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The Effectiveness of Schema Therapy and Mindfulness on Psychological Distress in Patients with Rheumatoid Arthritis

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ABSTRACT

This study aimed to determine the effectiveness of schema therapy and mindfulness on psychological distress in patients with rheumatoid arthritis in Mashhad in 2025. The present study employed a quasi-experimental pretest–posttest design with a control group. A total of 45 patients with rheumatoid arthritis who met the inclusion criteria were selected through purposive sampling and were randomly assigned to the study groups. The Kessler Psychological Distress Scale (2003) was used for assessment. Schema therapy was implemented based on the model of Riso et al. (2008), and group mindfulness was conducted based on the therapeutic program developed by Teasdale, Williams, and Segal (2018). Data were analyzed using inferential statistical indices, including repeated-measures analysis of variance, multivariate analysis of covariance, and one-way analyses of covariance within the MANCOVA framework. The effectiveness of schema therapy and mindfulness on psychological distress in patients with rheumatoid arthritis was sustained ($p < .05$). However, no difference was observed between schema therapy and mindfulness in terms of their effectiveness. Group schema therapy and mindfulness can be used to reduce psychological distress in patients with rheumatoid arthritis and may partially alleviate the pain and suffering experienced by these patients.

Keywords: *Schema Therapy, Mindfulness, Psychological Distress, Rheumatoid Arthritis.*

1. Introduction

Rheumatoid arthritis is a chronic autoimmune and inflammatory disease that affects not only the joints and physical functioning of patients but also their psychological adjustment, emotional regulation, and overall quality of life. Although advances in pharmacological treatment have improved disease control, many patients continue to experience persistent pain, fatigue, functional limitation, uncertainty about the future, and psychological distress. Rheumatoid arthritis therefore requires a multidimensional treatment perspective in which biological management is accompanied by attention to psychological and behavioral factors. Contemporary approaches to rheumatoid arthritis management emphasize that disease activity, pain perception, adherence to treatment, and long-term functioning are shaped by complex interactions among inflammatory processes, clinical symptoms, lifestyle factors, and psychological responses to illness (Radu & Bungau, 2021). In this regard, psychological distress is one of the most important outcomes in patients with rheumatoid arthritis because it can intensify the subjective burden of disease, reduce coping capacity, and interfere with the patient's ability to manage the chronic demands of illness.

Pain is among the most disabling symptoms of rheumatoid arthritis and is strongly connected with psychological vulnerability. Even when inflammatory activity is medically controlled, many patients report pain that is influenced by affective, cognitive, and interpersonal factors. Evidence shows that the burden of pain in rheumatoid arthritis cannot be explained only by disease activity, because psychological factors also play an important role in the severity and persistence of pain experiences (Vergne-Salle et al., 2020). Depression, anxiety, maladaptive illness beliefs, catastrophizing, and reduced distress tolerance may increase the patient's sensitivity to physical symptoms and reduce perceived control over illness. Comparative evidence has also indicated that clinical and psychological factors associated with depression are highly relevant in patients with rheumatoid arthritis across different sociocultural contexts (Morf et al., 2021). Therefore, psychological distress in rheumatoid arthritis should not be regarded as a secondary or marginal issue; rather, it is a clinically meaningful component of the disease experience that can influence treatment outcomes and daily functioning.

Psychological distress refers to a state of emotional suffering usually characterized by symptoms of anxiety, depression, irritability, helplessness, and reduced psychological well-being. In chronic illness, distress is often maintained by continuous exposure to pain, fatigue, functional restrictions, medical uncertainty, and perceived loss of autonomy. Distress tolerance, which refers to the perceived and actual capacity to withstand negative emotional states, is especially important in this context. Low distress tolerance can make patients more vulnerable to avoidance, emotional dysregulation, and maladaptive coping. Research has shown that distress tolerance is closely associated with internalizing symptoms and emotional vulnerability in different populations (Ranney et al., 2022). Similarly, longitudinal evidence has demonstrated that distress intolerance can mediate the relationship between adverse experiences and maladaptive psychological outcomes, highlighting its role as a transdiagnostic process in emotional suffering (Kang et al., 2018). In patients with rheumatoid arthritis, reduced distress tolerance may increase the psychological burden of symptoms and weaken the patient's ability to tolerate the unpredictable course of pain and disability.

