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# The Effectiveness of Spirituality Therapy on Distress Tolerance and Resilience in Patients with Migraine

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A B S T R A C T

Migraine is a chronic neurological disorder associated with reduced distress tolerance and resilience. The present study aimed to determine the effectiveness of spirituality therapy on distress tolerance and resilience in patients with migraine. In a clinical trial study, patients with migraine attending neurology and counseling clinics in Bam were examined. Through cluster sampling, 44 eligible patients were selected and randomly assigned to intervention and control groups. In addition to pharmacotherapy, the intervention group received 10 sessions of spirituality therapy. The control group received pharmacotherapy. Data were collected using a demographic information form, Gaher's Distress Tolerance Scale, and Connor's Resilience Scale, which were completed at pretest, posttest, and one-month follow-up. Data analysis was performed using descriptive and analytical tests in SPSS version 20. The frequency distribution of demographic characteristics was homogeneous in the two groups. Before the intervention, there was no significant difference between the intervention and control groups in the mean scores of the variables. After the intervention, the mean scores of distress tolerance ($P = 0.002$) and resilience ($P < 0.001$) in the intervention group showed significant changes compared with both the pre-intervention stage and the control group. The differences in the aforementioned mean scores during the follow-up period compared with before the intervention were significant in the two groups ($P = 0.005$; $P = 0.02$). The effect size of the intervention was 0.992 for distress tolerance and 1.59 for resilience, indicating a large effect of spirituality therapy on these variables. The results showed that spirituality therapy, alongside medical treatments, can be effective in the short term in improving distress tolerance and resilience among patients with migraine. The long-term effects of these interventions should be examined so that they can be recommended for managing these psychological states during the course of the disease.

***Keywords:*** *spirituality therapy, distress tolerance, resilience, migraine*

## 1. Introduction

Migraine is a chronic and recurrent neurological disorder that extends beyond episodic headache and affects emotional regulation, cognitive functioning, interpersonal relationships, occupational performance, and overall quality of life. Contemporary clinical descriptions emphasize that migraine is characterized by recurrent attacks of moderate to severe headache, often accompanied by nausea, photophobia, phonophobia, sensory hypersensitivity, and functional impairment, and its diagnosis requires careful attention to headache pattern, duration, associated symptoms, and exclusion of alternative causes (Tzankova et al., 2023). Although migraine is commonly approached through neurological and pharmacological frameworks, its lived experience is deeply psychological, because repeated attacks expose patients to unpredictability, loss of control, anticipatory anxiety, fear of recurrence, and disruption of daily routines. Patient-centered qualitative evidence has shown that individuals with migraine frequently describe the disorder as a condition that interferes with identity, family responsibilities, social participation, emotional stability, and perceived autonomy, thereby demonstrating that migraine is not merely a pain condition but a complex biopsychosocial experience (Estave et al., 2021). In Iran, migraine is also an important public health concern, and systematic evidence on its prevalence highlights the need for psychological and behavioral interventions that can be integrated with medical care to reduce the burden of the disorder and improve adaptive functioning among affected individuals (Mohammadi et al., 2023).

The burden of migraine is not limited to symptom severity; it is also reflected in healthcare resource utilization, productivity loss, and persistent impairment across personal and social domains. Evidence from European population-based data indicates that people with migraine experience considerable incremental burden and increased healthcare use, suggesting that migraine imposes substantial costs on patients and health systems even when pharmacological treatments are available (Gendolla et al., 2024). This burden is intensified when patients experience frequent headaches, severe pain, comorbid emotional symptoms, or maladaptive coping patterns. Psychological factors have consistently been identified as important correlates of headache frequency, pain intensity, and migraine-related disability, indicating that emotional and cognitive processes may influence both the perception of migraine and the degree of impairment caused by it (Klonowski et al., 2022). More recent psychological accounts of migraine similarly emphasize the roles of stress, emotional dysregulation, catastrophizing, coping style, and resilience in shaping patients' adaptation to the disease (Yu & Tan, 2024). Therefore, a comprehensive intervention model for migraine should not be limited to reducing pain intensity, but should also address the psychological resources that help patients tolerate distress, maintain meaning, and recover from repeated episodes of physical and emotional strain.

Distress tolerance is one of the key psychological capacities involved in adaptation to chronic pain and recurrent illness. It refers to the perceived and actual ability to endure negative emotional states without becoming overwhelmed, avoidant, impulsive, or functionally impaired. In patients with headache disorders, low distress tolerance may lead to increased emotional reactivity, greater preoccupation with pain, avoidance of daily activities, and reduced ability to manage uncertainty associated with future attacks. Research on migraine patients has shown that distress tolerance is associated with headache severity, suggesting that patients who have greater difficulty enduring negative affect may experience migraine as more severe and disabling (Ozturk & Sertel Berk, 2022). The measurement of distress tolerance in headache populations has also received psychometric attention, and evidence from women with tension-type headaches has supported the validity and reliability of the Distress Tolerance Scale in assessing this construct in pain-related contexts (Tofangchi et al., 2022). Since distress tolerance is closely tied to emotional regulation, patients with migraine who have limited tolerance for distress may be more vulnerable to anxiety, hopelessness, anger, and helplessness during or between migraine attacks.

Resilience is another central psychological construct in chronic illness adaptation. It refers to the capacity to maintain or regain psychological equilibrium in the face of adversity, stress, illness, and functional limitations. In migraine, resilience is particularly important because patients must repeatedly cope with unpredictable pain, interruption of life plans, reduced productivity, and the psychological consequences of chronicity. A cross-sectional study on migraine demonstrated meaningful associations among resilience, stress, and headache-related disability, indicating that resilience may buffer the negative effects of stress and contribute to better functioning in individuals with migraine (Buse et al., 2020). In clinical intervention research, Acceptance and Commitment Therapy has also

been shown to improve resilience in migraine patients, supporting the view that resilience is modifiable and can be enhanced through structured psychological intervention (Esmaeili et al., 2021). These findings suggest that strengthening resilience may help patients reinterpret their illness experience, maintain adaptive functioning, and preserve hope despite recurring pain.

