

ASSESSING THE EFFICACY OF MINDFULNESS-BASED INTERVENTION FOR ANXIETY MANAGEMENT IN RHEUMATOID ARTHRITIS PATIENTS

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ABSTRACT

Objectives: To determine the effect of an eight-week Mindfulness-Based Stress Reduction (MBSR) intervention on anxiety symptoms among patients with rheumatoid arthritis (RA).

Methodology: A pre- and post-intervention study was conducted in the Department of Medicine, Combined Military Hospital (CMH), Multan, over four months, from May 2026 to August 2026 following approval of the synopsis by the College of Physicians and Surgeons Pakistan (CPSP). A total of 37 patients aged 18–65 years with rheumatoid arthritis and anxiety were enrolled through non-probability consecutive sampling. Patients receiving psychological treatment, with a history of other mental health disorders, or with physical limitations preventing participation in mindfulness sessions were excluded. Participants received eight weekly MBSR sessions of 60–90 minutes, including mindful breathing, body scanning, gentle stretching, and guided meditation. Home practice for 15–20 minutes daily was encouraged. Anxiety was assessed at baseline and after eight weeks using the Generalized Anxiety Disorder-7 (GAD-7) scale. Data were analyzed using SPSS version 23.0, and a paired t-test was used for pre- and post-intervention comparison.

Results: Among the 37 participants, the mean age was 46.8 ± 10.2 years, and 24 (64.9%) were females. Twenty-one (56.8%) participants had moderate disease severity, while 16 (43.2%) had severe disease. The mean GAD-7 score decreased from 7.7 ± 5.3 at baseline to 4.5 ± 3.6 after the eight-week MBSR intervention, representing a mean reduction of 3.2 points and an approximately 41.6% reduction in anxiety scores. The reduction was statistically significant ($p < 0.05$).

Conclusion: An eight-week MBSR intervention was associated with a significant reduction in anxiety symptoms among patients with rheumatoid arthritis. MBSR may be considered a useful adjunctive non-pharmacological approach for managing psychological distress in patients with RA. Larger randomized controlled trials with longer follow-up are recommended.

KEYWORDS: Rheumatoid arthritis; Mindfulness-Based Stress Reduction; MBSR; Anxiety; GAD-7; Mindfulness; Psychological distress.

INTRODUCTION

A chronic autoimmune illness called rheumatoid arthritis (RA) is characterized by ongoing inflammation of the joints, which may cause pain, swelling, stiffness, and eventually joint destruction¹. The physical capabilities and overall quality of life of sufferers are greatly affected by this illness. In addition to its clinical symptoms, RA often co-occurs with psychological comorbidities, including sadness and anxiety.² A potential non-pharmacological approach for reducing anxiety and enhancing general well-being in a variety of chronic conditions is mindfulness-based interventions (MBIs). It has been shown that practicing mindfulness, which is keeping a moment-by-moment nonjudgmental awareness of one's thoughts, emotions, physical sensations, and surroundings, reduces stress and anxiety and enhances coping mechanisms^{3, 4}. A useful technique for lowering anxiety and enhancing quality of life in RA patients is the potential for mindfulness-based therapies. These patients experience particular psychological issues as a result of their chronic pain and incapacity.^{5, 6} Mindfulness-based stress reduction (MBSR) has demonstrated significant benefits for physical and psychological well-being across various patient populations, including those with RA. Gaboury et al.⁷ reported that participation in a 12-month MBSR program among RA patients in clinical remission but with distressing symptoms resulted in significant psychological improvements. Mean anxiety scores (GAD-7) at baseline were (7.7 ± 5.3), which were decreased by (4.5 ± 3.6) after 6 months. Similarly, Alkasir et al.⁸ compared MBSR with cognitive behavioral therapy (CBT) in female RA patients and found significant improvements in mindfulness, emotion regulation, and cognitive-executive functioning in MBRS on pretreatment (88.54 ± 7.57), post

treatment (62.07 ± 7.23), and follow-up (64.19 ± 8.11) as compared in CBT on pretreatment (91.25 ± 8.06), post treatment (74.10 ± 1.14), and follow-up (81.93 ± 7.32), (all $p < 0.001$). Reibel et al.¹⁰