One of the psychological interventions that may be useful for patients with chronic inflammatory and painful conditions is schema therapy. Schema therapy is an integrative therapeutic approach that combines cognitive, behavioral, experiential, and interpersonal techniques to identify and modify early maladaptive schemas and dysfunctional coping modes. Maladaptive schemas can shape how patients interpret their illness, their body, interpersonal support, dependency, vulnerability, and perceived control. For example, patients who hold schemas related to vulnerability to harm, defectiveness, emotional deprivation, or dependence may interpret disease symptoms as evidence of personal weakness or catastrophic decline. Such interpretations can intensify psychological distress and reduce adaptive coping. Systematic evidence has suggested that schema therapy can reduce maladaptive schemas and psychological symptoms across mental health disorders (Taylor et al., 2017). More specifically, schema therapy has been recognized as a promising intervention for anxiety-related disorders, obsessive-compulsive disorder, and post-traumatic stress symptoms, although further clinical research is needed to refine its application across populations (Peeters et al., 2022).

The relevance of schema-focused interventions for medical and chronic disease populations is supported by studies in related clinical conditions. In patients with rheumatoid arthritis, emotional schema group therapy has

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been shown to reduce pain and depression, indicating that schema-based approaches can influence both emotional and somatic dimensions of illness experience (Hosseini et al., 2019). In patients with multiple sclerosis, schema therapy has also been compared with acceptance and commitment therapy and shown to affect chronic fatigue syndrome and health anxiety, suggesting that schema-level cognitive-emotional structures may contribute to illness-related distress in neurological and chronic conditions (Nazari et al., 2021). Recent evidence has further shown that schema therapy can improve distress tolerance, resilience, emotion regulation, and parenting styles in mothers of children with attention-deficit/hyperactivity disorder, which supports the broader applicability of schema therapy for populations exposed to sustained psychological demands (Rajaeizadeh & Khayatan, 2025). These findings suggest that schema therapy may be especially useful when distress is maintained by deep cognitive-emotional patterns rather than only by immediate symptoms.

Another intervention with strong relevance for psychological distress in chronic illness is mindfulness. Mindfulness refers to purposeful, present-moment, and nonjudgmental awareness of internal and external experiences. Mindfulness-based interventions aim to change the individual's relationship with thoughts, emotions, bodily sensations, and pain rather than directly eliminating them. This mechanism is particularly important in rheumatoid arthritis because pain and bodily discomfort may trigger worry, frustration, helplessness, and avoidance. By cultivating nonjudgmental awareness, patients may learn to observe physical sensations and negative thoughts without becoming fused with them. Mindfulness-based stress reduction has been shown to improve psychological well-being, health anxiety, and body image in women with breast cancer, supporting its usefulness in medical populations facing distress, illness-related uncertainty, and bodily concerns (Pasyar et al., 2023). In patients with diabetes, mindfulness-based stress reduction has also been reported to improve psychological distress tolerance, sexual function, and psychosocial distress, indicating that mindfulness may enhance psychological adaptation in chronic medical conditions (Timajchi et al., 2025).

The theoretical basis of mindfulness is also consistent with current findings on distress tolerance, cognitive reappraisal, and mental toughness. Mindfulness can strengthen the ability to remain present with difficult experiences, reduce automatic negative reactions, and support more adaptive cognitive processing. Research has demonstrated an association between mindfulness and distress tolerance, with cognitive reappraisal and mental toughness functioning as mediating mechanisms (Zhong et al., 2025). Similarly, mindfulness has been identified as a mediator in the relationship between psychological hardiness and distress tolerance, suggesting that mindful awareness can help individuals transform resilience-related capacities into better tolerance of emotional discomfort (Akbari & Khalatbari, 2025). Among mothers of children with physical-motor disabilities, mindfulness has also been considered alongside guilt and self-compassion in predicting distress tolerance, showing its relevance for individuals under continuous caregiving and emotional burden (Nouri Ghaleh Alikhani et al., 2025). These findings provide a strong rationale for applying mindfulness-based interventions to patients with rheumatoid arthritis, who must repeatedly cope with pain, uncertainty, functional limitations, and emotional strain.

