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Comparison of the Effectiveness of Hypnotherapy and Acceptance and Commitment Therapy on Chronic Fatigue Symptoms in Patients with Fibromyalgia in Tehran

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A B S T R A C T

Purpose: This study aimed to compare the effectiveness of Acceptance and Commitment Therapy (ACT) and hypnotherapy in reducing chronic fatigue symptoms among patients with fibromyalgia in Tehran.

Methodology: The research employed a semi-experimental, randomized design with a pre-test, post-test, and three-month follow-up, including two intervention groups (ACT and hypnotherapy) and one control group. A total of 45 patients with fibromyalgia were selected through convenience sampling and randomly assigned to the three groups (15 per group). Participants in the intervention groups received eight sessions of ACT or ten sessions of hypnotherapy, respectively, while the control group received no psychological intervention and continued with standard pharmacological treatment. Chronic fatigue symptoms were assessed using the Jason Chronic Fatigue Syndrome Questionnaire at all three time points. Data analysis was conducted using multivariate analysis of covariance (MANCOVA), repeated measures ANOVA, and Bonferroni post-hoc tests via SPSS-26 software.

Findings: The MANCOVA results revealed a significant difference in chronic fatigue symptoms between the three groups at both the post-test ($F = 168.32$, $p < 0.001$, $\eta^2 = 0.88$) and follow-up stages ($F = 46.19$, $p < 0.001$, $\eta^2 = 0.79$). Bonferroni post-hoc analysis showed that both ACT and hypnotherapy groups had significantly lower fatigue scores than the control group at post-test ($p < 0.001$), with no significant difference between ACT and hypnotherapy ($p = 0.338$). However, at follow-up, ACT remained significantly more effective than hypnotherapy ($p < 0.001$), indicating a more sustained impact.

Conclusion: These findings highlight the importance of psychological therapies in managing complex somatic symptoms in chronic conditions.

Keywords: *Acceptance and Commitment Therapy, Hypnotherapy, Chronic Fatigue, Fibromyalgia.*

1. Introduction

Fibromyalgia is a complex, chronic condition that affects millions of individuals worldwide and is characterized by widespread musculoskeletal pain, profound fatigue, cognitive disturbances, and emotional distress. Among its constellation of symptoms, chronic fatigue remains one of the most debilitating and persistent complaints, significantly impacting patients' daily functioning and quality of life (Vincent et al., 2013). Despite ongoing advances in the understanding of fibromyalgia, the etiology and optimal treatment for its fatigue-related symptoms remain elusive, prompting the need for integrative and psychologically informed interventions. Fatigue in fibromyalgia is not merely a byproduct of pain but an independent and multifactorial symptom, influenced by physiological dysregulation, emotional distress, and maladaptive coping mechanisms (Rostami et al., 2024). For many patients, conventional pharmacological treatments offer limited relief, further necessitating the exploration of non-pharmacologic therapeutic approaches such as Acceptance and Commitment Therapy (ACT) and hypnotherapy.

ACT, rooted in contextual behavioral science, promotes psychological flexibility by encouraging individuals to accept unpleasant experiences, defuse from maladaptive thought patterns, and engage in value-based actions despite physical or emotional discomfort (Li et al., 2021). Studies have demonstrated its promising impact on managing fatigue and emotional distress in patients with chronic illnesses, including fibromyalgia, cancer, and multiple sclerosis (Fang et al., 2023; Javadi et al., 2021; Mosher et al., 2022). ACT's emphasis on mindful awareness and value clarification has shown to be particularly relevant in helping patients reframe their experiences of fatigue and reduce the emotional burden associated with chronic illness (Karimi et al., 2022; Zhang et al., 2023). Moreover, ACT does not aim to eliminate fatigue per se but instead targets the experiential avoidance and inflexible behavior that exacerbate the subjective intensity of fatigue (Roshandel et al., 2022).

