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# Structural Modeling of the Relationship Between Mindfulness and Posttraumatic Growth: The Mediating Role of Difficulties in Emotion Regulation and Self-Compassion in Patients with Rheumatoid Arthritis

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A B S T R A C T

**Objective:** The present study aimed to model the structural relationship between mindfulness and posttraumatic growth through the mediating roles of difficulties in emotion regulation and self-compassion in patients with rheumatoid arthritis.

**Methods and Materials:** In terms of purpose, the present study was applied research, and in terms of data collection method, it was a descriptive correlational study using a structural equation modeling approach. The statistical population consisted of all patients with rheumatoid arthritis who attended hospitals and rheumatology clinics in Tehran during the autumn of 2025. A total of 550 patients were selected using purposive sampling and completed the Five Facet Mindfulness Questionnaire developed by Ruth A. Baer and colleagues (2006), the Difficulties in Emotion Regulation Scale by Kimberly L. Gratz and Lizabeth Roemer (2004), the Self-Compassion Scale by Kristin Neff (2003), and the Posttraumatic Growth Inventory by Richard G. Tedeschi and Lawrence G. Calhoun (1996). Data analysis was conducted using Pearson correlation coefficients and structural equation modeling with SPSS version 26 and AMOS version 24 software.

**Findings:** The findings indicated that the proposed model demonstrated a good fit (GFI = 0.995, CFI = 0.987, IFI = 0.987, RMSEA = 0.034, $\chi^2/df = 1.623$). All direct and indirect path coefficients in the structural model were significant ($P < 0.001$). Mindfulness had a positive and significant effect on self-compassion ($\beta = 0.243$) and a negative and significant effect on difficulties in emotion regulation ($\beta = -0.263$). In addition, difficulties in emotion regulation had a negative and significant effect on posttraumatic growth ($\beta = -0.641$), whereas self-compassion had a positive and significant effect on posttraumatic growth ($\beta = 0.607$). The indirect effect of mindfulness on posttraumatic growth through difficulties in

emotion regulation and self-compassion was 0.316 and statistically significant (P = 0.012).

**Conclusion:** Mindfulness is a significant predictor of posttraumatic growth in patients with rheumatoid arthritis, both directly and indirectly through reducing difficulties in emotion regulation and enhancing self-compassion. Therefore, the design and implementation of psychological interventions based on mindfulness, emotion regulation, and self-compassion may serve as effective approaches for improving mental health and facilitating posttraumatic growth in these patients.

***Keywords:*** *Rheumatoid arthritis, mindfulness, posttraumatic growth, difficulties in emotion regulation, self-compassion.*

## 1. Introduction

Rheumatoid arthritis is a chronic, progressive, and immune-mediated inflammatory disease that affects not only joints and physical functioning but also multiple domains of psychological adaptation. Although rheumatoid arthritis is commonly conceptualized through pain, inflammation, morning stiffness, fatigue, and functional limitation, its consequences extend to emotional distress, altered body perception, reduced autonomy, and persistent uncertainty about the future. Epidemiological evidence from Iranian adult populations indicates that rheumatic disorders remain a relevant public health concern and require attention to both biomedical and psychosocial determinants (Amiri et al., 2024; Harooni et al., 2025). The chronic and fluctuating nature of rheumatoid arthritis exposes patients to repeated stressors, including pain exacerbations, treatment burden, medication side effects, occupational limitations, and changes in family and social roles. These conditions can create a psychological context similar to chronic traumatic stress, in which patients are required to reconstruct their sense of self, meaning, and agency in the face of a long-term illness.

The psychological burden of rheumatoid arthritis has been increasingly emphasized in health psychology. Patients with rheumatoid arthritis often experience anxiety, depressive symptoms, pain-related fear, anger, alexithymia, and psychosomatic symptoms, all of which may interfere with treatment adherence and quality of life (Baeza-Velasco et al., 2012; Ghiggia et al., 2025; Rezaei et al., 2013). Pain is not merely a sensory experience; it is shaped by cognitive appraisal, emotional regulation, bodily attention, and interpersonal support. Studies on rheumatic and chronic pain conditions show that difficulties in identifying and regulating emotions can intensify perceived pain and reduce adaptive coping capacity (Baeza-Velasco et al., 2012; Ghazanfari Harandi et al., 2025). Therefore, understanding psychological variables that may facilitate adaptive adjustment is essential for developing comprehensive care models for patients with rheumatoid arthritis.

One important construct in this context is posttraumatic growth, which refers to positive psychological changes that occur as a result of struggling with highly stressful or life-altering experiences. In chronic illness, posttraumatic growth may be manifested through increased appreciation of life, discovery of new possibilities, stronger interpersonal relationships, enhanced personal strength, and spiritual or existential transformation. Evidence from patients with rheumatoid arthritis suggests that despite the physical and psychological burdens of the disease, some patients report meaningful positive changes after confronting the illness (Dirik & Karanci, 2008; Rzeszutek et al., 2017). Such growth does not imply the absence of distress; rather, it indicates that patients may integrate the illness experience into a broader psychological transformation. The validity of posttraumatic growth measurement has also been supported in both international and Iranian contexts, making it a suitable outcome for research on adaptation to chronic disease (Lee et al., 2023; Seyed Mahmoudi et al., 2013).

Mindfulness is one of the central psychological variables that may contribute to posttraumatic growth. Mindfulness refers to purposeful, present-centered, and nonjudgmental awareness of internal and external experiences. In chronic illness, mindfulness may help patients observe pain, fatigue, negative thoughts, and emotional reactions without excessive avoidance, rumination, or catastrophizing. This capacity can support flexible coping and reduce automatic emotional reactivity. Research has shown that mindfulness-based interventions can improve stress, pain perception, anger, emotion regulation, and cognitive-executive functioning in patients with rheumatoid arthritis (Alkasir et al., 2025; Paknahad & Saffarinia, 2023; Rashidghalami & Kiamarthi, 2022). Similarly, mindfulness has been associated with psychological well-being and adaptive cognitive emotion regulation, suggesting that mindful awareness may function as a broad protective factor across different populations (Azhdari & Yousefi, 2023; Keshtvarz



JARAC Assessment and Research in Applied Counseling
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Kendazi et al., 2024). Studies outside rheumatoid arthritis also support the role of mindfulness in enhancing intrinsic capacity and adaptive functioning among patients with chronic cardiovascular conditions, indicating that mindfulness may be relevant across chronic medical populations (Cui et al., 2026).

The theoretical importance of mindfulness lies in its capacity to change the individual's relationship with distressing experiences. Rather than eliminating pain or negative affect, mindfulness may reduce experiential avoidance and increase the ability to remain psychologically present. Through observing bodily sensations and emotions without immediate judgment, patients may develop greater tolerance for uncertainty and discomfort. This is especially relevant in rheumatoid arthritis, where symptoms are recurrent and unpredictable. Mindfulness meditation has been shown to improve emotion regulation and reduce maladaptive behavioral responses, suggesting that mindfulness may influence psychological outcomes through regulatory mechanisms (Tang et al., 2016). Therefore, mindfulness may facilitate posttraumatic growth not only directly, by helping patients reinterpret illness-related suffering, but also indirectly, by improving emotion regulation and self-related attitudes.