Although mindfulness-based interventions are widely used, their mechanisms and outcomes should be interpreted carefully. Some evidence suggests that mindfulness-based stress reduction may produce clinical and psychological benefits without necessarily leading to detectable structural brain changes, as shown in combined randomized controlled trials (Kral et al., 2022). This implies that the therapeutic value of mindfulness may depend more on functional, cognitive, attentional, and emotional processes than on structural neurological change. In the context of rheumatoid arthritis, this distinction is important because the main clinical goal is not necessarily neuroanatomical alteration but improvement in patients' capacity to regulate attention, tolerate pain-related distress, reduce emotional reactivity, and maintain adaptive functioning. Therefore, mindfulness can be conceptualized as a practical psychological intervention that targets the patient's moment-to-moment relationship with pain, thoughts, and emotions.

Comparative studies also indicate that schema-based and mindfulness-based interventions may both be effective in reducing distress-related outcomes, although they may operate through different mechanisms. Emotional schema therapy focuses on identifying and modifying maladaptive beliefs about emotions, needs, coping patterns, and interpersonal experiences, whereas mindfulness-based stress reduction focuses on awareness, acceptance, and nonjudgmental observation of internal experiences. In women undergoing medication treatment for psoriasis, both mindfulness-based stress reduction and emotional schema therapy have been found to affect perceived stress and

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distress tolerance, suggesting that both approaches may be beneficial in chronic dermatological conditions marked by psychological and somatic burden (Talayeri & Bavi, 2023). In individuals with major depressive disorder, emotional schema therapy and acceptance and commitment therapy have also been compared in relation to distress tolerance and emotion regulation difficulties, further demonstrating the clinical importance of interventions that target emotional processing and distress regulation (Bayat et al., 2025). These findings support the need to compare schema therapy and mindfulness in other chronic disease populations, including patients with rheumatoid arthritis.

From a clinical perspective, schema therapy and mindfulness may be particularly relevant for rheumatoid arthritis because both interventions address psychological distress through complementary pathways. Schema therapy may reduce distress by restructuring maladaptive cognitive-emotional patterns, modifying dysfunctional coping styles, strengthening the healthy adult mode, and improving the patient's ability to respond to unmet emotional needs. Mindfulness may reduce distress by promoting awareness, acceptance, attentional flexibility, and reduced identification with pain-related thoughts and emotional reactions. Acceptance-based approaches have also shown effectiveness in central pain sensitization syndromes, suggesting that interventions focused on acceptance, psychological flexibility, and altered relationships with pain may be beneficial in conditions characterized by persistent pain and heightened symptom sensitivity (Galvez-Sanchez et al., 2021). Therefore, applying schema therapy and mindfulness to rheumatoid arthritis is theoretically justified because both approaches address the emotional and cognitive processes that can amplify psychological suffering in chronic pain conditions.

The chronic nature of rheumatoid arthritis also makes psychological flexibility and adaptive resource use essential for patients. Although some research on resource structuring and strategic flexibility has been conducted in organizational and innovation contexts, its conceptual relevance lies in showing that adaptive outcomes depend on the ability to organize available resources and respond flexibly to changing demands (Li et al., 2017). In a psychological and clinical context, patients with rheumatoid arthritis similarly need to mobilize personal, interpersonal, cognitive, and emotional resources in response to fluctuating symptoms and disease-related limitations. Interventions such as schema therapy and mindfulness may help patients restructure internal resources, regulate emotional responses, and respond more flexibly to pain and distress. This perspective is important because rheumatoid arthritis is not a static condition; symptoms may vary over time, and patients need psychological strategies that remain useful beyond the immediate treatment period.

Despite growing evidence for schema therapy and mindfulness in psychological and medical populations, limited research has directly compared the effectiveness of these two interventions on psychological distress in patients with rheumatoid arthritis. Existing studies have separately supported schema-based approaches in rheumatoid arthritis and other chronic conditions, mindfulness-based approaches in cancer, diabetes, and stress-related conditions, and acceptance-based approaches in pain sensitization syndromes. However, patients with rheumatoid arthritis represent a distinct group in whom chronic inflammation, pain, fatigue, illness perception, emotional dysregulation, and distress may interact in complex ways. Therefore, comparative intervention research can help identify whether schema therapy and mindfulness are both effective, whether one approach demonstrates superior outcomes, and whether treatment gains remain stable during follow-up. Such evidence can guide clinicians in selecting psychological interventions that complement medical care and reduce the emotional burden of rheumatoid arthritis.