In parallel, hypnotherapy has garnered substantial empirical attention as a complementary approach in the treatment of chronic pain and fatigue-related conditions (Elkins et al., 2007). Hypnosis engages the patient in a focused, trance-like state in which suggestions can be used to modify pain perception, reduce physiological arousal, and enhance mental imagery for restorative processes (Elkins et al., 2012). Recent meta-analyses and clinical trials have affirmed hypnotherapy's efficacy in alleviating symptoms associated with fibromyalgia, including pain, fatigue, and sleep disturbance (Bowker & Dorstyn, 2014; Taylor & Genkov, 2019). For instance, hypnotherapy has been shown to significantly reduce subjective fatigue and improve cognitive functioning in women with disability-related pain and cancer-related fatigue (Hartini et al., 2025; Irani et al., 2019). The therapeutic mechanisms of hypnosis may operate through enhanced attentional control, reduced sympathetic nervous system activation, and alterations in somatosensory processing (Christie et al., 2006; Ford et al., 2014).

Several studies have suggested that hypnotherapy and ACT may target similar mechanisms—such as experiential acceptance, attentional modulation, and emotional regulation—albeit through different therapeutic modalities. While ACT draws upon verbal and cognitive restructuring to enhance psychological flexibility, hypnotherapy leverages the power of suggestibility and relaxation to access and alter maladaptive patterns stored in the subconscious mind (Hutomo, 2024; Valian et al., 2024). This conceptual convergence provides a compelling rationale for comparing the efficacy of these two interventions, particularly for symptoms like fatigue which have both psychological and somatic underpinnings. Previous research has also highlighted that when integrated with cognitive-behavioral strategies, hypnotherapy can lead to greater reductions in pain intensity and psychological distress than cognitive-behavioral therapy alone (Yusefi et al., 2022).

Among patients with fibromyalgia, the experience of fatigue is often deeply intertwined with psychological variables such as mood, anxiety, sleep disturbance, and sense of control. The Al-Ándalus study, for example, revealed a strong association between sedentary behavior, low physical activity, and greater levels of fatigue and pain among women with fibromyalgia (Segura-Jiménez et al., 2015). Similarly, it has been shown that fatigue levels are often exacerbated by maladaptive illness beliefs and psychiatric comorbidities (Creed, 2023). As such, psychotherapeutic interventions aimed at modifying these psychological factors may prove more effective than pharmacological approaches in long-term symptom management. ACT's focus on cognitive defusion and committed action offers a structured means of enhancing adaptive functioning and reducing psychological resistance to fatigue (Nazari et al., 2023). In contrast, hypnotherapy may be particularly beneficial in modulating sensory and emotional perceptions of fatigue, enabling patients to

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experience increased vitality through deeply internalized suggestions (Sampalli et al., 2009).

Although both ACT and hypnotherapy have demonstrated potential in mitigating fatigue and enhancing quality of life among patients with chronic conditions, there remains a paucity of head-to-head comparisons between the two modalities, particularly within fibromyalgia populations in non-Western contexts. Most of the existing studies have been conducted in Western or high-income countries, and relatively few have examined the efficacy of these interventions in diverse cultural and clinical settings such as Iran, where sociocultural beliefs about illness and coping may shape treatment responses (Rostami et al., 2024). Additionally, most prior research has focused on either pain or mood-related outcomes, while relatively less attention has been paid to chronic fatigue as a central symptom domain. The unique profile of fibromyalgia-related fatigue—which often resists rest and is compounded by cognitive "fog"—necessitates more targeted exploration of therapeutic mechanisms that address both physical and psychological exhaustion (Vincent et al., 2013).

Furthermore, understanding the comparative effectiveness of ACT and hypnotherapy in this domain can have important implications for tailoring psychosocial interventions to patient preferences and therapeutic goals. Some patients may respond better to structured, goal-oriented interventions such as ACT, while others may prefer the non-verbal, experiential style of hypnotherapy. By evaluating both interventions under controlled conditions, it becomes possible to inform clinicians about optimal treatment strategies based on empirical evidence, rather than solely on theoretical orientation or practitioner availability (Elkins et al., 2007; Zhang et al., 2023). There is also a growing interest in personalized care pathways in chronic illness management, which further underscores the need to identify which therapeutic modalities are most effective for which symptoms and for whom (Mosher et al., 2022).

