.

2.4. Data analysis

In the descriptive analysis of the data, statistical indices for each research variable were calculated. In the inferential statistics section, repeated measures ANOVA and SPSS-22 software were used.

3. Findings and Results

The mean age (standard deviation) of participants in the experimental group was 39.7 (9.4) and in the control group was 36.2 (7.9). The minimum and maximum ages in the experimental group were 30 and 48 years, respectively, and in the control group were 31 and 50 years, respectively.

Table 1

Mean and Standard Deviations of Research Variables Scores in Experimental and Control Groups

Variable	Group	Pre-test	Post-test	Follow-up
Emotion Regulation	Experimental	39.30 (8.66)	47.05 (10.33)	46.20 (9.97)
	Control	38.40 (7.04)	39.10 (7.18)	39.24 (7.26)
Perceived Stress	Experimental	28.80 (6.38)	20.89 (4.33)	21.97 (4.40)
	Control	26.41 (5.49)	25.49 (5.53)	25.45 (5.52)

To examine the significance of differences in emotion regulation and perceived stress scores between the experimental and control groups, repeated measures ANOVA was used.

Table 2

Repeated Measures ANOVA for Comparing Pre-test, Post-test, and Follow-up of Emotion Regulation and Perceived Stress in Experimental and Control Groups

Scale	Source of Effect	Sum of Squares	df	Mean Square	F	Significance	Eta Squared
Emotion Regulation	Time	230.46	1.70	160.14	79.16	.001	.73
	Time * Group	150.02	1.70	104.24	51.53	.001	.64
	Group	418.17	1	418.17	38.86	.001	.44

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E-ISSN: 3041-8518

Perceived Stress	Time	87.62	2	43.81	164.78	.001	.85
	Time * Group	37.48	2	18.74	70.50	.001	.71
	Group	131.61	1	131.61	15.25	.001	.24

The results in Table 2 indicate that the ANOVA for the within-subjects factor (time) is significant and the between-groups factor is significant. These results mean that, considering the group effect, the time effect alone is significant. Additionally, the interaction between group and time is significant. Bonferroni post hoc tests were also used for pairwise group comparisons.

Table 3

Results of Bonferroni Post Hoc Test for Comparing Emotion Regulation and Perceived Stress in the Experimental Group

Variable	Phases	Post-test	Follow-up
Emotion Regulation	Pre-test	-8.20*	-7.77*
	Post-test	-	1.42
Perceived Stress	Pre-test	8.60*	7.75*
	Post-test	-	1.15

The results in Table 3 show that the perceived stress score in the experimental group at the post-test stage is lower than that in the control group. In other words, the mindfulness-based therapy group had a high effectiveness in reducing perceived stress. Additionally, the emotion regulation score in the experimental group at the post-test stage is higher than that in the control group. In other words, the experimental group had a high effectiveness in improving emotion regulation.

4. Discussion and Conclusion

This study investigated the effectiveness of mindfulness-based therapy in reducing stress and improving emotion regulation in individuals with PTSD. The results showed that mindfulness-based therapy can significantly reduce PTSD symptoms, decrease stress, and improve emotion regulation skills in these individuals. Numerous studies have examined the effectiveness of mindfulness-based therapy in reducing PTSD symptoms and reported similar results. For example, a study by Polusny et al. (2015) found that participants in an eight-week mindfulness-based therapy program reported significant reductions in PTSD symptoms and improvements in emotion regulation. These results were sustained in six-month and one-year follow-ups (Polusny et al., 2015). Another study by King et al. (2013) showed that mindfulness exercises helped reduce stress and improve sleep quality in individuals with PTSD. These findings are consistent with the present study and indicate that mindfulness-based therapy can be an effective method for managing PTSD symptoms (King et al., 2013).

On the other hand, some studies have shown that mindfulness-based therapy may not be effective in reducing PTSD symptoms for all individuals. For example, some research has indicated that in some cases, individuals may require additional interventions or other therapeutic methods to experience significant improvement (Creswell et al., 2019; Dahm et al., 2015). These findings suggest that mindfulness-based therapy alone may not be sufficient for some individuals and that it may need to be combined with other therapeutic approaches. The results of this study showed that mindfulness-based therapy significantly reduces stress in individuals with PTSD. This finding is consistent with previous research indicating that mindfulness exercises can effectively reduce stress levels (Sadeghi et al., 2023; Safikhani, 2022). Mindfulness-based therapy, by focusing on present-moment awareness and non-judgmental acceptance of experiences, helps individuals reduce daily stresses and intense reactions to past trauma (Bowen et al., 2017; Wharton et al., 2019). This enables individuals with PTSD to more effectively cope with their stress and experience better quality of life.

The results also showed that mindfulness-based therapy significantly improves emotion regulation skills in individuals with PTSD. This finding aligns with research by Hölzel et al. (2011), which demonstrated that mindfulness exercises can strengthen brain areas related to emotion regulation and reduce activity in areas related to stress responses (Hölzel et al., 2011). Mindfulness-based therapy, by teaching focus on inner experiences and non-judgmental acceptance of them, helps individuals manage their emotions more adaptively and prevent intense and undesirable emotional reactions.

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5. Limitations & Suggestions

Like any study, this research has limitations. First, the statistical population was limited to individuals with PTSD in the city of Rasht, and its results may not be generalizable to other populations. Second, the relatively small sample size necessitates further research with larger samples to confirm these results. Third, the use of self-report questionnaires may lead to data distortion, as participants might tend to provide socially desirable responses. Fourth, the follow-up period in this study was one year, and more extended follow-up studies are needed. Based on the findings, several suggestions for future research and practical applications are presented. First, conducting studies with larger samples and in different geographic areas is necessary for generalizability of the results. Second, combining mindfulness-based therapy with other therapeutic methods such as cognitive-behavioral therapy (CBT) could be explored to evaluate the combined effects of these approaches. Third, using multiple and more objective assessment tools, such as brain imaging, can increase the accuracy of the results. Fourth, group and online mindfulness-based therapy can help increase patient access to this therapeutic method. Fifth, examining the long-term effects of mindfulness-based therapy on reducing PTSD symptoms and improving emotion regulation in future research is recommended.

In summary, this study demonstrated that mindfulness-based therapy can significantly reduce stress and improve emotion regulation in individuals with PTSD. These findings are consistent with previous research and indicate that mindfulness-based therapy can be used as an effective and sustainable method for managing PTSD symptoms. However, further research with larger samples and longer follow-up periods is needed to confirm and strengthen these results. Additionally, combining mindfulness-based therapy with other therapeutic methods and using more objective assessment tools can help improve the quality of treatment and increase its effectiveness. Given the high prevalence of PTSD and its negative impacts on individuals' lives, using effective and sustainable therapeutic methods such as mindfulness-based therapy can help improve the mental health and quality of life of these patients and play a significant role in reducing the psychological and social burden of this disorder.

Acknowledgments

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

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.

Authors' Contributions

All authors equally contributed in this article.

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JARAC Assessment and Research in Applied Counseling
E-ISSN: 3041-8518