The present study aimed to determine the effectiveness of schema therapy and mindfulness on psychological distress in patients with rheumatoid arthritis in Mashhad in 2025.

2. Methods and Materials

2.1. *Study Design and Participants*

The present study was conducted using a quasi-experimental design with pretest, posttest, follow-up, and a control group. The statistical population consisted of all patients aged 25 to 55 years with rheumatoid arthritis who referred to Imam Reza Hospital and rheumatology clinics in Mashhad in 2025. From this population, 45 eligible patients were selected through purposive sampling and were randomly assigned to three groups: schema therapy, mindfulness, and control. The psychological distress questionnaire was administered to all participants at the pretest, posttest, and two-month follow-up stages. In this design, schema therapy was implemented for the first experimental group, mindfulness-based intervention was implemented for the second experimental group, and the control group received no psychological intervention during the study period. To observe ethical considerations, after

completion of the research process, the more effective intervention was also provided to the control group.

2.2. *Measures*

Psychological distress was assessed using the Kessler Psychological Distress Scale developed by Kessler et al. (2003). This 10-item instrument evaluates the psychological status of individuals during the previous month. Items are scored on a five-point Likert scale ranging from 0 ("never") to 4 ("all of the time"), and the total score ranges from 0 to 40, with higher scores indicating greater psychological distress. Kessler et al. (2003) reported the reliability of the scale using Cronbach's alpha as .86. In an Iranian study, Rajabi Doki (2021) reported the Cronbach's alpha coefficient of this questionnaire as .80, confirming its acceptable internal consistency.

2.3. *Interventions*

The schema therapy intervention was implemented based on the model of Riso et al. (2008) in 10 sessions. In the first session, after familiarization and establishment of therapeutic rapport, explanations were provided regarding rheumatoid arthritis from a psychological perspective and the potential role of schema therapy in reducing psychological distress. Patients' problems, including psychological distress, emotional dysregulation, and illness perception, were formulated within the schema therapy framework. In the second session, objective evidence confirming or disconfirming patients' schemas was examined based on their current and past life experiences, and the maladaptive schema mode was compared with a healthier schema mode. In the third session, cognitive techniques, including schema validity testing, reinterpretation of evidence supporting maladaptive schemas, and evaluation of the advantages and disadvantages of coping styles, were taught. In the fourth session, the healthy adult mode was strengthened, unmet emotional needs were identified, and strategies for expressing blocked emotions were introduced. In the fifth session, healthy communication and imagery dialogue were practiced. In the sixth session, experiential techniques such as imagery of problematic situations and confrontation with the most challenging situations were taught. In the seventh session, the therapeutic relationship, relationships with significant others, and role-playing were addressed. In the eighth session, healthy behaviors were practiced through role-playing and assignments related to new behavioral patterns. In the ninth session, the advantages and disadvantages of healthy and unhealthy behaviors were examined, and strategies for overcoming barriers to behavioral change were taught. In the tenth session, the content of previous sessions was reviewed, and learned strategies were practiced and consolidated.

The group mindfulness intervention was implemented based on the therapeutic program of Teasdale, Williams, and Segal (2020) in eight sessions. In the first session, after familiarization and establishment of therapeutic rapport, explanations were provided regarding rheumatoid arthritis from a psychological perspective, including psychological distress, emotional dysregulation, and illness perception, as well as the potential effects of mindfulness on patients. General group rules were established with emphasis on confidentiality and respect for participants' personal lives, and participants introduced themselves through paired interaction followed by group introduction; the raisin exercise was also practiced. In the second session, attention was directed toward the body and bodily sensations as a pathway for awareness of internal experiences, homework was reviewed, thoughts and feelings were practiced, and coping events related to obstacles and difficulties were recorded. In the third session, "seeing" and "hearing" exercises were practiced, sitting meditation was introduced, and mindfulness of breathing was emphasized. In the fourth session, seeing and hearing exercises, staying in the present moment, sitting meditation, and awareness of breathing, sounds, and thoughts were practiced. In the fifth session, acceptance and permission to be present were emphasized, and sitting meditation was practiced with intentional awareness of patients' difficulties, including psychological distress, emotional dysregulation, and illness perception. In the sixth session, participants learned that negative thoughts and mood can restrict contact with experience, that thoughts are not facts, and that emotional pain can be approached with awareness and self-care. In the seventh session, strategies for taking better care of oneself were discussed and practiced. In the eighth session, the learned material was summarized for future use, and regular mindfulness practice was emphasized as a means of maintaining psychological balance in life.