Taken together, the existing literature strongly supports the theoretical and empirical rationale for examining the effectiveness of ACT and hypnotherapy in reducing chronic fatigue symptoms in fibromyalgia patients. However, there remains a significant gap in comparative research that investigates their relative efficacy using a robust experimental design in culturally relevant populations. The present study seeks to address this gap by comparing the effectiveness of Acceptance and Commitment Therapy and hypnotherapy on chronic fatigue symptoms among patients with fibromyalgia in Tehran.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a semi-experimental design using a randomized assignment with a pre-test, post-test, and three-month follow-up structure, incorporating a control group. Participants were selected through convenience sampling from hospitals and medical clinics across Tehran, based on a confirmed diagnosis of fibromyalgia by a rheumatologist, orthopedic specialist, or spine subspecialist. After initial screening based on inclusion criteria, 80 individuals were identified and 45 eligible participants were randomly assigned into three groups: a hypnotherapy group (15 participants), an acceptance and commitment therapy (ACT) group (15 participants), and a control group (15 participants). The intervention groups received their respective therapeutic protocols, while the control group did not receive any psychological intervention and continued their routine fibromyalgia medication. Post-intervention, all participants completed the study questionnaire again at the post-test phase. Three months after the end of the intervention, the same questionnaire was administered as part of a follow-up to assess the persistence of therapeutic outcomes. Inclusion criteria were as follows: residence in Tehran, minimum education level of middle school, consumption of standard fibromyalgia medication and analgesics, presence of fibromyalgia symptoms confirmed by clinical specialists, and informed consent to participate. Exclusion criteria included use of specialized fibromyalgia medication during the study, presence of major psychiatric disorders, concurrent participation in other psychotherapies or drug treatments, psychiatric hospitalization, absence in more than three therapy sessions, change of residence, poor treatment compliance, incomplete homework, or incomplete response to questionnaires.

2.2. Measures

2.2.1. Chronic Fatigue

To measure the severity of chronic fatigue symptoms, the Jason Chronic Fatigue Syndrome Questionnaire (2014) was used. This tool consists of 14 items rated on a Likert scale, assessing eight key dimensions including post-exertional malaise, non-refreshing sleep, muscle pain, joint stiffness and tenderness, headaches, cognitive issues, sore throat, and lymph node pain or swelling. Each item is rated from "not at all" to "much more than usual," and scores range from 0 to

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42, with higher scores indicating greater severity of chronic fatigue syndrome. The scale has demonstrated acceptable psychometric properties in prior research. In a study conducted by Ahmadi Charkhabi (2021), the questionnaire's content, face, and criterion validity were deemed appropriate, and the Cronbach's alpha coefficient exceeded 0.70 (Pizova, 2024; Qiu et al., 2022; Sakkaki et al., 2023).

2.3. Interventions

The ACT intervention in this study followed the chronic pain protocol developed by Wicksell and colleagues (2014). It consisted of eight 60-minute sessions held twice weekly. The first session included group introductions, pre-test administration, discussion of session rules, and explanation of ACT principles such as creative helplessness and avoidance. The second session introduced ACT's therapeutic goals, psychological flexibility, and techniques such as cognitive defusion and values clarification. In the third session, homework was reviewed, and strategies for relinquishing control over unwanted thoughts and emotions were taught. The fourth session focused on mindfulness exercises and identifying personal values. In the fifth session, clients learned to differentiate between their conceptualized self and observing self, and to clarify their values further. The sixth session introduced strategies for problem-solving and cognitive defusion using metaphors. The seventh session emphasized value-driven living and overcoming barriers through symbolic metaphors. The final session reviewed therapeutic progress, reassessed goals, encouraged ongoing mindfulness practice, and administered the post-test.