The relationship between resilience and distress tolerance is theoretically and clinically important. Distress tolerance reflects the individual's capacity to remain present with unpleasant internal states, whereas resilience reflects broader adaptive recovery and psychological flexibility in the face of adversity. In populations exposed to acute relational and emotional stress, interventions targeting uncertainty, compassion, coherence, resilience, and distress tolerance have shown that these constructs are responsive to psychological treatment and can be improved through systematic therapeutic work (Heydari et al., 2026). In chronic illness, these constructs may operate together: distress tolerance enables patients to endure the immediate emotional burden of pain, while resilience supports longer-term adaptation, meaning reconstruction, and continuity of valued life activities. Accordingly, interventions that simultaneously enhance distress tolerance and resilience may be especially useful for patients with migraine, because the disorder requires both moment-to-moment emotional endurance and sustained adaptive coping across time.

Non-pharmacological and psychological interventions have increasingly been recognized as important components of migraine management. Systematic review evidence indicates that patient education and cognitive-behavioral interventions can be effective as non-pharmacological approaches for adults with migraine, particularly by improving self-management, reducing maladaptive responses, and strengthening coping capacities (Meise et al., 2022). Mindfulness-based interventions have also been examined in migraine populations, and meta-analytic findings suggest that these approaches can influence migraine-related outcomes by improving awareness, acceptance, emotional regulation, and stress management (Liao et al., 2025). Broader evidence on psychological interventions for physical pain highlights the relevance of targeting catastrophizing and resilience, because these variables substantially influence pain perception, disability, and recovery trajectories (Leccese et al., 2025). These developments indicate that migraine care is moving toward integrative models in which pharmacotherapy is complemented by interventions that address cognitive, emotional, behavioral, existential, and interpersonal dimensions of illness.

Among integrative psychological approaches, spirituality-based interventions have attracted increasing attention in chronic pain and chronic illness research. Spirituality is generally understood as a search for meaning, connection, transcendence, inner peace, and relationship with the sacred or ultimate values; it may be expressed through religious beliefs, personal meaning systems, meditation, prayer, forgiveness, gratitude, compassion, or existential reflection. Spirituality and religiosity can influence mental health in different ways, and contemporary discussions emphasize the importance of distinguishing adaptive spiritual resources from rigid or conflictual religious experiences (Dubey et al., 2025). In psychotherapy, spiritual struggles such as guilt, anger toward God, perceived abandonment, existential doubt, and conflict between illness and belief systems may become clinically relevant and should be addressed with sensitivity, ethical awareness, and therapeutic competence (Pargament & Exline, 2021). For patients with migraine, spirituality therapy may provide a framework for reconstructing meaning, reducing self-blame, strengthening hope, and developing a more compassionate relationship with the body and illness experience.

The empirical literature on spirituality, pain, and coping provides a strong rationale for applying spirituality therapy to patients with migraine. In chronic pain populations, spirituality has been associated with pain, functional status, and coping, suggesting that spiritual resources may influence how individuals interpret pain, tolerate suffering, and maintain psychological functioning (Ferreira-Valente et al., 2020). Research on spiritual wellbeing, pain catastrophizing, and pain perception has further shown that spiritual wellbeing may be meaningfully related to how pain is appraised and experienced, particularly when individuals face ongoing pain conditions (Luedtke & Wachholtz, 2025). In cancer-related pain, spirituality has also been identified as an important dimension of pain experience, shaping how patients describe suffering, hope, connection, and endurance (Miller et al., 2024). Similarly, research among post-treatment cancer patients has shown that the relationship between spirituality and pain may be mediated by meaning in life and pain coping strategies, indicating that spirituality may affect pain adaptation through meaning-making and coping mechanisms (Krok et al., 2025). These findings are highly relevant to migraine because migraine patients often struggle not only with pain itself but also with the meaning, unpredictability, and emotional burden of recurrent attacks.

Spirituality has also been repeatedly linked to resilience in chronic illness and adversity. A systematic review and meta-analysis found a positive relationship between spirituality or religiosity and resilience, indicating that spiritual resources may contribute to adaptive functioning under stress (Schwalm et al., 2022). Another systematic review and meta-analysis focusing on chronic disease showed that spiritual and religious interventions can be effective in improving resilience among patients with chronic illnesses, supporting the clinical relevance of spirituality-based care in long-term health conditions (Dehghani et al., 2021). A mixed-methods systematic review among older adults with chronic illness further identified spirituality and religiosity as sources of resilience, showing that patients may draw on faith, meaning, prayer, connection, and acceptance to endure illness-related difficulties (Abu et al., 2026). In a large international study of care leavers, spirituality was also positively associated with resilience and well-being, suggesting that spiritual resources can support adaptation across diverse populations exposed to adversity (Howard et al., 2023). These findings collectively support the proposition that spirituality therapy may strengthen resilience in patients with migraine by enhancing meaning, acceptance, hope, and perceived inner support.

Clinical studies conducted in Iranian cultural and health contexts also support the relevance of spirituality-based interventions for pain-related and chronic conditions. Spiritual therapy based on Iranian culture has been shown to improve resilience in patients with chronic pain, suggesting that culturally congruent spiritual frameworks may be particularly meaningful for Iranian patients coping with persistent pain (Haddadi Kuhsar et al., 2019). In patients with multiple sclerosis, spirituality therapy has demonstrated beneficial effects on resilience and biological stress-related indicators, highlighting its potential role in improving psychological adaptation in chronic neurological disease (Karimi et al., 2020). Spirituality therapy has also been found effective in improving psychological distress and resilience among patients with thalassemia, another chronic condition requiring long-term coping and emotional endurance (Yousefian et al., 2020). In women with tension headaches, Islamic spirituality-based treatment has been compared with quality-of-life therapy and shown to influence distress tolerance, stress, anxiety, and depression, indicating that spiritual intervention may be relevant for headache-related psychological symptoms (Kajbaf et al., 2017). These culturally grounded studies are important because spirituality therapy is most clinically meaningful when it is adapted to patients' values, language, religious background, and lived experience.

At the same time, spirituality-based interventions in pain management require careful conceptualization and structured implementation. Spiritual interventions in multimodal pain management have been described as potentially valuable when they are integrated ethically, respectfully, and in accordance with patients' beliefs and preferences (Kieselbach & Frede, 2024). The intervention should not impose belief, replace medical treatment, or reduce illness to moral or religious failure; rather, it should help patients use spiritual resources to regulate emotion, reinterpret suffering, strengthen connection, and develop acceptance. This distinction is particularly important in migraine, because patients may experience guilt, helplessness, spiritual conflict, or frustration with the body. A structured spirituality therapy program can help patients identify maladaptive spiritual interpretations, reduce self-blame, cultivate self-compassion, strengthen trust and hope, and use spiritual practices such as prayer, meditation, gratitude, forgiveness, and meaning-oriented reflection as psychological coping resources.