Difficulties in emotion regulation represent another key construct in the psychological adjustment of patients with rheumatoid arthritis. Emotion regulation refers to the processes through which individuals monitor, understand, modulate, and express emotional responses in accordance with situational demands and personal goals. Difficulties in emotion regulation include nonacceptance of emotional responses, impulse control problems, limited access to regulation strategies, lack of emotional clarity, lack of emotional awareness, and difficulty engaging in goal-directed behavior when distressed. Psychometric research has supported the assessment of these difficulties in Iranian samples, and recent international work has continued to refine the measurement of emotion regulation deficits (Khanzadeh et al., 2012; Largatta et al., 2025). In patients with rheumatoid arthritis, emotion regulation problems may increase pain anxiety, intensify negative affect, and reduce the capacity to cope constructively with disease-related stress (Yazdanfar et al., 2020).

Emotion dysregulation may be particularly harmful for posttraumatic growth because growth requires cognitive-emotional processing of adversity. When patients are unable to identify, tolerate, or regulate emotional reactions, they may become trapped in avoidance, anger, helplessness, or intrusive illness-related concerns. In contrast, adaptive emotion regulation can help patients process distress, reinterpret illness meaning, and mobilize coping resources. Interventions targeting emotion management in rheumatoid arthritis have shown beneficial effects on pain-related and psychological outcomes, further indicating that emotion regulation is a clinically meaningful mechanism (Bolursaz Mashhadi et al., 2024; Ghazanfari Harandi et al., 2025). Accordingly, difficulties in emotion regulation may mediate the association between mindfulness and posttraumatic growth: higher mindfulness may reduce emotional dysregulation, and reduced dysregulation may create a more favorable psychological condition for growth.

Self-compassion is another important mediator in the relationship between mindfulness and posttraumatic growth. Self-compassion involves treating oneself with kindness rather than harsh self-criticism, recognizing suffering as part of shared human experience rather than as personal isolation, and holding painful thoughts and emotions in mindful awareness rather than over-identifying with them. In chronic illness, self-compassion may be especially important because patients often experience guilt, shame, perceived inadequacy, or frustration about bodily limitations. Research has shown that self-compassion is related to better functioning among adults with chronic pain and is associated with body image and depressive symptoms in rheumatic and autoimmune conditions (Barakat et al., 2024; Edwards et al., 2019). In Iranian research, the psychometric adequacy of the self-compassion scale has been supported, and self-compassion has been examined as a mechanism linking mindfulness to psychological well-being (Keshtvarz Kendazi et al., 2024; Shahbazi et al., 2015).

Self-compassion may promote posttraumatic growth by enabling patients to respond to suffering without self-blame or emotional collapse. Patients with rheumatoid arthritis may experience limitations in daily activities, changes in appearance, fatigue, and dependency on others. In such conditions, self-compassion can reduce maladaptive self-judgment and support acceptance, emotional balance, and meaning-making. Recent intervention studies in autoimmune and rheumatic conditions suggest that self-compassion-based approaches can improve psychological distress, body image, body awareness, and somatic symptoms (Amouei et al., 2025; Goldipoor et al., 2026). These findings indicate that self-compassion is not merely a personality trait but a modifiable psychological resource that may be strengthened through targeted interventions. Because mindfulness is conceptually embedded within self-


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

compassion, it is reasonable to expect that greater mindfulness may enhance self-compassion, which may in turn facilitate posttraumatic growth.

The combined study of mindfulness, emotion regulation, self-compassion, and posttraumatic growth is theoretically important because these constructs may represent a sequential adaptation pathway in chronic illness. Mindfulness may help patients observe their illness-related thoughts, emotions, and bodily sensations with greater clarity. This awareness may reduce difficulties in emotion regulation by increasing emotional recognition, reducing impulsive reactions, and expanding access to adaptive strategies. Simultaneously, mindfulness may strengthen self-compassion by decreasing self-criticism and increasing kindness toward the suffering self. Reduced emotion regulation difficulties and increased self-compassion may then enable patients to process the illness experience more constructively, thereby supporting posttraumatic growth. Previous research has separately supported the relevance of mindfulness-based stress reduction, acceptance and commitment therapy, cognitive-behavioral therapy, and emotion regulation interventions in rheumatoid arthritis (Alkasir et al., 2025; Bolursaz Mashhadi et al., 2024; Paknahad & Saffarinia, 2023; Rashidghalami & Kiamarthi, 2022). However, fewer studies have examined these variables simultaneously within a structural model.

From a clinical perspective, identifying mediating mechanisms is essential because it clarifies how mindfulness may contribute to positive adaptation. If the effect of mindfulness on posttraumatic growth is mediated by emotion regulation and self-compassion, interventions should not focus solely on attentional awareness but should also include components that directly target emotional processing and compassionate self-relating. This is particularly important for patients with rheumatoid arthritis, whose psychological distress is often intertwined with chronic pain and bodily vulnerability. Evidence indicates that stressful life events and psychosomatic symptoms are meaningfully present in rheumatoid arthritis populations, highlighting the need for integrated psychological models (Ghiggia et al., 2025). In addition, studies on coping, spirituality, and social support among rheumatoid arthritis patients suggest that psychological and interpersonal resources can shape posttraumatic growth outcomes (Rzeszutek et al., 2017).

Despite the growing body of research on psychological interventions and psychosocial correlates in rheumatoid arthritis, several gaps remain. First, many studies have focused on symptom reduction, such as reducing pain perception, anxiety sensitivity, anger, or depressive symptoms, whereas fewer have examined positive psychological outcomes such as posttraumatic growth (Bolursaz Mashhadi et al., 2024; Yazdanfar et al., 2020). Second, while mindfulness and self-compassion have been studied in relation to well-being and distress, their joint role with emotion regulation in explaining posttraumatic growth among patients with rheumatoid arthritis requires further empirical clarification (Azhdari & Yousefi, 2023; Keshtvarz Kendazi et al., 2024; Shahbazi et al., 2015). Third, although posttraumatic growth has been documented in rheumatoid arthritis, there is still a need to model its predictors and mechanisms in Iranian patient populations using structural equation modeling (Dirik & Karanci, 2008; Seyed Mahmoudi et al., 2013). Addressing these gaps may contribute to more precise psychological formulation and intervention planning.

The present study is therefore grounded in the assumption that rheumatoid arthritis, as a chronic inflammatory and disabling condition, may create not only distress but also the possibility of psychological growth when patients possess sufficient internal resources. Mindfulness may operate as an upstream resource that improves patients' capacity to encounter pain and emotional experience with awareness rather than avoidance. Difficulties in emotion regulation may represent a risk mechanism that weakens adaptive processing and reduces growth. Self-compassion may represent a protective mechanism that helps patients respond to suffering with kindness, common humanity, and balanced awareness. Integrating these variables into a structural model can clarify the direct and indirect pathways through which mindfulness is related to posttraumatic growth in patients with rheumatoid arthritis.

The present study aimed to model the structural relationship between mindfulness and posttraumatic growth through the mediating roles of difficulties in emotion regulation and self-compassion in patients with rheumatoid arthritis.