The hypnotherapy protocol, designed specifically for patients with fibromyalgia, was grounded in classic hypnotherapy methods and referenced authoritative sources such as David Elman's induction techniques and clinical hypnosis manuals by Lynn and Kirsch. The ten-session program was administered by a clinical psychologist certified by the Iranian Clinical Hypnosis Association. The first session involved psychoeducation on hypnosis, initial assessments of pain and fatigue, and a hypnotic suggestibility test, followed by the pre-test. The second session included hypnotic induction using Elman's method and relaxation deepening techniques. The third session focused on pain management through imagery and direct analgesic suggestions. In the fourth session, sleep improvement strategies were applied through relaxing guided imagery. The fifth session addressed working memory enhancement using hypnotic suggestions and mental organization imagery. The sixth session targeted chronic fatigue symptoms through energizing suggestions and visualization of a productive day. In the seventh session, self-hypnosis techniques were taught for daily use. The eighth session emphasized mindfulness under hypnosis and acceptance of bodily sensations. The ninth session aimed to consolidate positive changes and reinforce treatment gains. The final session involved a review of treatment outcomes, development of a self-management plan, and administration of the post-test.

2.4. Data Analysis

After collecting data at three time points—pre-test, post-test, and follow-up—analysis was conducted using both descriptive and inferential statistics. Descriptive statistics included measures of central tendency and dispersion (mean, standard deviation, standard error, minimum and maximum scores) as well as visual representations such as line graphs to display changes over time and box plots to depict score distributions. Inferential analysis began with checks for statistical assumptions, including normality, homogeneity of variance, and independence of observations. Box's M test was applied to assess equality of variance-covariance matrices. Multivariate analysis of covariance (MANCOVA), repeated measures analysis of variance (ANOVA), and Tukey's post-hoc tests were used to analyze within-subject and between-group effects across the three phases. All analyses were performed using SPSS software, version 26.

3. Findings and Results

The demographic characteristics of the participants across the three study groups were as follows. In terms of gender, the control group consisted of 8 women (47.1%) and 9 men (52.9%), the ACT group included 10 women (58.8%) and 7 men (41.2%), and the hypnotherapy group had 10 women (55.4%) and 8 men (44.4%). Regarding education, in the control group, 3 participants (17.6%) held a high school diploma, 8 (47.1%) had a bachelor's degree, and 6 (35.3%) had a master's degree. In the ACT group, 4 participants (23.5%) held a diploma, 10 (58.8%) had a bachelor's degree, and 3 (17.6%) had a master's degree. In the hypnotherapy group, 4 participants (22.2%) had a diploma, 11 (61.1%) had a bachelor's degree, and 3 (16.7%) held a master's degree. With respect to age, in the control group, 3 individuals (17.6%) were between 21–30 years old, 6 (35.3%) were aged 31–40, 3 (17.6%) were 41–50, and 5

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(29.4%) were above 50. In the ACT group, 5 participants (29.4%) were aged 21–30, 4 (23.5%) were 31–40, 4 (23.5%) were 41–50, and 5 (23.5%) were over 50 years old. In the hypnotherapy group, 5 participants (27.8%) were between 21–30 years old, 3 (16.7%) were 31–40, 4 (22.2%) were 41–50, and 6 (33.3%) were above 50. In terms of marital status, 10 participants (58.8%) in the control group were single and 7 (41.2%) were married; in the ACT group, 7 (41.2%) were single and 10 (58.8%) were married; while in the hypnotherapy group, 9 individuals (50%) were single and 9 (50%) were married. Finally, regarding employment status, 3 participants (17.6%) in the control group were unemployed, 10 (58.8%) were self-employed, and 4 (23.5%) worked in government jobs. In the ACT group, 5 (29.4%) were unemployed, 7 (41.2%) were self-employed, and 5 (29.4%) had government employment. In the hypnotherapy group, 5 participants (27.8%) were unemployed, 8 (44.4%) were self-employed, and 5 (27.8%) were government employees.