Despite the growing evidence on spirituality, resilience, chronic pain, and psychological interventions, the specific application of spirituality therapy to migraine remains relatively underdeveloped. Studies on migraine have examined psychological variables such as resilience, stress, distress tolerance, catastrophizing, meaning in life, perceived social support, spiritual well-being, and quality of life, but intervention studies that directly target spirituality-based mechanisms in migraine patients are limited (Yousefi Afrashteh et al., 2023). Existing non-pharmacological interventions such as cognitive-behavioral treatment, patient education, mindfulness, and acceptance-based approaches have provided useful evidence, yet they do not fully address the existential and spiritual struggles that may accompany chronic migraine (Esmaeili et al., 2021; Liao et al., 2025; Meise et al., 2022). Moreover, although spiritual therapy packages have been developed and tested for various chronic conditions, migraine-specific spirituality therapy requires attention to the unique features of migraine, including episodic unpredictability, sensory sensitivity, fear of attacks, disruption of identity, and repeated confrontation with pain. In this regard, a spirituality therapy package specifically designed for migraine patients and evaluated in relation to pain intensity, pain catastrophizing, distress tolerance, and

resilience provides a relevant basis for the present study (Saberi, 2026).

Taken together, the literature indicates that migraine is a multidimensional neurological and psychological condition in which distress tolerance and resilience play essential roles in adaptation, and spirituality therapy may offer a culturally meaningful and clinically relevant method for strengthening these capacities. Evidence from migraine research shows that psychological factors influence headache-related disability and patient functioning (Buse et al., 2020; Klonowski et al., 2022; Yu & Tan, 2024), while evidence from chronic pain and chronic illness research shows that spirituality can support coping, meaning-making, resilience, and emotional regulation (Abu et al., 2026; Dehghani et al., 2021; Ferreira-Valente et al., 2020; Schwalm et al., 2022). Therefore, integrating spirituality therapy with medical care may help patients with migraine not only tolerate distress more effectively during pain-related emotional states but also maintain resilience in the face of recurrent illness. The present study aimed to determine the effectiveness of spirituality therapy on distress tolerance and resilience in patients with migraine.

## 2. Methods and Materials

### *2.1. Study Design and Participants*

The present study was conducted as a clinical trial with a one-month follow-up period. The study population consisted of all patients with migraine who attended two neurology treatment centers and four public and private counseling centers in Bam, Kerman Province, Iran, between September 2025 and March 2026. The estimated population included approximately 480 patients who had referred to the selected centers during 2025. The final sample consisted of 44 eligible patients who met the inclusion criteria and were selected through cluster sampling. For this purpose, all neurology and counseling centers were first reviewed, and centers that had patients with migraine in their admission records were selected. Then, eligible patients in each center were identified according to the inclusion criteria. To ensure fair allocation and reduce selection bias, participants within each cluster were randomly assigned to either the intervention or control group using online randomization software by the research assistants. Although the study centers were selected based on their service provision to patients with migraine, the non-random selection of centers may have introduced environmental confounding variables, such as differences in service management, the psychological atmosphere of the setting, or access to ancillary services. To control these possible effects, baseline homogeneity between the two groups was examined at the pretest stage, which helped neutralize the influence of potential environmental confounders to a considerable extent. The inclusion criteria were being between 20 and 60 years of age, having a confirmed diagnosis of chronic migraine by a neurologist based on the criteria of the International Headache Society, having at least three months elapsed since diagnosis according to criterion A of the International Classification of Headache Disorders, third edition, and having a history of headache with migraine characteristics for at least three months, defined as headache occurring on 15 or more days per month for more than three months. Other inclusion criteria were not receiving concurrent psychotherapy or spirituality therapy during the previous six months, not having another disabling chronic disease, and being willing to participate in the study. The exclusion criteria were absence from more than two spirituality therapy sessions, failure to complete homework assignments for three consecutive sessions, development of an acute psychiatric disorder or medication use based on self-report, changes in the pharmacological treatment regimen during the study, incomplete completion of questionnaires, and unwillingness to continue participation. The sample size was estimated using G*Power statistical software version 3.1.1 based on repeated-measures analysis of variance. With a significance level of 0.05, statistical power of 0.90, a medium effect size of 0.70, and two repeated measurements considered in the sample-size estimation, the required sample size was calculated as 40 participants. Considering possible sample attrition, 44 participants were finally selected and allocated to two groups of 22 participants each.

### *2.2. Measures*

The demographic and clinical information form was used to collect participants' background characteristics and disease-related information. This form included age, gender, marital status, educational level, economic status, duration of migraine, history of medication use, history of non-pharmacological treatments, and pain intensity. Pain intensity was assessed using a visual pain scale. This form was completed by participants at the pretest stage and was used to describe the sample and examine the homogeneity of the intervention and control groups before implementation of the intervention.

The Distress Tolerance Scale was developed by Simons and Gaher (2005) to assess an individual's perceived capacity to tolerate negative emotional states. This scale contains 15 items scored on a five-point Likert scale ranging from 1, indicating "strongly agree," to 5, indicating "strongly disagree." Six items are reverse-scored. The scale includes four subscales: tolerance, including items 1, 3, and 5; absorption, including items 2, 4, and 15; appraisal, including items 6, 7, 9, 10, 11, and 12; and regulation, including items 8, 13, and 14. The total score ranges from 15 to 75, with higher scores indicating greater distress tolerance. The content validity and reliability of the Persian version of this questionnaire were confirmed in the study by Tafangchi et al. (2023), and its Cronbach's alpha coefficient was reported as 0.96. In the present study, this scale was completed by participants at the pretest, posttest, and one-month follow-up stages.