2.4. *Data Analysis*

Data were analyzed using descriptive and inferential statistical methods. Descriptive statistics, including mean and standard deviation, were used to summarize participants' scores in the pretest, posttest, and follow-up

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stages. Before conducting inferential analyses, the assumptions required for parametric tests were examined. Repeated-measures analysis of variance was used to evaluate changes in psychological distress across the three measurement stages. Multivariate analysis of covariance and one-way analyses of covariance within the MANCOVA framework were also used to compare the intervention groups and the control group while controlling for baseline scores. Statistical analyses were conducted at the significance level of .05.

3. Findings and Results

The study sample consisted of 45 patients with rheumatoid arthritis who were randomly assigned to the schema therapy group, mindfulness group, and control group, with 15 participants in each group. All participants were between 25 and 55 years of age and had referred to Imam Reza Hospital or rheumatology clinics in Mashhad in 2025. The three groups were examined at the pretest, posttest, and follow-up stages.

Table 1

Descriptive Statistics of Psychological Distress Scores Across Groups

Variable	Group	N	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD
Psychological distress	Schema therapy	15	32.56	6.73	29.44	5.93
Psychological distress	Mindfulness	15	35.59	4.30	31.83	3.21
Psychological distress	Control	15	36.64	3.98	36.15	3.71

As shown in Table 1, psychological distress scores decreased from pretest to posttest in both intervention groups. The reduction was observed in the schema therapy group and the mindfulness group, whereas the control group showed only a minimal change between the pretest and posttest stages. These descriptive findings indicate that both psychological interventions were associated with reduced psychological distress among patients with rheumatoid arthritis.

Before conducting inferential analyses, the assumptions of parametric testing were examined. The homogeneity of variances was assessed using Levene's test. The results indicated that the assumption of equality of error variances was met for psychological distress at the pretest, posttest, and follow-up stages, because all significance values were greater than .05. Therefore, the data did not violate the assumption of homogeneity of variances, and the use of analysis of variance and covariance-based procedures was justified.

Table 2

Analysis of Covariance for Psychological Distress

Source	SS	df	MS	F	p	η^2
Group	83.893	1	83.893	35.244	.000	.508
Error	11.478	43	0.266			
Total	95.371	44				

As shown in Table 2, there was a statistically significant difference between the study groups in psychological distress after controlling for baseline scores, $F(1, 43) = 35.244$, $p < .001$, $\eta^2 = .508$. This finding indicates that the interventions had a significant effect on reducing psychological distress in patients with rheumatoid arthritis. The eta-squared value also shows that a substantial proportion of the variance in psychological distress was explained by group membership.

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Table 3

Bonferroni Post-Hoc Comparisons for Psychological Distress Across Measurement Stages

Group	Comparison	Mean Difference	Standard Error	p	95% CI Lower Bound	95% CI Upper Bound
Schema therapy	Posttest–Pretest	10.533	1.775	.000	5.709	15.358
Schema therapy	Follow-up–Pretest	8.200	1.775	.002	2.961	13.439
Schema therapy	Posttest–Follow-up	2.333	0.950	.083	-0.247	4.914
Mindfulness	Posttest–Pretest	13.533	2.151	.000	7.687	19.380
Mindfulness	Follow-up–Pretest	11.733	2.592	.001	4.689	18.778
Mindfulness	Posttest–Follow-up	1.800	0.852	.159	-0.515	4.115
Control	Posttest–Pretest	0.733	1.677	1.000	-3.826	5.292
Control	Follow-up–Pretest	-0.133	2.845	1.000	-7.865	7.599
Control	Posttest–Follow-up	0.867	2.147	1.000	-4.967	6.701

Based on the Bonferroni post-hoc test results, the difference between pretest and posttest scores was statistically significant in both the schema therapy and mindfulness groups. The difference between pretest and follow-up scores was also statistically significant in both intervention groups, indicating that the therapeutic effects were maintained over time. However, the difference between posttest and follow-up scores was not statistically significant in either intervention group, suggesting relative stability of treatment gains. In the control group, no statistically significant differences were found between pretest, posttest, and follow-up scores.

