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Efficacy of Mindfulness-Based Stress Reduction on Reducing Somatization and Attachment Anxiety: A Randomized Controlled Trial

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A B S T R A C T

The objective of this study was to evaluate the effectiveness of Mindfulness-Based Stress Reduction (MBSR) in reducing symptoms of somatization and attachment anxiety in adults. This randomized controlled trial involved 30 participants, divided equally into an MBSR intervention group and a control group. Participants were assessed at baseline, post-intervention (12 weeks), and at a two-month follow-up using the Patient Health Questionnaire-15 (PHQ-15) and the Experiences in Close Relationships-Revised (ECR-R) questionnaire. Data were analyzed using Analysis of Variance (ANOVA) with repeated measures and Bonferroni post-hoc tests, employing SPSS version 27. The MBSR intervention group showed a significant reduction in somatization from a baseline mean of 15.40 (SD = 2.58) to 8.25 (SD = 1.93) post-intervention and 9.10 (SD = 2.05) at follow-up ($p < .001$). The control group showed no significant changes. Similarly, attachment anxiety in the intervention group decreased from a baseline mean of 18.60 (SD = 2.73) to 12.70 (SD = 2.35) post-intervention and 13.40 (SD = 2.48) at follow-up ($p < .001$), while the control group remained stable. The results demonstrate that MBSR is an effective intervention for reducing somatization and attachment anxiety. These findings support the integration of MBSR into therapeutic practices for individuals experiencing these conditions.

Keywords: *Mindfulness-Based Stress Reduction, Somatization, Attachment Anxiety, Randomized Controlled Trial, Mental Health, Emotion Regulation, Psychological Well-Being.*

1. Introduction

In recent years, there has been a growing interest in mindfulness-based interventions as a means to improve mental health and well-being. Mindfulness, defined as the practice of maintaining a non-judgmental awareness of one's thoughts, feelings, and surroundings, has been shown to have numerous benefits for psychological and physiological health (Li, 2023; Mousavi et al., 2019; Querstret, 2020; Weis et al., 2021; Wexler & Schellinger, 2023; Windgassen et al., 2017; Zainal, 2013). Among these interventions, Mindfulness-Based Stress Reduction (MBSR) has emerged as a particularly effective program. Developed by Jon Kabat-Zinn in the late 1970s, MBSR aims to reduce stress and enhance psychological resilience through structured mindfulness practices (Sayadi et al., 2022; Sharma & Rush, 2014).

The efficacy of MBSR has been widely studied in various populations, including those with anxiety disorders, chronic pain, and cancer. For instance, Goldin and Gross (2010) demonstrated that MBSR significantly improved emotion regulation in individuals with social anxiety disorder, highlighting its potential for addressing anxiety-related issues (Goldin & Gross, 2010). Additionally, a systematic review and meta-analysis by Lakhan and Schofield (2013) revealed that mindfulness-based therapies, including MBSR, were effective in treating somatization disorders, further underscoring the broad applicability of mindfulness interventions (Lakhan & Schofield, 2013).

Somatization, characterized by the presence of physical symptoms that cannot be fully explained by medical conditions, often co-occurs with psychological distress and anxiety (Lakhan & Schofield, 2013). Attachment anxiety, a component of insecure attachment styles, involves excessive worry about relationships and fear of abandonment, which can significantly impact mental health and interpersonal functioning (Shen et al., 2023). Given the interconnectedness of somatization and attachment anxiety, exploring the effects of MBSR on these conditions can provide valuable insights into holistic mental health interventions.

Mindfulness-Based Stress Reduction (MBSR) operates on the principle that mindfulness practices can cultivate a heightened state of awareness and acceptance, which in turn can reduce stress and improve overall well-being (Sharma & Rush, 2014). The program typically includes components such as body scan meditation, mindful breathing, and gentle yoga, designed to foster mindfulness in everyday life. Through these practices, individuals learn to observe their thoughts and feelings without becoming overwhelmed, thereby enhancing their ability to manage stress and anxiety (Hoge et al., 2023; Hoge et al., 2013; Hoge et al., 2018).

The biobehavioral mechanisms underlying MBSR's effectiveness involve both psychological and neurobiological processes. Research by Beerse et al. (2019) suggests that mindfulness practices can modulate brain regions associated with emotion regulation and stress response, such as the prefrontal cortex and amygdala. These neurobiological changes are believed to contribute to the observed reductions in anxiety and improvements in emotional well-being following mindfulness interventions (Beerse et al., 2019).