The Connor-Davidson Resilience Scale was developed by Connor and Davidson (2003) to measure the ability to cope with difficulties, adversity, and stressful life conditions. The original version consists of 25 items scored on a five-point Likert scale ranging from 0, indicating "never," to 4, indicating "always." The scale includes five subscales: perception of personal competence, including items 10, 11, 12, 16, 17, 23, 24, and 25; trust in personal instincts and tolerance of negative affect, including items 6, 7, 14, 15, 18, 19, and 20; positive acceptance of change and secure relationships, including items 1, 2, 4, 5, and 8; control, including items 13, 21, and 22; and spiritual influences, including items 3 and 9. The total score ranges from 0 to 100, with higher scores indicating greater resilience. Abdi et al. (2019) standardized this scale in Iran and confirmed its content validity. They also reported a Cronbach's alpha coefficient of 0.94 for the total scale. In the present study, this scale was completed at the pretest, posttest, and one-month follow-up stages.

### *2.3. Intervention*

After obtaining the ethics approval from Islamic Azad University, Najafabad Branch, and coordinating with the research settings, the first researcher attended the treatment and counseling centers during working hours, reviewed patients' records, and contacted eligible individuals by telephone to invite them to participate in the study. Participants were asked to attend the relevant center at a specified day and time and participate in an orientation session. Patients were met in one of the offices of the selected centers, where the necessary explanations about the study were provided. After completing the demographic information form, participants were further assessed for eligibility. Those who met the inclusion criteria signed the written informed consent form, verbally declared their readiness to participate in the spirituality therapy program, and completed the Distress Tolerance Scale and the Connor-Davidson Resilience Scale. After completion of sampling and allocation into the two groups, participants in the intervention group were invited to an awareness session at the relevant centers. In addition to pharmacotherapy, the intervention group participated in 10 weekly spirituality therapy sessions, each lasting 90 minutes, at a private counseling center, Robin Counseling Center. The sessions were conducted by the first researcher under the supervision of the second researcher. The spirituality therapy package had been specifically developed for patients with migraine in another study conducted by the researchers of the present study through interviews with 25 patients with migraine and specialists in psychology and spirituality therapy, as well as through a review of the literature. Its applicability had also been evaluated in two expert panels. The sessions were implemented in a group format. At the beginning of each session, the researcher briefly introduced the topic through an interactive lecture. This was followed by supervised group discussion, question-and-answer interaction, and assignment of homework. At the beginning of subsequent sessions, previous homework assignments were reviewed and participants' questions and ambiguities were addressed. The intervention began with establishing rapport, forming a therapeutic alliance, creating a safe and accepting group atmosphere, and introducing the spirituality therapy approach. Subsequent sessions focused on identifying and reconstructing guilt-related beliefs associated with conflicts in servitude, divine justice, and divine providence; identifying and reconstructing beliefs related to harmful socio-spiritual agency caused by projection of illness; rebuilding damaged self-esteem through modification of beliefs related to fear of the future and dissatisfaction with the self; strengthening self-awareness, hope, and meaning in life through a spirituality-oriented approach; reducing feelings of disconnection from the world and dark views of life through reconciliation with creation and reconnection with the world; strengthening acceptance of divine decree and trust in God's providence; developing collective spirituality through connection-seeking and shared spiritual space; enhancing spiritual self-awareness through attitude modification, self-control, stress management, relational

boundary-setting, spiritual attraction, and self-accountability; and finally reviewing the sessions, evaluating participants' satisfaction, identifying spiritual and behavioral changes, and developing a personal plan for maintaining the spiritual path. Techniques used across the sessions included active listening, reflection of emotion and meaning, open-ended questions about spirituality, spiritual meditation, psychodrama-based reverse role-play, narrative rewriting, inner dialogue, self-compassion, meaning-making of suffering, gratitude exercises, connection with nature, imaginary dialogue with a spiritual reference, group sharing of emotions, sacred-bond exercises, cognitive-spiritual restructuring, stress-management exercises, spiritual rumination reduction, and writing letters to the self. Homework assignments included emotional journaling, self-forgiveness exercises, reflection on meaning, forgiveness and release of anger, rewriting life narratives from the perspective of compassion and divine acceptance, identifying daily goals, focusing on positive daily experiences, writing a letter to the earth and sky, designing an alternative worship plan, developing a collective peace pledge, determining meaningful priorities, and preparing a weekly plan for continuing spiritual practices. The control group did not receive the spirituality therapy program and continued pharmacotherapy only. Immediately after completion of the intervention, participants in the intervention group completed the questionnaires again during the final session. One month later, they were contacted by telephone and asked to attend the same center for follow-up assessment, where their condition was reviewed and the questionnaires were completed again under the supervision of the first researcher. In the control group, the questionnaires were also completed immediately after the study period and again one month later following telephone coordination and attendance at the relevant center. At the final session, educational questions and needs of the control group participants were addressed.

### *2.4. Data Analysis*

Data were analyzed using SPSS software version 20. Descriptive statistical indices, including frequency, percentage, mean, and standard deviation, were used to describe demographic and clinical characteristics and the main study variables. Analytical tests, including the independent-samples t-test, paired-samples t-test, and chi-square test, were used to compare groups and assess within-group changes where appropriate. Repeated-measures analysis of variance was applied to examine within-group changes over time and the group-by-time interaction effect, and the LSD post hoc test was used for pairwise comparisons. The significance level was set at 0.05. Before conducting inferential analyses, the normality of the distribution of the distress tolerance variable at the pretest and posttest stages was examined using the Shapiro-Wilk test and was confirmed. The results of Levene's test also showed that the assumption of homogeneity of variances was met for the study variables. In addition, Box's M test indicated equality of covariance matrices for distress tolerance and resilience. Mauchly's test of sphericity was not statistically significant; therefore, the assumption of sphericity was also satisfied. The results of repeated-measures analysis of variance showed that the main effects of time and group, as well as the interaction effect of time and group, were significant for the study variables. These findings indicated significant differences between the intervention and control groups in the mean scores of distress tolerance and resilience across the measurement stages and showed that spirituality therapy significantly improved these variables in the intervention group. Moreover, the results of multivariate analysis of variance based on Wilks' lambda for the group-by-time interaction showed a significant difference in the linear combination of distress tolerance and resilience scores, indicating that spirituality therapy had a significant effect on participants' score changes over time. The results of other multivariate statistics, including Pillai's trace, were also consistent with Wilks' lambda and further confirmed the significance of the intervention effect on distress tolerance and resilience.