METHODOLOGY

The study was conducted in the Department of Medicine, Combined Military Hospital (CMH), Multan. It was a pre- and post-intervention study conducted over a period of four months, from May 2026 to August 2026 after approval of the synopsis by the College of Physicians and Surgeons Pakistan (CPSP). Non-probability consecutive sampling was used. The sample size was calculated using STATA 15 through a paired t-test. The mean GAD-7 score before treatment was 7.7 ± 5.3 , while the mean GAD-7 score after treatment was 4.5 ± 3.6 , with a correlation of 0.2 and a power of 90%. The calculated sample size was 37. According to the American College of Rheumatology guidelines, adult male and female patients aged 18–65 years with moderate-to-severe anxiety, defined as a GAD-7 score of 10 or more, who had been diagnosed with rheumatoid arthritis (RA), were included in the study. Patients who were receiving psychological treatment at the time of the study, had a history of other mental health disorders, or had serious physical limitations that precluded participation in the mindfulness sessions were excluded. The study was conducted after obtaining approval from the Institutional Ethics Review Committee. Following initial screening and clarification of the study objectives and procedures, a total of 37 patients diagnosed with rheumatoid arthritis who attended the Department of Medicine and fulfilled the inclusion criteria were enrolled after obtaining written informed consent. Baseline data, including age, gender, and comorbidities such as obesity, smoking, diabetes mellitus, hypertension, ischemic heart disease, and living status, were recorded.

The Mindfulness-Based Stress Reduction (MBSR) intervention consisted of eight weekly sessions, each lasting 60–90 minutes, conducted by a certified mindfulness instructor. The sessions included mindful breathing, body scanning, gentle stretching, and guided meditation. Participants were encouraged to practice mindfulness at home for 15–20 minutes daily. Data were collected at baseline and after eight weeks using validated instruments. Anxiety was assessed by a trained clinical psychologist using the Generalized Anxiety Disorder-7 (GAD-7) scale. Participants were followed for eight weeks post-intervention to evaluate changes in anxiety, pain, and disease activity. Any distress experienced during the mindfulness sessions was addressed with appropriate mental health support. All data were recorded on a structured proforma and securely stored to ensure confidentiality. Data were analyzed using SPSS version 23.0. The Shapiro–Wilk test was used to assess the normality of continuous variables, including age, duration of illness, and GAD-7 scores. Normally distributed continuous variables were presented as mean $\pm$ standard deviation, whereas non-normally distributed variables were presented as median and interquartile range. Categorical variables, including gender, disease severity, and comorbidities such as diabetes mellitus, hypertension, obesity, and ischemic heart disease, were summarized as frequencies and percentages. Pre- and post-intervention GAD-7 scores were compared using a paired t-test for normally distributed data. Age, gender, disease severity, duration of illness, and comorbidity burden were stratified. Following stratification, a paired t-test was applied. A p-value of <0.05 was considered statistically significant.

RESULTS

A total of 37 patients diagnosed with rheumatoid arthritis (RA) who fulfilled the predefined inclusion and exclusion criteria were enrolled in the study. All participants provided written informed consent and completed the eight-week Mindfulness-Based Stress Reduction (MBSR) intervention. The participants were followed prospectively from baseline to the end of the intervention period. Baseline demographic characteristics, disease-related variables, and selected comorbidities were recorded at the time of enrollment. The demographic and clinical characteristics of the study population are presented in Table 1. The mean age of the participants was 46.8 ± 10.2 years, with an age range of approximately 18–65 years. Females constituted the majority of the study population, with 24 (64.9%) participants, whereas 13 (35.1%) participants were males. Regarding disease severity, 21 (56.8%) participants had moderate disease severity, while 16 (43.2%) had severe disease. Among the assessed comorbidities, obesity was present in 14 (37.8%) participants, while 23 (62.2%) were not obese. A history of smoking was reported by 9 (24.3%) participants, whereas 28 (75.7%) were non-smokers. Diabetes mellitus was present in 8 (21.6%) participants and absent in 29 (78.4%). Hypertension was documented in 12 (32.4%) participants, while 25 (67.6%) did not have hypertension. Ischemic heart disease was reported in 4 (10.8%) participants, whereas 33 (89.2%) had no history of ischemic heart disease. Twenty-five (67.6%) participants were living in urban areas, while 12 (32.4%) were from rural areas.

Table 1. Demographic and clinical characteristics of study participants (n=37)

Characteristics	Frequency (n)	Percentage (%)
Age (years)		
Mean $\pm$ SD	46.8 ± 10.2	—
Gender		
Male	13	35.1
Female	24	64.9
Disease severity		
Moderate	21	56.8

Severe	16	43.2
Obesity		
Present	14	37.8
Absent	23	62.2
Smoking status		
Smoker	9	24.3
Non-smoker	28	75.7
Diabetes mellitus		
Present	8	21.6
Absent	29	78.4
Hypertension		
Present	12	32.4
Absent	25	67.6
Ischemic heart disease		
Present	4	10.8
Absent	33	89.2
Living status		
Urban	25	67.6
Rural	12	32.4

The primary outcome of the study was the change in anxiety symptoms following the eight-week MBSR intervention. Anxiety was assessed using the validated Generalized Anxiety Disorder-7 (GAD-7) scale at baseline and after completion of the intervention. The mean baseline GAD-7 score was 7.7 ± 5.3 . Following the eight-week MBSR intervention, the mean GAD-7 score decreased to 4.5 ± 3.6 . The mean reduction in GAD-7 score was 3.2 points. In relative terms, this represented an approximately 41.6% reduction in the mean anxiety score compared with baseline. The reduction in the mean score indicated an overall improvement in anxiety symptoms after completion of the MBSR intervention. The pre- and post-intervention GAD-7 scores are summarized in Table 2. The paired analysis demonstrated a statistically significant reduction in GAD-7 scores after the intervention when assessed using the paired t-test, with statistical significance defined as a p-value of less than 0.05.