## 2. Methods and Materials

### *2.1. Study Design and Participants*

The present study was applied research in terms of purpose and a descriptive correlational study using a structural equation modeling approach in terms of data collection method. The statistical population of the present study consisted of all patients with rheumatoid arthritis who

attended hospitals and rheumatology clinics in Tehran during the autumn of 2025. Based on statistics obtained from the selected treatment centers, the approximate number of patients referred during this period was estimated at 2,000 individuals. According to the perspective of Rex B. Kline (2010), which recommends a minimum of 5 to 10 participants per estimated parameter, and considering the number of questionnaire items used in the study (approximately 100 items), the minimum sample size was estimated at 500 participants. To compensate for possible attrition and increase statistical power, 550 patients were selected using purposive sampling while observing the inclusion and exclusion criteria. In purposive sampling, the researcher selects individuals who meet the necessary conditions for participation based on knowledge of the target population and the objectives of the study. In the present study, the researcher reviewed the medical records of patients in the selected treatment centers, including Imam Khomeini Hospital Complex, Shariati Hospital, Razi Hospital, and private rheumatology clinics, and consecutively selected patients with a confirmed diagnosis of rheumatoid arthritis who also met the other inclusion criteria until the target sample size of 550 participants was completed.

The inclusion criteria were as follows: confirmed diagnosis of rheumatoid arthritis by a rheumatologist based on the criteria of the American College of Rheumatology (ACR); age range between 30 and 65 years (according to the World Health Organization, 2023, the peak prevalence of rheumatoid arthritis occurs during the sixth decade of life, approximately 60 years of age, and the disease is relatively rare before the age of 30); at least a high school diploma; willingness to participate in the study and provision of informed consent; and at least one year having elapsed since the diagnosis of the disease. The exclusion criteria included acute psychiatric disorders (such as psychosis, bipolar I disorder during the acute phase, or major depressive disorder accompanied by active suicidal ideation), the presence of other disabling chronic diseases (such as active cancer, multiple sclerosis, end-stage renal failure, or uncontrolled diabetes), and inability to complete the questionnaires due to cognitive or language impairments.

After coordination with the selected treatment centers, including Imam Khomeini, Shariati, and Razi hospitals and private rheumatology clinics in different districts of Tehran, the researcher visited these centers, reviewed patients' medical records, and identified eligible participants. Subsequently, the objectives of the study, confidentiality of information, and voluntary nature of participation were explained to the patients, and written informed consent was obtained from them. In the next stage, a demographic questionnaire along with the four principal research instruments, including the Five Facet Mindfulness Questionnaire, the Difficulties in Emotion Regulation Scale, the Self-Compassion Scale, and the Posttraumatic Growth Inventory, were administered as a single package in one session lasting a maximum of 45 minutes. To control for the order effect of instrument administration, the questionnaires were randomly arranged for each participant. During questionnaire completion, the researcher remained available to answer participants' questions and provided necessary explanations without suggesting any specific response. After completion of the questionnaires, the researcher collected and reviewed them for completeness. In cases of incomplete responses or invalid response patterns, participants were asked, if willing, to complete the missing sections; otherwise, the questionnaire was excluded from the analysis.

### *2.2. Instruments*

The first instrument used in the present study to assess mindfulness capacity in daily life was the Five Facet Mindfulness Questionnaire (FFMQ). This instrument was developed by Ruth A. Baer and colleagues (2006) and has a multidimensional structure. The questionnaire consists of 39 items organized into five subscales: observing, describing, acting with awareness, nonjudging of inner experience, and nonreactivity to inner experience. Responses are rated on a five-point Likert scale ranging from "never" (score = 1) to "always" (score = 5). The total score is obtained by summing the scores of the five subscales and ranges from 39 to 195, with higher scores indicating greater levels of mindfulness. In international studies, Ruth A. Baer and colleagues (2006) reported Cronbach's alpha coefficients ranging from 0.72 to 0.92 for the subscales. In Iran, Azhdari and Yousefi (2023), as well as Keshtvarz Kandazi et al. (2024), confirmed the validity and reliability of this instrument. Based on the findings of Keshtvarz Kandazi et al. (2024), conducted among university students, Cronbach's alpha coefficient for the total scale was 0.89, while the coefficients for the subscales ranged from 0.67 to 0.82. Furthermore, confirmatory factor analysis supported the five-factor structure of the questionnaire within the Iranian population.

The Difficulties in Emotion Regulation Scale (DERS) was developed by Kimberly L. Gratz and Lizabeth Roemer (2004) to assess multidimensional impairments in


JARAC Assessment and Research in Applied Counseling
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individuals' ability to manage emotional responses. This instrument consists of 36 items categorized into six subscales: nonacceptance of emotional responses, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. Some items, particularly those in the emotional awareness subscale, are reverse scored. Participants respond using a five-point Likert scale ranging from "almost never" (score = 1) to "almost always" (score = 5). The total score is calculated by summing the six subscale scores and ranges from 36 to 180, with higher scores reflecting greater difficulties in emotion regulation. In the original study by Kimberly L. Gratz and Lizabeth Roemer (2004), the Cronbach's alpha coefficient for the total scale was reported as 0.93, and the subscale coefficients ranged from 0.80 to 0.89. Test–retest reliability over a period of 4 to 8 weeks was calculated as 0.88 for the total scale. In addition, reliability coefficients obtained through Cronbach's alpha for the total scale were reported as 0.87, with subscale coefficients ranging from 0.71 to 0.85 {Largatetta et al., 2025}. In Iran, Khanzadeh et al. (2012) examined the psychometric properties of the scale and confirmed its factorial structure in a student sample. Their findings indicated Cronbach's alpha coefficients ranging from 0.86 to 0.88 for the subscales and from 0.78 to 0.93 for the total scale. Moreover, test–retest reliability coefficients over a one-week interval ranged from 0.79 to 0.91, indicating satisfactory temporal stability.

The Self-Compassion Scale was developed by Kristin Neff (2003) to assess individuals' kindness and understanding toward themselves during difficult and distressing situations. This scale contains 26 items encompassing six subscales: self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification. The self-judgment, isolation, and over-identification subscales are reverse scored. Responses are provided on a five-point Likert scale ranging from "almost never" (score = 1) to "almost always" (score = 5). The total score is calculated by reversing the negative subscale scores and summing the six subscales, resulting in a total score ranging from 26 to 130, with higher scores indicating greater levels of self-compassion. In international studies, Kristin Neff (2003) reported an internal consistency coefficient of 0.92 for the total scale and Cronbach's alpha coefficients ranging from 0.75 to 0.81 for the subscales, while test–retest reliability over a three-week interval was estimated at 0.93. Barakat et al. (2024) reported a Cronbach's alpha coefficient of 0.89 for the Self-Compassion Scale. Furthermore, in a study conducted in Iran, Amouei et al. (2025) demonstrated acceptable reliability for the short form of the scale, with a Cronbach's alpha coefficient of 0.81. Shahbazi et al. (2015) also confirmed the validity and reliability of the scale and reported a Cronbach's alpha coefficient of 0.91 for the total scale and coefficients ranging from 0.83 to 0.92 for the subscales. Additionally, Rozsnyai et al. (2017) used this instrument among patients with rheumatoid arthritis and reported an acceptable Cronbach's alpha reliability coefficient of 0.89.