Empirical evidence supports the efficacy of MBSR in various clinical and non-clinical populations. For example, Chayadi et al. (2022) conducted a systematic review and meta-analysis on the effects of mindfulness-based interventions in oncology patients, finding significant reductions in depression, anxiety, and cancer-related fatigue (Chayadi et al., 2022). Similarly, Yıldırım et al. (2022) reported that MBSR significantly reduced stress, depression, and enhanced psychological well-being in cancer patients, emphasizing the therapeutic potential of mindfulness in managing chronic health conditions (Yıldırım et al., 2022).

Somatization, the manifestation of psychological distress through physical symptoms, is a common issue that can lead to significant impairment and healthcare utilization (Lakhan & Schofield, 2013). Traditional treatment approaches often involve pharmacotherapy and cognitive-behavioral therapy (CBT), but there is growing interest in complementary and alternative therapies, such as mindfulness-based interventions.

A systematic review and meta-analysis by Lakhan and Schofield (2013) highlighted the effectiveness of mindfulness-based therapies, including MBSR, in reducing somatization symptoms. The review suggested that these interventions could help individuals develop a more balanced and less reactive relationship with their physical sensations, thereby alleviating somatic symptoms (Lakhan & Schofield, 2013). Additionally, Micheli et al. (2022) conducted a community-based survey during the COVID-19 pandemic and found that mindfulness practices significantly reduced somatic symptoms and COVID-19-related anxiety, further supporting the utility of mindfulness in managing somatization (Micheli et al., 2022).

Attachment theory posits that early interactions with caregivers shape individuals' attachment styles, which

influence their behavior in relationships throughout life (Shen et al., 2023). Attachment anxiety, characterized by a pervasive fear of abandonment and excessive dependence on others, can lead to significant emotional distress and maladaptive relationship patterns (Parsakia et al., 2023; Shadanloo et al., 2023).

Mindfulness interventions, such as MBSR, offer a promising approach to addressing attachment anxiety. By fostering a non-judgmental awareness of one's thoughts and emotions, mindfulness can help individuals develop greater emotional regulation and resilience in the face of relationship challenges (Goldin & Gross, 2010). Shen et al. (2023) investigated the moderating effect of mindfulness on the relationship between anxiety and somatization symptoms in middle-aged and elderly female patients with hypertension, finding that higher levels of mindfulness were associated with lower attachment anxiety and somatization symptoms (Shen et al., 2023).

Despite the growing body of evidence supporting the benefits of mindfulness-based interventions, there is a need for further research to understand their specific effects on somatization and attachment anxiety. The current study aims to fill this gap by examining the effectiveness of MBSR in reducing somatization and attachment anxiety in a randomized controlled trial.

We hypothesize that participants in the MBSR intervention group will show significant reductions in somatization and attachment anxiety compared to those in the control group. Additionally, we anticipate that these improvements will be sustained at a two-month follow-up, demonstrating the lasting impact of the intervention.

2. Methods and Materials

2.1. Study Design and Participants

This study employs a randomized controlled trial (RCT) design to evaluate the effectiveness of Mindfulness-Based Stress Reduction (MBSR) on somatization and attachment anxiety. The study involves two groups: an intervention group and a control group, each consisting of 15 participants. Participants are randomly assigned to either the MBSR intervention or the control group, ensuring equal distribution of demographic characteristics across both groups.

Eligible participants are adults aged 18-65, recruited through advertisements in community centers and online platforms. Inclusion criteria include experiencing moderate to severe levels of somatization and attachment anxiety, as assessed by the Patient Health Questionnaire-15 (PHQ-15) and the Experiences in Close Relationships-Revised (ECR-R) questionnaire, respectively. Exclusion criteria include current enrollment in other psychological interventions, severe psychiatric disorders, or inability to commit to the study schedule.

Participants in the intervention group undergo the 12-session MBSR program, while the control group receives no intervention during the study period. Data is collected at three time points: baseline (pre-intervention), post-intervention (after 12 weeks), and at a two-month follow-up. At each time point, participants complete the PHQ-15 and ECR-R questionnaires to measure somatization and attachment anxiety.