## 3. Findings and Results

Data obtained from 44 patients with migraine were analyzed. All participants completed the relevant questionnaires at pretest, posttest, and one month later, and no sample attrition occurred. The age range was 22–56 years in the intervention group and 22–63 years in the control group. The results of the independent-samples t-test showed no significant difference between the two groups in terms of age and mean pain intensity. The results of the chi-square test showed that the distribution of gender, marital status, religious beliefs, occupational status, independence status, medication use, non-pharmacological treatments, bereavement experience, and having children was not significantly different between the two groups. The result of the Mann–Whitney U test also showed that economic status

and educational level did not differ significantly between the two groups (Table 1).

**Table 1**

*Demographic and clinical characteristics of participants in the two groups*

| Variable | Variable level | Intervention group | Control group | Statistic | Effect size | P |
|---|---|---|---|---|---|---|
| Age | — | 34.86 ± 10.63 | 34.59 ± 10.32 | Independent t-test | d = 0.27 | 0.93 |
| Pain intensity | — | 7.55 ± 1.33 | 7.41 ± 1.10 | Independent t-test | d = 0.114 | 0.71 |
| Gender | Female | 11 (50.0%) | 12 (54.5%) | Chi-square | V = 0.45 | 0.76 |
| Gender | Male | 11 (50.0%) | 10 (45.5%) | Chi-square | V = 0.45 | 0.76 |
| Marital status | Married | 15 (68.2%) | 14 (63.6%) | Chi-square | V = 0.139 | 0.43 |
| Marital status | Single | 6 (27.3%) | 8 (36.4%) | Chi-square | V = 0.139 | 0.43 |
| Marital status | Divorced | 1 (4.5%) | 0 (0.0%) | Chi-square | V = 0.139 | 0.43 |
| Occupational status | Self-employed | 5 (22.7%) | 4 (18.2%) | Chi-square | V = 0.055 | 0.94 |
| Occupational status | Homemaker | 3 (13.6%) | 4 (18.2%) | Chi-square | V = 0.055 | 0.94 |
| Occupational status | Unemployed | 8 (36.4%) | 7 (31.8%) | Chi-square | V = 0.055 | 0.94 |
| Occupational status | Employee | 6 (27.3%) | 7 (31.8%) | Chi-square | V = 0.055 | 0.94 |
| Independence status | Living in another person's home | 5 (22.7%) | 5 (22.7%) | Chi-square | V = 0.095 | 1.00 |
| Independence status | Independent living | 17 (77.3%) | 17 (77.3%) | Chi-square | V = 0.095 | 1.00 |
| Economic status | Poor | 4 (18.2%) | 4 (18.2%) | Mann–Whitney U test | r = 0.036 | 0.81 |
| Economic status | Moderate | 12 (54.5%) | 13 (59.1%) | Mann–Whitney U test | r = 0.036 | 0.81 |
| Economic status | Good | 6 (27.3%) | 5 (22.7%) | Mann–Whitney U test | r = 0.036 | 0.81 |
| Educational level | Diploma or lower | 7 (31.8%) | 8 (36.4%) | Mann–Whitney U test | r = 0.022 | 0.88 |
| Educational level | Associate degree | 5 (22.7%) | 4 (18.2%) | Mann–Whitney U test | r = 0.022 | 0.88 |
| Educational level | Bachelor's degree or higher | 10 (45.5%) | 10 (45.5%) | Mann–Whitney U test | r = 0.022 | 0.88 |
| Medication use | Yes | 5 (22.7%) | 6 (27.3%) | Chi-square | V = 0.052 | 0.73 |
| Non-pharmacological treatment | Yes | 8 (36.4%) | 10 (45.5%) | Chi-square | V = 0.093 | 0.54 |
| Specific psychiatric disorder | Yes | 0 (0.0%) | 2 (9.1%) | Fisher's exact test | V ≈ 0.90 | 0.49 |
| Bereavement experience | Yes | 11 (50.0%) | 10 (45.5%) | Chi-square | V = 0.095 | 0.76 |
| Having children | Yes | 15 (68.2%) | 13 (59.1%) | Chi-square | V = 0.095 | 0.53 |
| Religious beliefs | Yes | 22 (100.0%) | 22 (100.0%) | Chi-square | V = 0.095 | 1.00 |

The mean, standard deviation, and changes in distress tolerance scores over time in the two groups are presented in Table 2. The effects of the intervention on distress tolerance were analyzed using a mixed-design repeated-measures analysis of variance, with group, namely intervention versus control, as the between-subjects factor and time, namely pretest, posttest, and follow-up, as the within-subjects factor. This analysis showed a significant group × time interaction for distress tolerance, $F(2, 42) = 121.53$, $p < 0.001$, $\eta^2p = 0.924$, indicating that the intervention group showed significantly greater improvement over time than the control group.

Post hoc comparisons using the LSD test confirmed that the two groups did not differ significantly at pretest ($p = 0.65$). However, the intervention group obtained significantly higher distress tolerance scores at both posttest and follow-up compared with pretest ($p < 0.001$ for both comparisons). The difference between posttest and follow-up in the intervention group was not significant ($p = 0.12$), indicating the stability of the intervention effect over time. In contrast, the control group showed no significant fluctuation throughout the study ($p > 0.05$ for all pairwise comparisons). These findings, as detailed in Table 2, indicate that the intervention had a stable and positive effect on distress tolerance among patients with migraine.



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**Table 2**

*Changes in the scores of different domains of distress tolerance over time in the two groups*

| Domain | Time | Intervention group, mean ± SD | Control group, mean ± SD | F | P | $\eta^2p$ |
|---|---|---|---|---|---|---|
| Tolerance | Pretest | 10.50 ± 2.11 | 10.59 ± 2.06 | 124.47 | 0.89 | 0.926 |
| Tolerance | Posttest | 13.05 ± 2.17 | 10.50 ± 2.32 | 124.47 | <0.001 | 0.926 |
| Tolerance | Follow-up | 12.09 ± 2.62 | 10.55 ± 2.36 | 124.47 | 0.046 | 0.926 |
| Absorption | Pretest | 10.64 ± 1.81 | 10.68 ± 2.42 | 108.90 | 0.94 | 0.916 |
| Absorption | Posttest | 13.32 ± 2.06 | 10.68 ± 2.42 | 108.90 | 0.001 | 0.916 |
| Absorption | Follow-up | 12.18 ± 2.30 | 10.82 ± 2.67 | 108.90 | 0.08 | 0.916 |
| Appraisal | Pretest | 15.64 ± 3.33 | 16.45 ± 3.33 | 105.62 | 0.42 | 0.914 |
| Appraisal | Posttest | 21.14 ± 2.57 | 17.05 ± 2.97 | 105.62 | 0.001 | 0.914 |
| Appraisal | Follow-up | 20.05 ± 2.84 | 17.09 ± 2.43 | 150.62 | 0.001 | 0.914 |
| Regulation | Pretest | 7.99 ± 1.88 | 7.59 ± 1.53 | 43.44 | 0.43 | 0.813 |
| Regulation | Posttest | 9.91 ± 2.31 | 7.73 ± 1.58 | 43.44 | 0.001 | 0.813 |
| Regulation | Follow-up | 9.23 ± 1.93 | 7.64 ± 1.71 | 43.44 | 0.006 | 0.813 |
| Total score | Pretest | 40.27 ± 6.31 | 41.09 ± 6.72 | 121.53 | 0.68 | 0.924 |
| Total score | Posttest | 48.27 ± 7.24 | 40.95 ± 7.52 | 121.53 | 0.002 | 0.924 |
| Total score | Follow-up | 47.41 ± 6.93 | 41.45 ± 6.22 | 121.53 | 0.005 | 0.924 |