The Posttraumatic Growth Inventory (PTGI) was developed by Richard G. Tedeschi and Lawrence G. Calhoun (1996) to assess positive psychological changes resulting from efforts to cope with traumatic or highly stressful events. The questionnaire consists of 21 items and five major dimensions, including new possibilities, relating to others, personal strength, appreciation of life, and spiritual change. Responses are measured on a six-point Likert scale ranging from "I did not experience this change at all" (score = 0) to "I experienced this change to a very great degree" (score = 5). The total score is obtained by summing the scores of the five dimensions and ranges from 0 to 105, with higher scores indicating greater levels of posttraumatic growth. Richard G. Tedeschi and Lawrence G. Calhoun (1996) reported a Cronbach's alpha coefficient of 0.90 for the total scale, while the coefficients for the subscales ranged from 0.67 to 0.85. Test–retest reliability over a two-month interval was calculated as 0.71 for the total instrument. Dirik and Karanci (2008), in their study on patients with rheumatoid arthritis, used this questionnaire and reported a highly satisfactory Cronbach's alpha coefficient of 0.94. In the study by Lee et al. (2023), confirmatory factor analysis supported a four-factor structure, and Cronbach's alpha coefficients for the subscales ranged from 0.78 to 0.91. In Iran, Seyed Mahmoodi et al. (2013) examined the psychometric properties of the Persian version of the instrument and reported a Cronbach's alpha coefficient of 0.92 for the total scale and a test–retest reliability coefficient of 0.94. Moreover, factor analysis conducted within the Iranian sample identified four distinct factors, including sense of inner strength, changes in goals and priorities, sense of closeness with others, and efforts to maintain relationships, which demonstrated acceptable consistency with the original structure of the instrument.


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

### *2.3. Data analysis*

Data analysis was conducted at both descriptive and inferential levels using SPSS version 26 and AMOS version 24. At the descriptive level, indices such as mean, standard deviation, skewness, and kurtosis were calculated to examine the normality of data distribution. At the inferential level, Pearson correlation matrices among the study variables were first computed. Subsequently, structural equation modeling using the maximum likelihood estimation approach was employed to test the conceptual model of the study.

## 3. Findings and Results

The demographic information of the respondents showed that, among the 550 patients with rheumatoid arthritis examined in the study, the majority of respondents (51.6%) were in the age range of 40 to 50 years, and overall, 74.2% of the sample were under 50 years of age, indicating the predominance of a middle-aged population in this study. In terms of educational level, half of the sample (50.2%) had a bachelor's degree, 26.9% had a high school diploma or associate degree, and 22.9% had a master's or doctoral degree.

As shown in Table 1, the mean scores for all dimensions of the variables were within a relatively moderate range. Given that the absolute values of skewness and kurtosis coefficients for all variables were below 2, it can be concluded that the variables followed a normal distribution. Therefore, the prerequisite for using parametric methods, including structural equation modeling and confirmatory factor analysis, was met. The lowest skewness value was related to the nonreactivity dimension of mindfulness (-0.024), and the highest skewness value was related to the difficulty engaging in goal-directed behavior dimension of difficulties in emotion regulation (-0.382). Moreover, the kurtosis values for all dimensions were within an acceptable range, confirming the normality of data distribution.

**Table 1**

*Descriptive Indices of the Research Variables*

| Component | Dimensions | Symbol | Minimum | Maximum | Mean | Standard Deviation | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|
| Posttraumatic growth | New possibilities | Y1 | 0.00 | 5.00 | 2.966 | 1.596 | -0.255 | -1.079 |
| Posttraumatic growth | Relating to others | Y2 | 0.00 | 5.00 | 2.950 | 1.706 | -0.296 | -1.202 |
| Posttraumatic growth | Personal strength | Y3 | 0.00 | 5.00 | 2.986 | 1.518 | -0.335 | -0.896 |
| Posttraumatic growth | Appreciation of life | Y4 | 0.00 | 5.00 | 2.935 | 1.643 | -0.306 | -1.135 |
| Posttraumatic growth | Spiritual changes | Y5 | 0.00 | 5.00 | 2.961 | 1.556 | -0.311 | -0.963 |
| Mindfulness | Observing | X1 | 1.40 | 4.52 | 2.978 | 0.571 | -0.088 | -0.067 |
| Mindfulness | Describing | X2 | 1.00 | 5.00 | 2.969 | 0.828 | -0.165 | -0.172 |
| Mindfulness | Acting with awareness | X3 | 1.00 | 5.00 | 3.001 | 0.944 | -0.080 | -0.461 |
| Mindfulness | Nonjudging | X4 | 1.49 | 4.45 | 2.999 | 0.498 | -0.084 | 0.069 |
| Mindfulness | Nonreactivity | X5 | 1.00 | 5.00 | 2.987 | 0.901 | -0.024 | -0.229 |
| Difficulties in emotion regulation | Nonacceptance of emotional responses | A1 | 1.00 | 5.00 | 3.380 | 1.446 | -0.359 | -1.299 |
| Difficulties in emotion regulation | Difficulty engaging in goal-directed behavior | A2 | 1.00 | 5.00 | 3.423 | 1.460 | -0.382 | -1.322 |
| Difficulties in emotion regulation | Impulse control difficulties | A3 | 1.00 | 5.00 | 3.386 | 1.415 | -0.370 | -1.236 |
| Difficulties in emotion regulation | Lack of emotional awareness | A4 | 1.00 | 5.00 | 3.347 | 1.369 | -0.349 | -1.171 |
| Difficulties in emotion regulation | Limited access to emotion regulation strategies | A5 | 1.00 | 5.00 | 3.410 | 1.357 | -0.332 | -1.172 |
| Difficulties in emotion regulation | Lack of emotional clarity | A6 | 1.00 | 5.00 | 3.393 | 1.413 | -0.357 | -1.244 |
| Self-compassion | Self-kindness | B1 | 1.00 | 5.00 | 2.868 | 1.488 | 0.124 | -1.438 |
| Self-compassion | Self-judgment | B2 | 1.00 | 5.00 | 2.963 | 1.397 | 0.037 | -1.357 |
| Self-compassion | Common humanity | B3 | 1.00 | 5.00 | 3.005 | 1.462 | -0.003 | -1.428 |
| Self-compassion | Isolation | B4 | 1.00 | 5.00 | 2.950 | 1.477 | 0.043 | -1.445 |
| Self-compassion | Mindfulness | B5 | 1.00 | 5.00 | 2.952 | 1.449 | 0.064 | -1.420 |
| Self-compassion | Over-identification | B6 | 1.00 | 5.00 | 2.928 | 1.531 | 0.084 | -1.518 |


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Given the normal distribution of the variables, Pearson's parametric correlation coefficient was used to examine the correlations among the dimensions of the variables, the results of which are reported in Table 2. The results indicate that all dimensions of mindfulness (observing, describing, acting with awareness, nonjudging, and nonreactivity) had positive and significant correlations with all dimensions of posttraumatic growth (new possibilities, relating to others, personal strength, appreciation of life, and spiritual changes) ($P < 0.01$). The strongest correlations were observed between describing and new possibilities (0.296), and between observing and personal strength (0.261). Moreover, the dimensions of mindfulness showed negative and significant correlations with the dimensions of difficulties in emotion regulation (nonacceptance, difficulty engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to strategies, and lack of emotional clarity), with the strongest relationships observed between describing and limited access to strategies (-0.261), and between observing and lack of emotional awareness (-0.206).