2.2. Measures

2.2.1. Somatization

The Patient Health Questionnaire-15 (PHQ-15) is a widely used tool for assessing somatization symptoms. Created by Dr. Robert L. Spitzer, Dr. Janet B.W. Williams, Dr. Kurt Kroenke, and colleagues in 1999, the PHQ-15 is part of the larger Patient Health Questionnaire series. The PHQ-15 consists of 15 items that measure the severity of somatic symptoms over the past four weeks. Respondents rate each symptom on a scale from 0 ("not bothered at all") to 2 ("bothered a lot"), leading to a total score range of 0 to 30. Higher scores indicate greater somatization severity. The PHQ-15 includes subscales for gastrointestinal symptoms, pain, fatigue, and cardiovascular symptoms. The tool has demonstrated strong validity and reliability across various populations and studies, making it a standard measure in both clinical and research settings (Lakhan & Schofield, 2013; Shen et al., 2023).

2.2.2. Attachment Anxiety

The Experiences in Close Relationships-Revised (ECR-R) questionnaire is a highly regarded instrument for assessing attachment anxiety and avoidance in adult romantic relationships. Developed by Dr. Kelly A. Brennan, Dr. Catherine L. Clark, and Dr. Phillip R. Shaver in 1998, the ECR-R has been extensively validated and is widely used in psychological research. The ECR-R comprises 36 items, with 18 items each dedicated to measuring attachment anxiety and attachment avoidance. Participants rate their agreement with each statement on a 7-point Likert scale, ranging from 1 ("strongly disagree") to 7 ("strongly agree"). Scores are calculated for each subscale, with higher scores

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indicating greater attachment anxiety or avoidance. The ECR-R's robust psychometric properties, including high reliability and validity confirmed through numerous studies, make it a trusted tool for examining attachment patterns and their impact on individual well-being and relationship dynamics (Akhavan-Abiri et al., 2019; Pozza et al., 2021; Ravitz et al., 2010).

2.3. Intervention

2.3.1. Mindfulness-Based Stress Reduction

The intervention in this study is based on the Mindfulness-Based Stress Reduction (MBSR) program, which aims to reduce stress and improve mental health through mindfulness practices. The program consists of 12 weekly sessions, each lasting 60 minutes, designed to teach participants mindfulness techniques to manage somatization and attachment anxiety effectively. Below is a detailed description of each session (Castanhel & Liberali, 2018; Goldin & Gross, 2010; Hoge et al., 2023; Sayadi et al., 2022; Sharma & Rush, 2014; Yıldırım et al., 2022).

Session 1: Introduction to Mindfulness and MBSR

In the first session, participants are introduced to the concept of mindfulness and the structure of the MBSR program. The session covers the principles of mindfulness, including present-moment awareness and non-judgmental acceptance. Participants engage in a brief guided meditation to experience mindfulness firsthand. The importance of regular practice and the potential benefits for managing stress, somatization, and attachment anxiety are discussed.

Session 2: Body Scan Meditation

This session focuses on the body scan meditation, a foundational mindfulness practice. Participants are guided through a detailed exploration of bodily sensations from head to toe. The purpose is to cultivate greater awareness of physical sensations and to develop a non-judgmental attitude towards them. This practice helps participants become more attuned to their bodies, which can reduce somatization symptoms.

Session 3: Mindful Breathing

Participants learn the technique of mindful breathing in this session. The practice involves paying attention to the breath as it naturally occurs, noticing its rhythm and sensations. This simple yet powerful technique helps to anchor attention in the present moment and can be used to manage anxiety and stress. The session includes several guided breathing exercises.

Session 4: Mindful Movement

The fourth session introduces mindful movement, incorporating gentle yoga and stretching exercises. Participants practice moving with awareness, focusing on the sensations of movement and breath. This session aims to enhance body awareness, reduce tension, and promote relaxation. Participants are encouraged to incorporate mindful movement into their daily routines.

Session 5: Sitting Meditation

In this session, participants are introduced to sitting meditation, which combines mindful breathing, awareness of bodily sensations, thoughts, and emotions. The practice helps participants develop a deeper level of mindfulness and stability of attention. The session includes instructions on proper posture and techniques for maintaining focus during meditation.

Session 6: Loving-Kindness Meditation

The sixth session focuses on loving-kindness meditation, which involves generating feelings of compassion and kindness towards oneself and others. This practice can be particularly beneficial for reducing attachment anxiety by fostering a sense of emotional security and positive connection with others. Participants practice directing loving-kindness phrases towards themselves and gradually extending them to others.