The mean, standard deviation, and changes in resilience scores over time in the two groups are presented in Table 3. The effects of the intervention on resilience were analyzed using a mixed-design repeated-measures analysis of variance, with group, namely intervention versus control, as the between-subjects factor and time, namely pretest, posttest, and follow-up, as the within-subjects factor. This analysis showed a significant group × time interaction for the total resilience score, $F(2, 42) = 221.44$, $p < 0.001$, $\eta^2p = 0.957$, indicating that the intervention group showed significantly greater improvement over time than the control group.

Post hoc comparisons using the LSD test confirmed that the two groups did not differ significantly at pretest ($p = 0.92$). However, the intervention group obtained significantly higher resilience scores at both posttest and follow-up compared with pretest ($p < 0.001$ for both comparisons). The difference between posttest and follow-up in the intervention group was also significant ($p < 0.001$), indicating a slight but significant decrease at follow-up compared with posttest; nevertheless, follow-up scores remained significantly higher than pretest scores. In contrast, the control group showed no significant fluctuation throughout the study ($p > 0.05$ for all pairwise comparisons). These findings, as detailed in Table 3, indicate that the intervention had a stable and positive effect on resilience among patients with migraine.

**Table 3**

*Changes in the scores of different domains of resilience over time in the two groups*

| Domain | Time | Intervention group, mean ± SD | Control group, mean ± SD | F | P | $\eta^2p$ |
|---|---|---|---|---|---|---|
| Perception of personal competence | Pretest | 24.82 ± 4.18 | 25.36 ± 4.35 | 82.10 | 0.67 | 0.891 |
| Perception of personal competence | Posttest | 29.18 ± 4.70 | 25.00 ± 4.39 | 82.10 | <0.001 | 0.891 |
| Perception of personal competence | Follow-up | 26.91 ± 4.20 | 25.23 ± 4.54 | 82.10 | 0.002 | 0.891 |
| Trust in personal instincts | Pretest | 22.45 ± 5.39 | 21.86 ± 4.05 | 123.03 | 0.68 | 0.925 |
| Trust in personal instincts | Posttest | 26.55 ± 5.11 | 21.91 ± 4.17 | 123.03 | <0.001 | 0.925 |
| Trust in personal instincts | Follow-up | 24.86 ± 4.85 | 22.59 ± 4.05 | 123.03 | 0.009 | 0.925 |
| Positive acceptance of change and secure relationships | Pretest | 16.00 ± 3.66 | 15.68 ± 2.99 | 119.20 | 0.75 | 0.923 |
| Positive acceptance of change and secure relationships | Posttest | 18.91 ± 3.43 | 15.82 ± 2.99 | 119.20 | <0.001 | 0.923 |
| Positive acceptance of change and secure relationships | Follow-up | 17.73 ± 3.22 | 15.36 ± 2.89 | 119.20 | <0.001 | 0.923 |



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| | | | | | | |
|---|---|---|---|---|---|---|
| Control | Pretest | 9.86 ± 2.29 | 9.64 ± 1.62 | 29.14 | 0.71 | 0.745 |
| Control | Posttest | 11.36 ± 2.10 | 9.36 ± 1.68 | 29.14 | <0.001 | 0.745 |
| Control | Follow-up | 10.64 ± 1.96 | 9.32 ± 1.86 | 29.14 | 0.004 | 0.745 |
| Spiritual influences | Pretest | 6.23 ± 1.54 | 6.45 ± 1.40 | 16.66 | 0.61 | 0.561 |
| Spiritual influences | Posttest | 7.27 ± 1.67 | 6.32 ± 1.46 | 16.66 | <0.001 | 0.561 |
| Spiritual influences | Follow-up | 6.77 ± 1.38 | 6.05 ± 1.81 | 16.66 | 0.004 | 0.561 |
| Total score | Pretest | 79.36 ± 15.64 | 79.00 ± 11.00 | 221.44 | 0.92 | 0.957 |
| Total score | Posttest | 93.27 ± 14.51 | 78.41 ± 10.89 | 221.44 | <0.001 | 0.957 |
| Total score | Follow-up | 86.91 ± 12.56 | 78.55 ± 10.71 | 221.44 | <0.001 | 0.957 |

## 4. Discussion

The present study aimed to determine the effectiveness of spirituality therapy on distress tolerance and resilience in patients with migraine. The findings showed that, before the intervention, the intervention and control groups were statistically homogeneous in terms of demographic and clinical characteristics, including age, pain intensity, gender, marital status, occupational status, independence status, economic status, educational level, medication use, non-pharmacological treatment history, psychiatric history, bereavement experience, having children, and religious beliefs. This baseline homogeneity strengthens the internal validity of the findings and indicates that the subsequent changes in distress tolerance and resilience can be attributed more confidently to the spirituality therapy intervention rather than to pre-existing differences between the groups. The results of repeated-measures analysis of variance demonstrated a significant group × time interaction for distress tolerance, indicating that patients in the intervention group experienced a substantial increase in distress tolerance from pretest to posttest and that this improvement remained stable at the one-month follow-up. The control group did not show significant changes over time. These findings suggest that spirituality therapy was effective in improving the patients' perceived capacity to tolerate negative emotional states, endure migraine-related distress, and regulate emotional reactions to pain. This result is consistent with previous evidence showing that distress tolerance is meaningfully related to headache severity in migraine patients and that lower tolerance for emotional distress may intensify the subjective burden of headache symptoms (Ozturk & Sertel Berk, 2022). It is also consistent with research confirming the relevance of distress tolerance assessment in headache populations, particularly among individuals experiencing recurrent pain and psychological strain (Tofangchi et al., 2022). Therefore, the improvement observed in the present study can be interpreted as a clinically meaningful change in the emotional coping capacity of patients with migraine.