4. Discussion

The present study aimed to determine the effectiveness of schema therapy and mindfulness on psychological distress in patients with rheumatoid arthritis. The findings showed that psychological distress significantly decreased in both intervention groups compared with the control group. The Bonferroni post-hoc results further indicated that the reduction in psychological distress from pretest to posttest was statistically significant in both the schema therapy and mindfulness groups, and that this improvement remained significant at the follow-up stage. However, the difference between posttest and follow-up was not significant, suggesting that the therapeutic gains were relatively stable over time. In contrast, the control group did not show significant changes across pretest, posttest, and follow-up. These findings indicate that both schema therapy and mindfulness can be considered effective psychological interventions for reducing distress in patients with rheumatoid arthritis, although no meaningful superiority was observed between the two approaches.

The effectiveness of schema therapy in reducing psychological distress can be explained by the fact that rheumatoid arthritis is not merely a physical disease but also a psychologically demanding chronic condition. Patients with rheumatoid arthritis often experience pain, fatigue, functional limitation, uncertainty, and fear of disease progression, all of which can activate maladaptive cognitive-emotional patterns. Schema therapy helps patients identify deep-seated maladaptive schemas, dysfunctional coping styles, and emotional patterns that intensify distress. In the present study, schema therapy may have reduced psychological distress by helping patients reinterpret illness-related experiences, strengthen the healthy adult mode, recognize unmet emotional needs, and replace avoidant or overcompensatory responses with healthier coping behaviors. This interpretation is consistent with evidence showing that schema therapy can reduce schemas and psychological symptoms across different mental health disorders (Taylor et al., 2017). It is also aligned with findings that schema therapy is a promising intervention for anxiety-related and trauma-related psychological problems, particularly when symptoms are maintained by stable maladaptive cognitive-emotional structures (Peeters et al., 2022).

The schema therapy findings are also consistent with previous studies conducted among patients with chronic medical or psychological conditions. Hosseini et al. showed that emotional schema group therapy was effective in reducing pain and depression among patients with rheumatoid arthritis, which directly supports the present finding that schema-oriented intervention can reduce

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psychological burden in this population (Hosseini et al., 2019). Similarly, Nazari et al. reported that schema therapy was effective in improving chronic fatigue syndrome and health anxiety in patients with multiple sclerosis, suggesting that schema therapy can be useful for illness-related emotional and cognitive problems in chronic disease contexts (Nazari et al., 2021). Rajaeizadeh and Khayatan also found that schema therapy improved distress tolerance, resilience, emotion regulation, and parenting styles in mothers of children with attention-deficit/hyperactivity disorder, indicating that schema therapy can enhance psychological regulation under sustained stress (Rajaeizadeh & Khayatan, 2025). Therefore, the reduction of psychological distress in the schema therapy group in the present study can be understood as the result of modifying maladaptive interpretations of illness, reducing rigid emotional schemas, and improving adaptive coping capacity.

The findings also showed that mindfulness significantly reduced psychological distress in patients with rheumatoid arthritis. This result can be explained through the core mechanisms of mindfulness, including present-moment awareness, nonjudgmental acceptance, attentional regulation, cognitive defusion, and reduced emotional reactivity. Patients with rheumatoid arthritis often become entangled in cycles of pain, worry, frustration, helplessness, and anticipatory anxiety. Mindfulness does not necessarily eliminate pain or disease-related limitations, but it changes the patient's relationship with these experiences. Through mindfulness practice, patients may learn to observe bodily sensations, negative thoughts, and emotional discomfort without immediate avoidance, rumination, or catastrophic interpretation. This mechanism is consistent with findings showing that mindfulness-based stress reduction improves psychological well-being, health anxiety, and body image in women with breast cancer (Pasyar et al., 2023). It is also supported by evidence that mindfulness-based stress reduction can improve psychological distress tolerance and psychosocial distress in patients with diabetes (Timajchi et al., 2025).