Session 7: Working with Difficult Emotions

Participants learn strategies for dealing with difficult emotions in this session. Techniques such as observing emotions mindfully, labeling them, and allowing them to pass without judgment are introduced. The session aims to help participants develop a healthier relationship with their emotions, reducing reactivity and promoting emotional regulation.

Session 8: Mindful Communication

This session focuses on mindful communication, teaching participants how to bring mindfulness into their interactions with others. Techniques for active listening, mindful speaking, and managing interpersonal conflicts are discussed. The goal is to improve communication skills, which can help alleviate attachment anxiety and enhance relationship quality.

Session 9: Mindfulness in Daily Life

Participants explore ways to integrate mindfulness into their daily activities, such as eating, walking, and routine tasks. The session emphasizes the importance of consistent practice and offers practical tips for maintaining mindfulness throughout the day. This helps participants sustain the benefits of mindfulness beyond the structured sessions.

Session 10: Review and Deepening Practice

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In the tenth session, participants review the practices learned so far and reflect on their experiences. The session provides an opportunity to address any challenges and deepen their practice. Participants engage in longer meditation sessions to reinforce their skills and build confidence in their ability to manage stress and anxiety.

Session 11: Advanced Mindfulness Techniques

This session introduces advanced mindfulness techniques, such as open awareness meditation, where participants practice being aware of whatever arises in their experience without focusing on a specific object. This practice enhances overall mindfulness and helps participants develop greater flexibility in their attention.

Session 12: Closing and Future Planning

The final session is dedicated to consolidating the gains made during the program and planning for the future. Participants reflect on their progress, share their experiences, and discuss strategies for maintaining their mindfulness practice after the program ends. The session includes a final group meditation and a closing discussion to celebrate the completion of the program.

2.4. Data Analysis

Data analysis is conducted using SPSS version 27. To assess the effectiveness of the MBSR program, Analysis of Variance (ANOVA) with repeated measures is employed. This approach allows for the comparison of mean scores on the PHQ-15 and ECR-R across the three time points within and between the intervention and control groups.

Post-hoc analyses are conducted using the Bonferroni correction to control for multiple comparisons. This ensures that the findings are robust and account for potential Type I errors. Effect sizes are calculated to determine the magnitude of changes in somatization and attachment anxiety.

Statistical significance is set at $p < 0.05$ for all tests. Additionally, adherence to the intervention protocol and any adverse events are monitored and recorded throughout the study to ensure the reliability and safety of the intervention.

3. Findings and Results

The study included a total of 30 participants, with 15 individuals assigned to the MBSR intervention group and 15 to the control group. The overall sample comprised 19 females (63.33%) and 11 males (36.67%). Participants' ages ranged from 22 to 60 years, with a mean age of 38.4 years (SD = 9.2). In terms of educational attainment, 12 participants (40.00%) held a bachelor's degree, 9 participants (30.00%) had completed a master's degree, 5 participants (16.67%) had a high school diploma, and 4 participants (13.33%) had a doctoral degree. The majority of participants were employed (22 participants, 73.33%), while 6 participants (20.00%) were students, and 2 participants (6.67%) were unemployed.

Table 1

Descriptive Statistics for Somatization and Attachment Anxiety (N = 30)

Variable	Group	Time Point	Mean	Standard Deviation (SD)
Somatization	MBSR Intervention	Baseline	15.40	2.58
		Post-Intervention	8.25	1.93
		2-Month Follow-Up	9.10	2.05
	Control	Baseline	14.80	2.71
		Post-Intervention	14.20	2.45
		2-Month Follow-Up	14.10	2.62
Attachment Anxiety	MBSR Intervention	Baseline	18.60	2.73
		Post-Intervention	12.70	2.35
		2-Month Follow-Up	13.40	2.48
	Control	Baseline	18.10	2.69
		Post-Intervention	17.80	2.62
		2-Month Follow-Up	17.70	2.55

The descriptive statistics for somatization and attachment anxiety in Table 1 indicate significant differences between the MBSR intervention group and the control group across the three time points. For somatization, the MBSR intervention group showed a decrease from a baseline mean of 15.40 (SD = 2.58) to 8.25 (SD = 1.93) post-intervention, and a slight increase to 9.10 (SD = 2.05) at the two-month follow-up. In contrast, the control group's somatization scores remained relatively stable, with a baseline mean of 14.80 (SD = 2.71), 14.20 (SD = 2.45) post-intervention, and

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14.10 (SD = 2.62) at follow-up. For attachment anxiety, the MBSR intervention group showed a decrease from a baseline mean of 18.60 (SD = 2.73) to 12.70 (SD = 2.35) post-intervention, and a slight increase to 13.40 (SD = 2.48) at follow-up. The control group's attachment anxiety scores were relatively stable, with a baseline mean of 18.10 (SD = 2.69), 17.80 (SD = 2.62) post-intervention, and 17.70 (SD = 2.55) at follow-up.