On the other hand, the dimensions of mindfulness had positive and significant correlations with the dimensions of self-compassion (self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification), with the strongest correlations observed between describing and self-judgment (0.228), and between acting with awareness and self-judgment (0.226). Furthermore, the dimensions of difficulties in emotion regulation had negative and significant correlations with the dimensions of posttraumatic growth, with the strongest relationships observed between lack of emotional clarity and new possibilities (-0.633), and between impulse control difficulties and new possibilities (-0.605). The dimensions of self-compassion also showed positive and significant correlations with the dimensions of posttraumatic growth, with the strongest correlations observed between self-judgment and personal strength (0.669), and between mindfulness and personal strength (0.645). These findings indicate that higher mindfulness is associated with fewer difficulties in emotion regulation and greater self-compassion, and that these variables are, in turn, related to posttraumatic growth. The correlation pattern among the dimensions of the variables provided the necessary conditions for conducting confirmatory factor analysis and structural equation modeling.

**Table 2**

*Pearson Correlation Coefficients Among the Research Variables*

| | Y1 | Y2 | Y3 | Y4 | Y5 | X1 | X2 | X3 | X4 | X5 | A1 | A2 | A3 | A4 | A5 | A6 | B1 | B2 | B3 | B4 | B5 | B6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Y1 | 1 | | | | | | | | | | | | | | | | | | | | | |
| Y2 | .87** | 1 | | | | | | | | | | | | | | | | | | | | |
| Y3 | .69** | .60** | 1 | | | | | | | | | | | | | | | | | | | |
| Y4 | .62** | .54** | .87** | 1 | | | | | | | | | | | | | | | | | | |
| Y5 | .66** | .58** | .75** | .63** | 1 | | | | | | | | | | | | | | | | | |
| X1 | .21** | .16** | .26** | .24** | .25** | 1 | | | | | | | | | | | | | | | | |
| X2 | .29** | .23** | .26** | .21** | .29** | .45** | 1 | | | | | | | | | | | | | | | |
| X3 | .27** | .23** | .25** | .19** | .28** | .39** | .85** | 1 | | | | | | | | | | | | | | |
| X4 | .24** | .20** | .27** | .25** | .28** | .86** | .53** | .46** | 1 | | | | | | | | | | | | | |
| X5 | .14** | .10* | .18** | .15** | .16** | .56** | .23** | .19** | .45** | 1 | | | | | | | | | | | | |
| A1 | -.51** | -.50** | -.53** | -.50** | -.50** | -.14** | -.17** | -.16** | -.13** | -.11** | 1 | | | | | | | | | | | |
| A2 | -.50** | -.49** | -.53** | -.50** | -.46** | -.15** | -.15** | -.13** | -.14** | -.060 | .42** | 1 | | | | | | | | | | |
| A3 | -.60** | -.59** | -.59** | -.53** | -.57** | -.13** | -.16** | -.17** | -.17** | -.073 | .51** | .52** | 1 | | | | | | | | | |
| A4 | -.57** | -.55** | -.62** | -.55** | -.58** | -.20** | -.21** | -.20** | -.22** | -.10* | .54** | .50** | .58** | 1 | | | | | | | | |
| A5 | -.58** | -.55** | -.64** | -.61** | -.57** | -.16** | -.26** | -.23** | -.21** | -.12** | .54** | .50** | .61** | .61** | 1 | | | | | | | |
| A6 | -.63** | -.59** | -.61** | -.55** | -.55** | -.15** | -.19** | -.15** | -.18** | -.09* | .51** | .50** | .60** | .54** | .61** | 1 | | | | | | |
| B1 | .55** | .53** | .54** | .51** | .52** | .16** | .17** | .15** | .16** | .080 | -.44** | -.45** | -.56** | -.49** | -.52** | -.55** | 1 | | | | | |
| B2 | .62** | .60** | .66** | .61** | .63** | .17** | .22** | .22** | .19** | .064 | -.54** | -.52** | -.62** | -.62** | -.64** | -.61** | .57** | 1 | | | | |
| B3 | .49** | .46** | .55** | .51** | .50** | .10* | .19** | .20** | .14** | .052 | -.45** | -.42** | -.52** | -.52** | -.55** | -.49** | .47** | .81** | 1 | | | |
| B4 | .54** | .53** | .58** | .54** | .55** | .12** | .19** | .18** | .14** | .09* | -.46** | -.43** | -.55** | -.48** | -.56** | -.55** | .49** | .60** | .51** | 1 | | |
| B5 | .63** | .61** | .64** | .60** | .58** | .15** | .24** | .23** | .17** | .056 | -.50** | -.50** | -.63** | -.59** | -.64** | -.64** | .57** | .68** | .57** | .58** | 1 | |
| B6 | .48** | .46** | .52** | .50** | .47** | .13** | .17** | .16** | .15** | .074 | -.40** | -.40** | -.52** | -.45** | -.52** | -.50** | .42** | .55** | .49** | .89** | .53** | 1 |

*Significant at the 0.05 level. **Significant at the 0.01 level.*

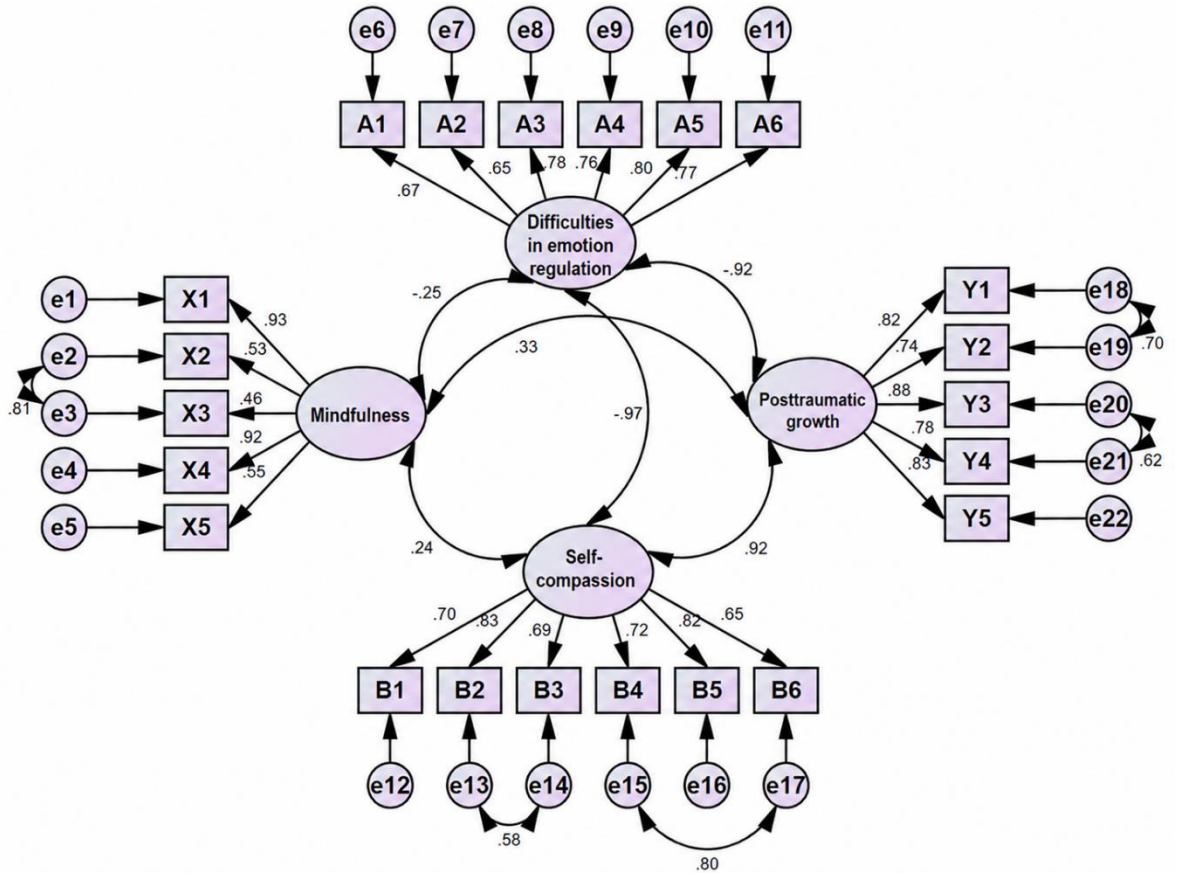
To examine the fit of the measurement model, confirmatory factor analysis was used. The model output in standardized coefficient mode is presented in Figure 2. As shown, all factor loadings (standardized coefficients) between the latent variables and their corresponding indicators were greater than 0.30, ranging from 0.46 to 0.92. The highest factor loadings were related to the limited access to emotion regulation strategies dimension (A5), with a coefficient of 0.80, and the nonacceptance of emotional responses dimension (A1), with a coefficient of 0.78, on the