The effectiveness of mindfulness in this study is further supported by research on distress tolerance and emotional regulation. Akbari and Khalatbari found that mindfulness mediated the relationship between psychological hardiness and distress tolerance, suggesting that mindfulness can strengthen the capacity to tolerate emotional discomfort (Akbari & Khalatbari, 2025). Zhong et al. also showed that mindfulness is associated with distress tolerance through cognitive reappraisal and mental toughness, indicating that mindfulness may improve distress regulation by changing cognitive-emotional processing (Zhong et al., 2025). In another study, mindfulness, self-compassion, and guilt were identified as predictors of distress tolerance among mothers of children with physical-motor disabilities, highlighting the importance of mindfulness in populations exposed to chronic stress (Nouri Ghaleh Alikhani et al., 2025). These findings align with the present results because rheumatoid arthritis requires continuous tolerance of physical discomfort, emotional strain, and uncertainty. Therefore, mindfulness may have reduced psychological distress by increasing patients' ability to remain present with difficult experiences and by weakening the automatic link between pain sensations and emotional suffering.

The present findings are also consistent with studies showing the importance of psychological factors in the experience of rheumatoid arthritis. Radu and Bungau emphasized that rheumatoid arthritis management requires attention to the multidimensional nature of the disease, including clinical, behavioral, and psychological components (Radu & Bungau, 2021). Vergne-Salle et al. demonstrated that the burden of pain in rheumatoid arthritis is influenced not only by disease activity but also by psychological factors (Vergne-Salle et al., 2020). Morf et al. also showed that clinical and psychological factors are associated with depression in patients with rheumatoid arthritis across different countries (Morf et al., 2021). These studies support the present finding that psychological interventions can meaningfully reduce distress in patients with rheumatoid arthritis. Since pain, disability, and illness perception interact with emotional states, interventions that target cognitive-emotional responses to illness may improve psychological adaptation even when the medical condition itself remains chronic.

The absence of a significant difference between schema therapy and mindfulness suggests that both interventions may be effective through different but partially overlapping psychological pathways. Schema therapy works mainly through identifying and modifying maladaptive schemas, correcting dysfunctional coping patterns, and strengthening healthier self-regulatory modes. Mindfulness works mainly through awareness, acceptance, and reduced identification with distressing thoughts and bodily sensations. However, both approaches can reduce avoidance, increase emotional regulation, and improve tolerance of distress. This finding is consistent with Talayeri and Bavi, who compared mindfulness-based stress reduction and emotional schema

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therapy in women undergoing medication treatment for psoriasis and found that both interventions were effective in improving perceived stress and distress tolerance (Talayeri & Bavi, 2023). Bayat et al. similarly showed that emotional schema therapy and acceptance and commitment therapy were effective in improving distress tolerance and emotion regulation difficulties in individuals with major depressive disorder, suggesting that interventions with different theoretical foundations can produce comparable improvements when they target emotional regulation and distress processes (Bayat et al., 2025).

The stability of treatment gains from posttest to follow-up is another important finding. The non-significant difference between posttest and follow-up in the intervention groups suggests that the reduction in psychological distress was not temporary and that participants were able to maintain part of the benefits after the intervention ended. In schema therapy, this stability may be due to the consolidation of healthier interpretations, improved recognition of maladaptive schemas, and practice of new behavioral patterns. In mindfulness, stability may be related to continued use of mindfulness exercises, improved awareness of thoughts and emotions, and greater acceptance of pain-related experiences. This finding is compatible with acceptance-based and mindfulness-based evidence showing that interventions targeting psychological flexibility and acceptance can be useful in chronic pain and central sensitization conditions (Galvez-Sanchez et al., 2021). It is also important to note that mindfulness effects may occur through functional psychological changes rather than structural brain changes, as Kral et al. reported no structural brain changes after mindfulness-based stress reduction in combined randomized controlled trials (Kral et al., 2022). Therefore, the maintained improvement observed in the present study may reflect learned regulatory skills rather than biological alteration.