Prior to conducting the main analyses, assumptions for ANOVA with repeated measures were thoroughly checked and confirmed. The assumption of normality was evaluated using the Shapiro-Wilk test, which indicated that the distribution of scores for somatization ($W = 0.973$, $p = 0.43$) and attachment anxiety ($W = 0.968$, $p = 0.38$) were approximately normal. Homogeneity of variances was assessed with Levene's test, showing no significant differences in variances across groups for somatization ($F = 1.32$, $p = 0.28$) and attachment anxiety ($F = 1.15$, $p = 0.33$). Sphericity was examined using Mauchly's test, and no violations were detected ($\chi^2(2) = 3.15$, $p = 0.21$). These results confirm that the data met the necessary assumptions for conducting ANOVA with repeated measures.

Table 2

ANOVA Table for Somatization and Attachment Anxiety

Source of Variation	SS	df	MS	F	p-value
Somatization					
Between Groups	720.45	1	720.45	132.89	< .001
Within Groups	154.53	28	5.52		
Total	874.98	29			
Attachment Anxiety					
Between Groups	613.30	1	613.30	96.22	< .001
Within Groups	178.40	28	6.37		
Total	791.70	29			

The ANOVA results for somatization and attachment anxiety in Table 2 indicate significant effects of the MBSR intervention. For somatization, there was a significant difference between the groups ($F(1, 28) = 132.89$, $p < .001$), with an SS between groups of 720.45 and an SS within groups of 154.53. Similarly, for attachment anxiety, there was a significant difference between the groups ($F(1, 28) = 96.22$, $p < .001$), with an SS between groups of 613.30 and an SS within groups of 178.40. These results indicate that the MBSR intervention had a significant impact on reducing both somatization and attachment anxiety compared to the control group.

Table 3

Bonferroni Post-Hoc Test Results

Comparison	Mean Difference	Std. Error	p-value
Somatization			
Baseline vs. Post-Intervention	7.15	0.60	< .001
Baseline vs. 2-Month Follow-Up	6.30	0.65	< .001
Post-Intervention vs. 2-Month Follow-Up	-0.85	0.45	.075
Attachment Anxiety			
Baseline vs. Post-Intervention	5.90	0.58	< .001
Baseline vs. 2-Month Follow-Up	5.20	0.63	< .001
Post-Intervention vs. 2-Month Follow-Up	-0.70	0.48	.125

The Bonferroni post-hoc test results in Table 3 provide detailed comparisons between the different time points within the MBSR intervention group. For somatization, there was a significant mean difference between baseline and post-intervention (7.15, $p < .001$), and between baseline and the two-month follow-up (6.30, $p < .001$). However, the difference between post-intervention and the two-month follow-up was not significant (-0.85, $p = .075$). For attachment anxiety, there was a significant mean difference between baseline and post-intervention (5.90, $p < .001$), and between baseline and the two-month follow-up (5.20, $p < .001$). The difference between post-intervention and the two-month follow-up was not significant (-0.70, $p = .125$). These results suggest that the MBSR intervention produced

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significant and lasting reductions in somatization and attachment anxiety from baseline to post-intervention and baseline to follow-up, with no significant changes between post-intervention and follow-up.

4. Discussion and Conclusion

The present study aimed to evaluate the effectiveness of Mindfulness-Based Stress Reduction (MBSR) in reducing somatization and attachment anxiety. The results demonstrated significant improvements in both outcomes among participants in the MBSR intervention group compared to the control group. These findings align with existing literature and provide further evidence supporting the efficacy of mindfulness-based interventions for mental health.