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

latent variable of difficulties in emotion regulation. In addition, the factor loadings of the mindfulness dimensions ranged from 0.55 to 0.92, those of the self-compassion dimensions ranged from 0.58 to 0.83, and all factor loadings of the posttraumatic growth dimensions were equal to 0.97. These values indicate that the indicators were appropriately associated with their latent constructs and had sufficient adequacy for measuring the latent variables.

**Figure 1**

*Output of the Confirmatory Factor Analysis Model in Standardized Coefficient Mode*




The fit indices of the confirmatory factor analysis model are reported in Table 3. The results show that the chi-square to degrees of freedom ratio ($\chi^2$/df) was 1.623, which is lower than the desirable threshold of 3 and indicates a good fit of the measurement model. The RMSEA value was 0.034, which is below the criterion of 0.08 and indicates excellent model fit. The GFI value was 0.949, which is higher than the desirable threshold of 0.90 and indicates good model fit. In addition, both the IFI (0.987) and CFI (0.987) indices exceeded the acceptable threshold of 0.90. Accordingly, the measurement model had an appropriate fit, and the factorial structure of the latent variables of mindfulness, difficulties in emotion regulation, self-compassion, and posttraumatic growth was confirmed.

**Table 3**

*Fit Indices of the Confirmatory Factor Analysis Model*

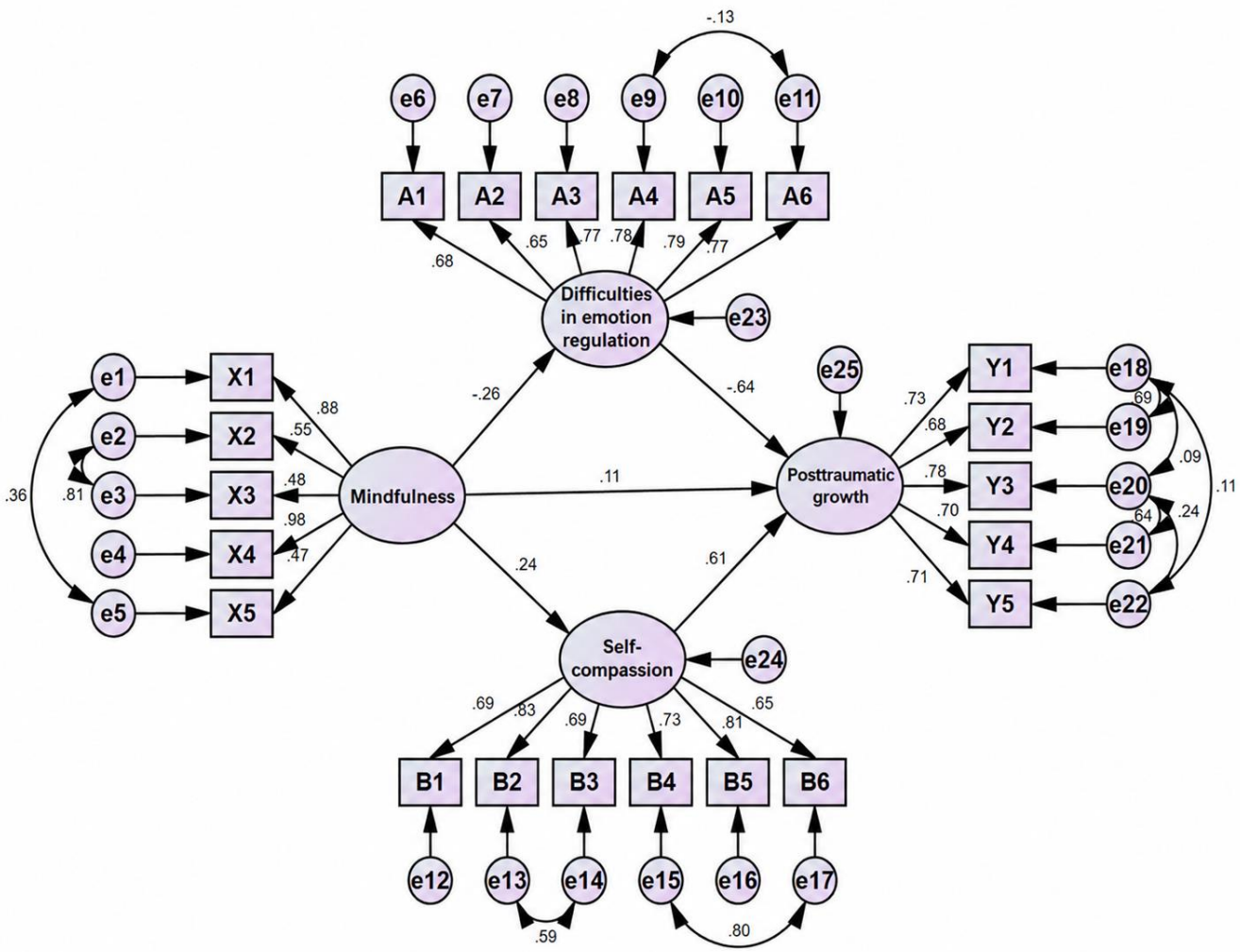
| Fit Index | $\chi^2$/df | RMSEA | GFI | IFI | CFI |
|---|---|---|---|---|---|
| Value | 1.623 | 0.034 | 0.949 | 0.987 | 0.987 |
| Criterion | Less than 3 | Less than 0.08 | Greater than 0.90 | Greater than 0.90 | Greater than 0.90 |
| Interpretation | Desirable | Desirable | Desirable | Acceptable | Acceptable |


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

In the next step, after confirming the fit of the measurement model, structural equation modeling (SEM) was used to test the research hypotheses and examine the causal relationships among the latent variables. The output of the structural model in standardized coefficient mode is presented in Figure 3. As shown in Figure 3, all factor loadings of the latent variables (mindfulness, difficulties in emotion regulation, self-compassion, and posttraumatic growth) were greater than 0.30. Table 4 reports the standardized and unstandardized coefficients, as well as the T-value, to examine the significance of the relationships among the variables.