The results can also be understood from the perspective of distress intolerance. Chronic pain and inflammatory disease can reduce patients' perceived control and increase vulnerability to anxiety and depressive symptoms. Ranney et al. showed that anxiety sensitivity and distress tolerance predict changes in internalizing symptoms among individuals exposed to interpersonal trauma, supporting the transdiagnostic role of distress tolerance in emotional symptoms (Ranney et al., 2022). Kang et al. also demonstrated that distress intolerance mediates the relationship between childhood maltreatment and nonsuicidal self-injury, showing that inability to tolerate emotional distress can contribute to maladaptive outcomes (Kang et al., 2018). Although these studies were not conducted among rheumatoid arthritis patients, they support the broader mechanism through which schema therapy and mindfulness may reduce psychological distress: both interventions increase patients' capacity to experience difficult emotions without becoming overwhelmed by them. In patients with rheumatoid arthritis, this capacity is particularly important because pain, fatigue, and limitations are often recurring rather than short-term.

5. Conclusion

Finally, the present findings highlight the importance of flexible psychological adaptation in chronic illness. Li et al. discussed the role of resource structuring and strategic flexibility in shaping adaptive outcomes in another field, but the broader concept of flexibility is relevant to psychological adaptation as well (Li et al., 2017). Patients with rheumatoid arthritis need to organize personal, interpersonal, emotional, and cognitive resources in response to changing disease conditions. Schema therapy may enhance this flexibility by helping patients revise rigid schemas and adopt healthier coping responses, while mindfulness may enhance flexibility by reducing automatic reactions to pain and distress. Therefore, both interventions can be viewed as methods for strengthening patients' adaptive psychological resources in the face of chronic illness.

One limitation of the present study was the use of a relatively small sample size, which may limit the generalizability of the findings to all patients with rheumatoid arthritis. The participants were selected from Imam Reza Hospital and rheumatology clinics in Mashhad, and therefore the results may not fully represent patients in other regions or treatment settings. Another limitation was reliance on self-report measurement, which may be influenced by response bias, social desirability, or participants' temporary emotional state. In addition, although the study included a follow-up stage, the follow-up period was limited, and longer-term maintenance of intervention effects could not be fully evaluated. The control group did not receive an active placebo or alternative supportive intervention during the study period, which may also limit interpretation of whether the observed effects were due specifically to therapeutic techniques or to general therapeutic attention.

Future studies are recommended to examine the effectiveness of schema therapy and mindfulness with larger

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samples and in multiple clinical centers to improve generalizability. Future research should also use longer follow-up periods, such as six-month and one-year follow-ups, to determine the durability of therapeutic effects. It is suggested that future studies include additional outcome variables such as pain intensity, fatigue, illness perception, emotion regulation, distress tolerance, quality of life, treatment adherence, and inflammatory markers to provide a more comprehensive understanding of intervention effects. Researchers may also compare individual and group formats of schema therapy and mindfulness and examine mediating mechanisms such as cognitive reappraisal, acceptance, self-compassion, psychological flexibility, and maladaptive schemas. Using active control groups would also strengthen causal interpretation and clarify the specific contribution of each therapeutic approach.

From a practical perspective, the findings suggest that schema therapy and mindfulness can be used as complementary psychological interventions alongside medical treatment for patients with rheumatoid arthritis. Rheumatology clinics and hospitals can benefit from integrating structured psychological services into routine care, especially for patients who show high psychological distress, poor emotional adjustment, or difficulty coping with pain and disease limitations. Group-based delivery may be particularly useful because it can reduce costs, increase access, and provide social support among patients with similar illness experiences. Clinicians should assess patients' psychological needs and select the intervention according to the patient's dominant difficulties; schema therapy may be especially suitable for patients with persistent maladaptive beliefs and emotional schemas, whereas mindfulness may be especially suitable for patients who struggle with rumination, pain-related anxiety, and emotional reactivity. Training healthcare professionals in basic psychological screening and referral pathways can also improve comprehensive care for patients with rheumatoid arthritis.

Authors' Contributions

Authors equally contributed 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

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Ethical Considerations

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

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