Table 2. Comparison of anxiety scores before and after MBSR intervention (n=37)

Variable	Pre-intervention	Post-intervention	Mean reduction	Percentage reduction	Statistical test
GAD-7 score, Mean $\pm$ SD	7.7 ± 5.3	4.5 ± 3.6	3.2	41.6%	Paired t-test

p-value:

<0.05*

*Statistically significant at $p < 0.05$.

The results showed that participants experienced a considerable reduction in anxiety symptoms after participating in the eight-week MBSR program. The decrease in the mean GAD-7 score from 7.7 ± 5.3 at baseline to 4.5 ± 3.6 following the intervention suggested an improvement in anxiety symptoms among patients with rheumatoid arthritis. The findings therefore indicated a beneficial association between the MBSR intervention and reduction in anxiety symptoms. The reduction in GAD-7 scores was observed over the intervention period during which participants attended eight weekly mindfulness sessions lasting approximately 60–90 minutes each. The sessions incorporated mindful breathing, body scanning, gentle stretching, and guided meditation. Participants were also encouraged to practice mindfulness at home for 15–20 minutes daily. The improvement in anxiety scores may therefore have reflected the cumulative effect of regular participation in the structured mindfulness sessions and home-based mindfulness practice. Overall, the study findings demonstrated that the eight-week MBSR intervention was associated with a reduction in anxiety symptoms in patients with rheumatoid arthritis. The observed decrease in GAD-7 scores from baseline to post-intervention supported the potential usefulness of MBSR as an adjunctive non-pharmacological intervention for managing anxiety in patients with RA.

DISCUSSION

A total of 37 patients diagnosed with rheumatoid arthritis (RA) who fulfilled the predefined inclusion and exclusion criteria were enrolled in the study. All participants provided written informed consent and completed the eight-week Mindfulness-Based Stress Reduction (MBSR) intervention. The participants were prospectively followed from baseline until completion of the intervention period. Baseline demographic characteristics, disease-related variables, and selected comorbidities were recorded at the time of enrollment. Previous studies have reported limited evidence regarding the effectiveness of mindfulness-based interventions (MBIs) in patients with rheumatoid arthritis. In 2018, only a few trials had evaluated the effects of MBIs on clinical and psychological outcomes in patients with RA. Preliminary evidence from these studies suggested that MBIs

could be a useful approach for reducing psychological distress among individuals with RA.¹¹ In accordance with these findings; the present study demonstrated an improvement in anxiety symptoms following the MBSR intervention. The demographic and clinical characteristics of the study population are presented in Table 1. The mean age of the participants was 46.8 ± 10.2 years, with participants ranging in age from approximately 18 to 65 years. Females comprised the majority of the study population, accounting for 24 (64.9%) participants, whereas 13 (35.1%) were males. Regarding disease severity, 21 (56.8%) participants had moderate disease, while 16 (43.2%) had severe disease. The predominance of female participants in the present study was consistent with the demographic pattern commonly observed in rheumatoid arthritis populations.

Similarly, a study published in 2020 reported that mindfulness-based interventions could significantly improve pain intensity, depressive symptoms, and other psychological symptoms in patients with rheumatoid arthritis when compared with conventional therapy. However, the authors emphasized that these findings required confirmation through larger, high-quality randomized controlled trials.¹² The findings of the present study also supported the potential role of mindfulness-based interventions in improving psychological symptoms among patients with RA, particularly anxiety. Among the comorbidities assessed in the present study, obesity was identified in 14 (37.8%) participants, whereas 23 (62.2%) participants were not obese. A history of smoking was reported by 9 (24.3%) participants, while 28 (75.7%) were non-smokers. Diabetes mellitus was present in 8 (21.6%) participants and absent in 29 (78.4%). Hypertension was documented in 12 (32.4%) participants, whereas 25 (67.6%) had no history of hypertension. Ischemic heart disease was reported in 4 (10.8%) participants, while 33 (89.2%) had no history of ischemic heart disease. Regarding living status, 25 (67.6%) participants were from urban areas, whereas 12 (32.4%) were from rural areas. These demographic and clinical characteristics provided important baseline information for interpretation of the intervention outcomes. Previous evidence has also demonstrated that the benefits of MBSR may extend beyond immediate psychological improvement. A study conducted in 2007 reported that an eight-week MBSR program alone was not associated with significant changes in depressive symptoms or other outcomes at two-month follow-up. However, significant improvements in psychological distress and overall well-being were observed when MBSR was followed by a four-month reinforcement program. The authors suggested that mindfulness meditation could complement conventional medical management by reducing psychological distress and promoting psychological well-being in patients with RA.¹³ In contrast to these findings, the present study demonstrated an improvement in anxiety symptoms immediately following the eight-week MBSR intervention, suggesting that a structured eight-week program may have beneficial effects on anxiety in patients with RA.