**Figure 2**

*Output of the Structural Equation Model in Standardized Coefficient Mode*




Based on Table 4, all paths in the structural equation model were statistically significant (P < 0.001), and the direction of the relationships was consistent with theoretical expectations. Mindfulness had a negative and significant effect on difficulties in emotion regulation (-0.263), meaning that increased mindfulness was associated with reduced deficits in emotion regulation. Mindfulness also had a positive and significant effect on self-compassion (0.243), indicating that nonjudgmental awareness of present experiences provides a foundation for kindness toward oneself. Mindfulness had a direct and positive effect on posttraumatic growth (0.107), although this effect was smaller than the indirect paths. Difficulties in emotion regulation had a negative and significant effect on posttraumatic growth (-0.641), meaning that inability to identify, describe, and manage emotions reduces the experience of positive changes after confronting chronic illness. Self-compassion also had a positive and significant effect on posttraumatic growth (0.607), indicating that self-kindness, common humanity, and mindfulness in the face of suffering play a key role in positive psychological transformation among patients with rheumatoid arthritis.


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

**Table 4**

*Coefficients Related to the Structural Equation Model*

| Exogenous Variable | Path | Endogenous Variable | Standardized Coefficient | Unstandardized Coefficient | Standard Error | T-Value | Probability Value |
|---|---|---|---|---|---|---|---|
| Mindfulness | → | Posttraumatic growth | 0.107 | 0.262 | 0.085 | 3.082 | <0.001 |
| Mindfulness | → | Difficulties in emotion regulation | -0.263 | -0.614 | 0.119 | -5.141 | <0.001 |
| Mindfulness | → | Self-compassion | 0.243 | 0.596 | 0.125 | 4.755 | <0.001 |
| Difficulties in emotion regulation | → | Posttraumatic growth | -0.641 | -0.675 | 0.053 | -12.822 | <0.001 |
| Self-compassion | → | Posttraumatic growth | 0.607 | 0.608 | 0.048 | 12.577 | <0.001 |

The indirect effect of mindfulness on posttraumatic growth through the mediating roles of difficulties in emotion regulation and self-compassion was then examined using the bootstrap method with 5,000 resamples and a 95% confidence interval using the bias-corrected method. The results showed that mindfulness had a significant indirect effect on posttraumatic growth through difficulties in emotion regulation and self-compassion, with a standardized indirect effect coefficient of 0.316 and an unstandardized coefficient of 0.776. The 95% confidence interval for this indirect effect ranged from 0.484 to 1.112; since zero was not included in this interval, the significance of the indirect effect was confirmed. The probability value was also 0.012, which was lower than the 0.05 significance level. The direct effect of mindfulness on posttraumatic growth was also 0.107 (confidence interval: 0.099 to 0.458) and was significant (P = 0.007). The total effect of mindfulness on posttraumatic growth was 0.423 (confidence interval: 0.760 to 1.436) and was significant (P = 0.012). Given that the indirect effect (0.316) was larger than the direct effect (0.107), it can be concluded that the mediating role of difficulties in emotion regulation and self-compassion in the effect of mindfulness on posttraumatic growth was confirmed.

## 4. Discussion

The present study aimed to investigate the structural relationship between mindfulness and posttraumatic growth with the mediating roles of difficulties in emotion regulation and self-compassion among patients with rheumatoid arthritis. The findings demonstrated that mindfulness had a direct positive effect on posttraumatic growth and also exerted significant indirect effects through reducing difficulties in emotion regulation and enhancing self-compassion. Furthermore, difficulties in emotion regulation negatively predicted posttraumatic growth, whereas self-compassion positively predicted posttraumatic growth. Overall, the findings supported the proposed structural model and indicated that mindfulness, emotion regulation, and self-compassion constitute interconnected psychological mechanisms associated with adaptive psychological transformation in patients with rheumatoid arthritis.

One of the major findings of the present study was the positive and significant relationship between mindfulness and posttraumatic growth. This finding suggests that patients with higher levels of mindful awareness are more capable of experiencing positive psychological changes despite living with a chronic and disabling disease. Mindfulness may facilitate posttraumatic growth because it encourages individuals to confront difficult internal experiences without avoidance or excessive judgment. Patients with rheumatoid arthritis often encounter persistent pain, fatigue, uncertainty regarding disease progression, and disruptions in occupational and social functioning. Under such circumstances, mindfulness may help patients observe their suffering more objectively and reinterpret stressful experiences in a less threatening manner. This process can gradually create psychological space for meaning-making, emotional acceptance, and positive reconstruction of self-perception. The findings of the present study are consistent with previous evidence indicating that mindfulness-based interventions improve psychological adjustment, stress management, and emotional functioning in patients with rheumatoid arthritis (Alkasir et al., 2025; Paknahad & Saffarinia, 2023; Rashidghalami & Kiamarthi, 2022). Moreover, the observed relationship aligns with broader theoretical and empirical work emphasizing the role of mindfulness in enhancing psychological well-being and adaptive functioning in chronic illness populations (Cui et al., 2026; Keshtvarz Kendazi et al., 2024).



JARAC Assessment and Research in Applied Counseling
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The present findings can also be interpreted in light of mindfulness theory, which proposes that nonjudgmental awareness of present experiences reduces cognitive fusion and experiential avoidance. Individuals with greater mindfulness are less likely to become overwhelmed by catastrophic thoughts or emotional reactivity associated with chronic illness. Instead, they may develop greater psychological flexibility and emotional balance. Such qualities are important for posttraumatic growth because growth often emerges when individuals cognitively and emotionally process stressful experiences rather than suppressing them. Mindfulness may therefore provide the psychological conditions necessary for transforming illness-related suffering into opportunities for personal development. Similar conclusions have been reported in studies showing that mindfulness enhances emotional awareness and adaptive coping strategies in psychologically stressful contexts (Azhdari & Yousefi, 2023; Tang et al., 2016).

Another important finding was the negative relationship between mindfulness and difficulties in emotion regulation. This result indicates that patients with higher mindfulness experience fewer problems in identifying, understanding, and managing their emotional responses. Mindfulness encourages awareness of emotional states without impulsive reaction or suppression, thereby improving emotional clarity and acceptance. Rheumatoid arthritis patients are frequently exposed to pain-related stress, uncertainty, frustration, and emotional exhaustion. When patients lack effective emotion regulation strategies, these emotional experiences may intensify distress and reduce psychological adaptation. The current findings support the notion that mindfulness functions as a protective factor against emotional dysregulation. This finding is consistent with previous studies reporting beneficial effects of mindfulness-based interventions on emotional management, anger reduction, cognitive-emotional functioning, and pain-related beliefs in rheumatoid arthritis populations (Alkasir et al., 2025; Bolursaz Mashhadi et al., 2024; Rashidghalami & Kiamarthi, 2022). Furthermore, theoretical and empirical evidence suggests that mindfulness training improves attentional control and emotional monitoring, both of which contribute to healthier regulation of affective experiences (Tang et al., 2016).