The significant improvement in distress tolerance may be explained by the content and mechanisms of the spirituality therapy protocol. Migraine patients often experience fear of recurrence, helplessness, frustration, guilt, and emotional exhaustion, all of which may reduce their ability to remain psychologically stable during pain episodes. Spirituality therapy in this study addressed these emotional and existential burdens through meaning-making, self-compassion, acceptance of suffering, reconstruction of maladaptive spiritual beliefs, forgiveness, gratitude, spiritual meditation, and group-based emotional sharing. These elements may have helped patients reinterpret migraine not merely as uncontrollable suffering but as an experience that can be faced with inner resources, meaning, connection, and hope. This explanation aligns with research showing that spirituality can influence pain, function, and coping among individuals with chronic pain (Ferreira-Valente et al., 2020). It is also supported by evidence indicating that spiritual wellbeing is related to pain perception and pain catastrophizing, suggesting that spiritual resources may alter the way patients appraise and tolerate pain-related distress (Luedtke & Wachholtz, 2025). In addition, studies on cancer-related pain have shown that spirituality may shape patients' experiences of suffering and coping through meaning, connectedness, and existential interpretation (Miller et al., 2024). Similarly, the mediating role of meaning in life and pain coping strategies in the association between spirituality and pain supports the view that spiritual intervention can improve distress tolerance by strengthening meaning-oriented coping processes (Krok et al., 2025).

Another important finding of the present study was the significant improvement in resilience among patients who received spirituality therapy. The intervention group showed a marked increase in total resilience from pretest to posttest, and although there was a slight decrease at follow-up

compared with posttest, follow-up scores remained significantly higher than baseline. This pattern indicates that spirituality therapy had a positive and relatively stable effect on resilience, although continued practice may be necessary to maintain the maximum post-intervention gains. This finding is consistent with previous evidence demonstrating that resilience is a key psychological factor in migraine. Buse et al. reported that resilience is associated with stress and headache-related disability, suggesting that resilient patients may be better able to manage migraine-related stress and maintain functioning despite recurrent attacks (Buse et al., 2020). Likewise, studies on psychological factors in migraine have emphasized that resilience, coping style, stress regulation, and emotional processes are important determinants of symptom experience and disability (Yu & Tan, 2024). The present result also aligns with research showing that Acceptance and Commitment Therapy can improve resilience in migraine patients, indicating that resilience is not a fixed trait but a modifiable psychological resource responsive to structured intervention (Esmaeili et al., 2021).

The effect of spirituality therapy on resilience can be explained through several therapeutic pathways. First, the intervention helped patients reconstruct their relationship with illness by reducing guilt, self-blame, hopelessness, and fear of the future. Second, it encouraged patients to identify spiritual values, sources of meaning, and personal strengths that could support them during migraine attacks. Third, it included practices such as prayer, meditation, gratitude, forgiveness, emotional journaling, and spiritual self-reflection, which may strengthen psychological flexibility and adaptive recovery after distress. These mechanisms are consistent with systematic review evidence showing that spiritual and religious interventions can improve resilience in patients with chronic diseases (Dehghani et al., 2021). They also accord with meta-analytic evidence indicating a positive relationship between spirituality or religiosity and resilience across different populations (Schwalm et al., 2022). In older adults with chronic illness, spirituality and religiosity have been identified as sources of resilience by providing meaning, hope, acceptance, and perceived support during illness-related adversity (Abu et al., 2026). Therefore, the present findings extend this body of evidence to patients with migraine and suggest that spirituality therapy may help transform the chronic experience of migraine into a context for adaptive meaning-making and psychological strengthening.

The findings also support the relevance of culturally grounded spirituality therapy in Iranian clinical contexts. In the present study, all participants reported religious beliefs, and the intervention was designed in a manner compatible with patients' spiritual and cultural background. This cultural fit may have increased engagement, emotional openness, and the perceived relevance of therapeutic exercises. Previous Iranian studies have similarly shown that spirituality-based interventions can improve resilience and psychological functioning in chronic pain and chronic illness populations. For example, spiritual therapy based on Iranian culture has been found effective in improving resilience among patients with chronic pain (Haddadi Kuhsar et al., 2019). Spirituality therapy has also been shown to improve resilience in patients with multiple sclerosis (Karimi et al., 2020) and psychological distress and resilience in patients with thalassemia (Yousefian et al., 2020). In headache-related research, Islamic spirituality-based treatment has demonstrated effects on distress tolerance, stress, anxiety, and depression among women with tension headaches (Kajbaf et al., 2017). These aligned findings suggest that spirituality therapy can be particularly effective when it is delivered in a culturally sensitive way and when it resonates with patients' values, beliefs, and lived experiences.

The present findings should also be interpreted in light of the broader psychological burden of migraine. Migraine is associated with repeated disruption of daily life, occupational limitations, social withdrawal, and healthcare use, which together increase psychological vulnerability and reduce adaptive capacity (Gendolla et al., 2024). Qualitative evidence has shown that patients experience migraine as a condition that affects identity, relationships, autonomy, and emotional life, not only as a neurological disorder (Estave et al., 2021). Psychological factors such as stress, emotional reactivity, catastrophizing, and coping difficulties are also associated with headache frequency, intensity, and disability (Klonowski et al., 2022). Accordingly, interventions that target only physical symptoms may not be sufficient for patients whose migraine is accompanied by emotional distress, existential concerns, and reduced resilience. The current study supports the view that psychological-spiritual care can complement medical treatment by addressing the emotional and meaning-related dimensions of migraine. This interpretation is consistent with systematic evidence showing the effectiveness of patient education and cognitive-behavioral treatment as non-pharmacological interventions for migraine (Meise et al., 2022), as well as evidence indicating that mindfulness-based interventions

can benefit migraine patients by improving awareness, acceptance, and stress regulation (Liao et al., 2025). Spirituality therapy may share some mechanisms with these interventions, such as acceptance, attentional regulation, and emotional awareness, while also adding specific spiritual mechanisms such as divine trust, meaning reconstruction, forgiveness, and connection with transcendent values.