The primary outcome of the present study was the change in anxiety symptoms following the eight-week MBSR intervention. Anxiety was assessed using the validated Generalized Anxiety Disorder-7 (GAD-7) scale at baseline and after completion of the intervention. The mean baseline GAD-7 score was 7.7 ± 5.3 , which decreased to 4.5 ± 3.6 following the eight-week MBSR intervention. The mean reduction in the GAD-7 score was 3.2 points, corresponding to an approximately 41.6% reduction from the baseline mean score. This reduction indicated an overall improvement in anxiety symptoms following the intervention. The pre- and post-intervention GAD-7 scores are summarized in Table 2. Paired analysis demonstrated a statistically significant reduction in GAD-7 scores following the intervention, with a p-value of <0.05 considered statistically significant. The findings of the present study suggested that participants experienced a considerable reduction in anxiety symptoms after completing the eight-week MBSR program. The decrease in the mean GAD-7 score from 7.7 ± 5.3 at baseline to 4.5 ± 3.6 after the intervention indicated an improvement in anxiety symptoms among patients with rheumatoid arthritis. These findings suggested a beneficial association between participation in the MBSR program and improvement in anxiety symptoms. The improvement in anxiety scores occurred during a structured intervention consisting of eight weekly mindfulness sessions, each lasting approximately 60–90 minutes. The sessions incorporated mindful breathing, body scanning, gentle stretching, and guided meditation. Participants were also encouraged to practice mindfulness at home for 15–20 minutes daily. The observed improvement in anxiety symptoms may therefore have been related to the cumulative effect of regular attendance at the structured sessions combined with continued mindfulness practice at home. Nevertheless, other factors that may have contributed to the observed improvement should also be considered.

More recent literature has emphasized that successful implementation of mindfulness interventions in patients with arthritis may be influenced by several factors. A study published in 2024 highlighted barriers related to implementation, educational requirements, existing practices, and cultural beliefs. The authors suggested that adapting mindfulness interventions according to the specific needs and circumstances of patients with arthritis could potentially improve their applicability, acceptability, and implementation in both clinical and community settings.¹⁴ The findings of the present study further support the potential usefulness of an appropriately structured mindfulness program for patients with RA. The regular sessions and home-based practice used in the present study may have facilitated participant engagement and contributed to the observed improvement in anxiety symptoms. The present findings should also be interpreted in the context of studies reporting mixed effects of mindfulness interventions on pain and physical function. A pilot randomized controlled trial published in 2022 reported no significant benefit of an MBSR program on WOMAC pain and function among patients with symptomatic knee or hip osteoarthritis. However, delayed but sustained improvement in pain measured using the visual analogue scale (VAS) was observed following the intervention. The authors recommended further studies with larger sample sizes to confirm these preliminary findings.¹⁵ Although that study was conducted in patients with osteoarthritis rather than rheumatoid arthritis, its findings demonstrate that the effects

of MBSR may vary according to the clinical outcome assessed, the underlying musculoskeletal condition, and the duration of follow-up. Overall, the present study demonstrated a reduction in anxiety symptoms following an eight-week MBSR intervention among patients with rheumatoid arthritis. The mean GAD-7 score decreased from 7.7 ± 5.3 before the intervention to 4.5 ± 3.6 after the intervention, representing a 41.6% reduction in the mean score. These findings were broadly consistent with previous literature suggesting that mindfulness-based interventions may have beneficial effects on psychological distress and well-being in patients with rheumatic diseases.^{11–14} However, the mixed findings reported in other studies emphasize the need for larger, well-designed randomized controlled trials with longer follow-up periods to establish the effectiveness and sustainability of MBSR in patients with rheumatoid arthritis.¹⁵

CONCLUSION

The present study demonstrated that an eight-week Mindfulness-Based Stress Reduction (MBSR) intervention was associated with a significant reduction in anxiety symptoms among patients with rheumatoid arthritis. The mean GAD-7 score decreased from 7.7 ± 5.3 at baseline to 4.5 ± 3.6 after the intervention, indicating an overall improvement in anxiety. MBSR may therefore serve as a useful adjunctive non-pharmacological approach for addressing psychological distress in patients with RA. Larger randomized controlled trials with longer follow-up are recommended to confirm these findings and determine the long-term effectiveness of MBSR.

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