The negative relationship between difficulties in emotion regulation and posttraumatic growth also represents a meaningful finding of the present study. Patients who reported greater emotional dysregulation demonstrated lower levels of posttraumatic growth. This finding can be explained by the fact that posttraumatic growth requires active cognitive-emotional processing of stressful experiences. Individuals who are unable to tolerate, identify, or regulate their emotions may rely on maladaptive coping strategies such as emotional avoidance, denial, impulsive reactions, or rumination. These processes can interfere with meaning-making and psychological integration of illness experiences. In contrast, individuals with greater emotional regulation capacities are better able to process painful experiences constructively and derive positive psychological meaning from adversity. Previous studies on rheumatoid arthritis have similarly shown that emotional deficits, alexithymia, and poor emotion management are associated with more severe psychological distress and maladaptive pain experiences (Baeza-Velasco et al., 2012; Ghazanfari Harandi et al., 2025; Rezaei et al., 2013). Moreover, interventions based on emotion regulation strategies have been shown to reduce pain anxiety and improve psychological adjustment among patients with rheumatoid arthritis (Yazdanfar et al., 2020). Therefore, emotional regulation difficulties may constitute a significant psychological barrier to adaptive transformation and growth in chronic illness.

The present study further demonstrated that mindfulness positively predicted self-compassion. This finding is theoretically coherent because mindfulness and self-compassion share common components, particularly balanced awareness and nonjudgmental acceptance of internal experiences. Individuals who are mindful are less likely to criticize themselves harshly when confronted with pain, disability, or emotional suffering. Instead, they may respond to their experiences with greater kindness, understanding, and acceptance. In rheumatoid arthritis, patients often experience frustration related to physical limitations, dependence on treatment, or changes in body image. Mindfulness may help reduce over-identification with these negative experiences and promote a more compassionate attitude toward the self. The findings of the present study are consistent with previous research demonstrating significant associations between mindfulness, self-compassion, and psychological well-being (Azhdari & Yousefi, 2023; Keshtvarz Kendazi et al., 2024). In addition, interventions aimed at increasing body awareness and mindfulness have been shown to improve self-compassion and psychological adaptation among patients with rheumatic and autoimmune disorders (Amouei et al., 2025; Goldipoor et al., 2026).


JARAC
Assessment and Research in Applied Counseling
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Another major finding was the positive relationship between self-compassion and posttraumatic growth. Patients with higher levels of self-compassion reported greater positive psychological changes following confrontation with rheumatoid arthritis. Self-compassion may facilitate posttraumatic growth because it creates a supportive internal emotional environment that enables patients to tolerate suffering without excessive self-blame or hopelessness. Individuals with high self-compassion tend to recognize suffering as part of common human experience and respond to difficulties with emotional balance rather than self-criticism. Such an orientation may help patients reinterpret illness-related adversity in a more constructive and meaningful way. Previous studies have similarly shown that self-compassion is associated with improved psychological functioning, lower depressive symptoms, and better adaptation to chronic pain conditions (Barakat et al., 2024; Edwards et al., 2019). Furthermore, research on self-compassion-based interventions suggests that enhancing compassionate self-relating can reduce psychological distress and improve emotional resilience among individuals with chronic medical conditions (Amouei et al., 2025; Goldipoor et al., 2026).

The mediating roles of difficulties in emotion regulation and self-compassion constituted another important aspect of the present findings. The results showed that mindfulness influenced posttraumatic growth not only directly but also indirectly through these two mediators. Moreover, the indirect effect was larger than the direct effect, indicating the central importance of these psychological mechanisms. This finding suggests that mindfulness may not enhance posttraumatic growth solely through attentional awareness itself; rather, mindfulness may create psychological change by improving emotional regulation capacities and fostering compassionate attitudes toward the self. In other words, mindfulness appears to reduce maladaptive emotional responses while simultaneously strengthening adaptive self-related processes, and these changes collectively facilitate positive psychological growth.

This finding is particularly important in the context of rheumatoid arthritis because chronic illness often involves repeated emotional challenges and threats to self-concept. Patients who are unable to regulate emotional distress may become overwhelmed by pain, uncertainty, or social limitations, thereby reducing their ability to adapt positively. Similarly, patients who engage in harsh self-criticism may experience greater hopelessness and emotional exhaustion. Mindfulness may interrupt these maladaptive cycles by promoting emotional awareness, acceptance, and self-kindness. Consistent with this interpretation, previous studies have shown that mindfulness-based and acceptance-based interventions improve emotional functioning and psychological adjustment in rheumatoid arthritis populations (Alkasir et al., 2025; Bolursaz Mashhadi et al., 2024; Paknahad & Saffarinia, 2023). In addition, studies on stressful life events and psychosomatic symptoms in rheumatic conditions emphasize the importance of psychological coping resources in determining patients' adjustment outcomes (Ghiggia et al., 2025).

The findings of the present study also support broader biopsychosocial approaches to rheumatoid arthritis. Although rheumatoid arthritis is fundamentally an inflammatory and autoimmune condition, psychological factors significantly influence patients' subjective experience of illness, emotional functioning, and adaptation. Lifestyle, emotional processes, coping strategies, and interpersonal factors all interact with physical symptoms and disease burden (Amiri et al., 2024; Harooni et al., 2025). Consequently, psychological interventions targeting mindfulness, emotion regulation, and self-compassion may complement medical treatment and improve patients' overall quality of life. The findings further highlight the importance of positive psychology approaches in chronic illness research. Rather than focusing exclusively on symptom reduction, clinicians and researchers should also consider pathways through which patients may achieve psychological growth and resilience despite ongoing physical challenges.

## 5. Conclusion

Overall, the present study demonstrated that mindfulness, difficulties in emotion regulation, and self-compassion are meaningfully interconnected psychological constructs that contribute to posttraumatic growth among patients with rheumatoid arthritis. The proposed structural model showed that mindfulness may enhance adaptive transformation both directly and indirectly through improving emotional regulation and compassionate self-relating. These findings contribute to the growing literature on positive psychological adaptation in chronic illness and provide evidence for the relevance of mindfulness-based psychological frameworks in rheumatoid arthritis populations.


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

## 6. Limitations & Suggestions

One limitation of the present study was the use of a correlational cross-sectional design, which restricts causal interpretation of the relationships among the variables. In addition, the data were collected through self-report questionnaires, which may have increased the risk of response bias and social desirability effects. The study sample was also limited to patients attending treatment centers in Tehran, which may reduce the generalizability of the findings to other cultural or clinical populations. Furthermore, variables such as disease severity, medication type, duration of illness, and socioeconomic status were not controlled comprehensively and may have influenced the observed relationships.

Future studies are recommended to employ longitudinal and experimental designs in order to examine causal pathways between mindfulness, emotion regulation, self-compassion, and posttraumatic growth more precisely. Researchers may also investigate additional mediating or moderating variables such as resilience, coping strategies, social support, illness perception, and spirituality. Comparative studies across different chronic diseases and age groups could further clarify whether the observed psychological mechanisms are specific to rheumatoid arthritis or generalizable across chronic illness populations. Moreover, qualitative studies may provide deeper understanding of patients' lived experiences of mindfulness and psychological growth during chronic illness.

From a practical perspective, the findings of the present study suggest that psychological interventions for patients with rheumatoid arthritis should incorporate mindfulness training, emotion regulation skills, and self-compassion enhancement. Integrating these components into rheumatology and rehabilitation settings may help patients improve emotional adaptation and psychological resilience alongside medical treatment. Mental health professionals may also benefit from designing group-based interventions focused on nonjudgmental awareness, emotional acceptance, and compassionate self-relating. Such programs may not only reduce distress but also facilitate positive psychological transformation and improve overall quality of life in patients living with rheumatoid arthritis.

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## 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

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## Authors' Contributions

All authors equally contributed in this article.

## Declaration

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

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