The results of this study further correspond with evidence showing that spirituality and psychological interventions are increasingly recognized as relevant components of pain management. A systematic review of psychological interventions in physical pain emphasized the importance of targeting catastrophizing and resilience, both of which are closely related to how patients interpret and cope with pain (Leccese et al., 2025). Spiritual interventions in multimodal pain management have also been recommended when delivered ethically and in accordance with patients' preferences and beliefs (Kieselbach & Frede, 2024). The present intervention followed this logic by integrating spirituality with ongoing pharmacotherapy rather than replacing medical treatment. Furthermore, contemporary work on spirituality and mental health stresses the need to distinguish adaptive spirituality from maladaptive religious struggle and to address spiritual concerns carefully in psychotherapy (Dubey et al., 2025; Pargament & Exline, 2021). The spirituality therapy protocol used in this study addressed guilt, fear, self-dissatisfaction, disconnection from the world, and difficulties in accepting suffering, which are clinically relevant themes for patients living with chronic or recurrent pain. This is consistent with research showing that spirituality is associated with wellbeing and resilience across diverse populations facing adversity (Howard et al., 2023). It is also consistent with the theoretical foundation of the migraine-specific spirituality therapy package developed for patients with migraine, which was designed to affect pain intensity, pain catastrophizing, distress tolerance, and resilience (Saberi, 2026).

Another explanatory point concerns the interaction between distress tolerance and resilience. Distress tolerance may help patients withstand immediate negative emotional states during migraine attacks, whereas resilience may support longer-term recovery, adaptation, and continuity of valued life activities. The simultaneous improvement of both variables in the present study suggests that spirituality therapy may have operated at both acute and enduring levels of psychological functioning. By training patients to tolerate emotional discomfort, reinterpret suffering, seek spiritual and social connection, and develop a continuing plan for spiritual growth, the intervention may have reduced emotional vulnerability while strengthening adaptive recovery. Findings from intervention research on distress tolerance and resilience in other psychologically vulnerable populations also support the idea that these constructs are modifiable and responsive to structured therapeutic programs (Heydari et al., 2026). In migraine patients, meaning in life, perceived social support, spiritual well-being, pain catastrophizing, and quality of life have been shown to be interrelated, with pain self-efficacy playing a mediating role (Yousefi Afrashteh et al., 2023). Therefore, the effectiveness of spirituality therapy in the present study may reflect improvements in meaning, perceived inner control, and self-efficacy in coping with migraine-related distress.

## 5. Conclusion

In summary, the findings indicate that spirituality therapy, when added to pharmacotherapy, significantly improves distress tolerance and resilience in patients with migraine and that these effects remain evident at one-month follow-up. The intervention appears to have strengthened patients' capacity to endure negative emotional states, reconstruct the meaning of illness, reduce maladaptive spiritual and emotional interpretations, and maintain adaptive functioning despite recurrent pain. These results are consistent with previous studies on migraine, chronic pain, spirituality, distress tolerance, and resilience, and they support the integration of culturally sensitive spirituality therapy into comprehensive care programs for patients with migraine.

The present study had several limitations that should be considered when interpreting the findings. First, the sample size was relatively small and included patients from selected neurology and counseling centers in Bam, which may limit the generalizability of the results to broader migraine populations in other cities or healthcare settings. Second, although the study included a one-month follow-up, this period was short and does not allow firm conclusions about the long-term durability of the intervention effects. Third, the study relied on self-report questionnaires, which may be influenced by response bias, social desirability, or participants' expectations from the intervention. Fourth, although the groups were homogeneous at baseline, the non-random selection of centers may have introduced environmental differences that could not be fully controlled. Fifth, the control group received pharmacotherapy only and



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did not receive an active psychological placebo or alternative group intervention, making it difficult to separate the specific effects of spirituality therapy from nonspecific factors such as group support, therapist attention, and therapeutic expectation.

Future studies should replicate this research with larger samples, multi-center designs, and more diverse clinical populations to increase the external validity of the findings. Longer follow-up periods, such as three months, six months, and one year, are recommended to determine whether the effects of spirituality therapy remain stable over time. Future research should also compare spirituality therapy with other active psychological interventions, such as cognitive-behavioral therapy, mindfulness-based therapy, acceptance and commitment therapy, or compassion-focused therapy, to clarify its relative and specific effectiveness. It is also suggested that future studies examine possible mediating variables, such as meaning in life, pain catastrophizing, spiritual well-being, perceived social support, self-compassion, and pain self-efficacy, to identify the mechanisms through which spirituality therapy improves distress tolerance and resilience. Combining quantitative outcomes with qualitative interviews may also provide a deeper understanding of patients' lived experiences and the specific spiritual processes that contribute to therapeutic change.

In clinical practice, spirituality therapy can be considered as a complementary intervention alongside standard medical treatment for patients with migraine, particularly for individuals who experience emotional distress, reduced resilience, hopelessness, guilt, or difficulty coping with recurrent pain. Healthcare providers should assess patients' willingness to engage in spiritual or meaning-oriented interventions before implementation and should ensure that the therapy is delivered in a respectful, non-coercive, and culturally sensitive manner. Neurology clinics and counseling centers may benefit from interdisciplinary collaboration between neurologists, psychologists, counselors, and trained spirituality therapists to provide integrated care for patients with migraine. The intervention should emphasize emotional regulation, acceptance, meaning-making, self-compassion, hope, interpersonal support, and continuity of spiritual practices after treatment. Training therapists in ethically responsive spirituality-based care is also recommended so that spiritual themes can be addressed clinically without imposing beliefs or replacing evidence-based medical treatment.

## 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

The authors report no conflict of interest.

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## Ethical Considerations

This study was conducted after obtaining approval from the Research Ethics Committee of Islamic Azad University, Najafabad Branch, under the code IR.IAU.NAJAFABAD.REC.1402.191, and after registration in the Iranian Registry of Clinical Trials under the number IRCT20251021067705N2. At all stages of the research, ethical considerations, including obtaining written and verbal informed consent from the participants, maintaining the confidentiality of information, and allowing participants to withdraw from the study at any stage, were observed in accordance with the principles of the Declaration of Helsinki.

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