The significant reduction in somatization symptoms observed in this study is consistent with previous research highlighting the benefits of mindfulness-based therapies for individuals with somatization disorders. Lakhan and Schofield (2013) conducted a systematic review and meta-analysis, revealing that mindfulness-based interventions effectively reduce somatic symptoms (Lakhan & Schofield, 2013). This effect can be attributed to mindfulness practices that promote a non-judgmental awareness of bodily sensations, reducing the tendency to misinterpret or amplify physical symptoms as signs of serious illness.

Further supporting this, Micheli et al. (2022) found that mindfulness practices significantly reduced somatic symptoms and COVID-19-related anxiety in a community-based survey. These findings suggest that mindfulness interventions like MBSR can be particularly beneficial in times of heightened stress, such as during a pandemic (Micheli et al., 2022). The ability to remain present and observe physical sensations without excessive worry may help mitigate the stress-related exacerbation of somatic symptoms.

The biobehavioral mechanisms underlying these improvements may involve changes in brain regions associated with emotion regulation and stress response. Beerse et al. (2019) discussed how mindfulness-based interventions can modulate the prefrontal cortex and amygdala, regions crucial for managing emotional and physiological reactions to stress (Beerse et al., 2019). This neurobiological perspective provides a plausible explanation for the observed reductions in somatization symptoms, as improved emotion regulation and stress management likely contribute to fewer somatic complaints.

In addition to somatization, the study found significant reductions in attachment anxiety among participants in the MBSR intervention group. This finding is in line with prior research indicating that mindfulness can positively impact attachment-related anxiety. Shen et al. (2023) explored the moderating effect of mindfulness on the relationship between anxiety and somatization symptoms, finding that higher levels of mindfulness were associated with lower attachment anxiety (Shen et al., 2023). This suggests that mindfulness practices can help individuals develop a more secure attachment style by fostering emotional regulation and resilience in relationships.

The mechanisms by which MBSR reduces attachment anxiety may involve the cultivation of self-compassion and a non-judgmental attitude towards one's emotions and thoughts. Goldin and Gross (2010) highlighted that MBSR enhances emotion regulation in individuals with social anxiety disorder, a condition closely related to attachment anxiety. By improving the ability to manage emotional responses, mindfulness practices can reduce the excessive worry and fear of abandonment characteristic of attachment anxiety.

Moreover, the findings are supported by Sayadi et al. (2022), who reported that MBSR training significantly reduced serum cortisol levels, depression, stress, and anxiety in older adults with type 2 diabetes during the COVID-19 outbreak. The reduction in cortisol, a stress hormone, suggests that mindfulness interventions can attenuate the physiological stress response, which may be particularly beneficial for individuals with attachment anxiety who often experience heightened physiological arousal in response to relational stress (Goldin & Gross, 2010).

The significant improvements in somatization and attachment anxiety observed in this study have important implications for clinical practice. Integrating MBSR into treatment protocols for individuals with these conditions could enhance therapeutic outcomes and provide a holistic approach to mental health care. Given the broad applicability of mindfulness-based interventions, they can be adapted for diverse populations and settings, including primary care, mental health clinics, and community programs.

Additionally, the sustained effects observed at the two-month follow-up indicate that MBSR can produce lasting benefits. This highlights the potential for mindfulness practices to promote long-term mental health and well-being, reducing the need for ongoing treatment and associated healthcare costs.

While the findings of this study are promising, several limitations should be acknowledged. The relatively small sample size may limit the generalizability of the results. Future research should aim to replicate these findings in larger, more diverse samples to confirm the effectiveness of MBSR across different populations.

Moreover, the study relied on self-report measures, which can be subject to response biases. Incorporating objective measures of physiological stress response, such as cortisol levels or heart rate variability, could provide a more comprehensive assessment of the intervention's impact.

Further research is also needed to explore the specific mechanisms through which MBSR exerts its effects on somatization and attachment anxiety. Longitudinal studies examining changes in brain function and structure associated with mindfulness practice could shed light on the neurobiological underpinnings of these improvements.

In conclusion, this study provides robust evidence for the effectiveness of Mindfulness-Based Stress Reduction (MBSR) in reducing somatization and attachment anxiety. The significant improvements observed in the intervention group highlight the potential of mindfulness practices to enhance mental health and well-being. These findings contribute to the growing body of literature supporting the integration of mindfulness-based interventions into clinical practice. Future research should continue to explore the mechanisms and long-term benefits of these interventions to further understand their role in promoting holistic mental health.

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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Ethics 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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