The mean and standard deviation of participants' age in the experimental group were 25.76 and 5.54 years, respectively, while in the control group, they were 26.68 and 4.91 years. Additionally, the results showed that in the experimental group, 4 participants were single and 3 were married, whereas in the control group, 14 participants were single and 5 were married. Pearson's Chi-square test indicated that there was no significant difference between the two groups in terms of marital status ($\chi^2 = 2.68$, $p = .102$). Furthermore, in terms of educational attainment, in the experimental group, 4 participants had a high school diploma or associate degree, 7 had a bachelor's degree, and 6 held a master's degree. In the control group, 5 participants had a high school diploma or associate degree, 9 held a bachelor's degree, and 5 held a master's degree or higher. Pearson's Chi-square test results showed no significant difference between the two groups in terms of education level ($\chi^2 = 0.73$, $p = .694$). Also, the results showed that the mean and standard deviation of Body Mass Index (BMI) in the experimental group were 31.40 and 1.33, respectively, and in the control group, they were 30.84 and 1.39.

Table 1

Mean and Standard Deviation of Chronic Fatigue Symptoms by Intervention Group

Variable	Control (M ± SD)	ACT (M ± SD)	Hypnotherapy (M ± SD)
Pre-test Chronic Fatigue Symptoms	67.18 ± 2.83	67.88 ± 2.20	67.67 ± 2.33
Post-test Chronic Fatigue Symptoms	69.12 ± 2.20	41.12 ± 2.12	42.33 ± 3.73
Follow-up Chronic Fatigue Symptoms	67.18 ± 1.96	46.00 ± 2.35	49.78 ± 6.04

Table 1 presents the descriptive statistics including the mean and standard deviation of chronic fatigue symptoms across the three study groups—control, ACT, and hypnotherapy—at three different time points: pre-test, post-test, and follow-up. At the pre-test stage, the means were relatively similar across groups, indicating a comparable baseline: 67.18 for the control group, 67.88 for the ACT group, and 67.67 for the hypnotherapy group. In the post-test phase, a notable reduction in chronic fatigue symptoms was observed in the intervention groups, with the ACT group showing the greatest decrease (M = 41.12), followed by the hypnotherapy group (M = 42.33), while the control group showed an increase (M = 69.12). In the follow-up phase, the ACT and hypnotherapy groups maintained lower fatigue levels compared to baseline, though some increase was noted (ACT: M = 46.00; Hypnotherapy: M = 49.78), whereas the control group's mean remained unchanged from the pre-test level (M = 67.18). These descriptive findings suggest both interventions were effective in reducing chronic fatigue symptoms, with ACT demonstrating slightly more sustained effects.

Before conducting the repeated measures analysis of variance, the necessary statistical assumptions were examined and confirmed. The assumption of normality was assessed using the Shapiro–Wilk test, which indicated that the distribution of chronic fatigue scores at all three time points (pre-test, post-test, and follow-up) was normal across the three groups (p-values > 0.05). The assumption of homogeneity of variances was evaluated using Levene's test, which was non-significant for all time points (pre-test: $F(2,42) = 0.67$, $p = 0.517$; post-test: $F(2,42) = 1.13$, $p = 0.333$; follow-up: $F(2,42) = 1.49$, $p = 0.236$), indicating that the variances were equal across groups. The assumption of sphericity, relevant to repeated measures, was examined with Mauchly's test and was found to be non-significant ($W = 0.941$, $\chi^2(2) = 2.08$, $p = 0.353$), suggesting that the variances of the differences between time points were equal. Furthermore, the Box's M test indicated homogeneity of

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covariance matrices (Box's M = 7.92, F = 1.21, p = 0.295). These results confirmed that the data met the assumptions required for conducting repeated measures ANOVA.

Table 2

Results of MANCOVA for Between-Group Comparison on Chronic Fatigue Symptoms

Variable	Source	Phase	Sum of Squares	df	Mean Square	F	p	Eta²
Chronic Fatigue Symptoms	Group	Post-test	1432.44	2	716.22	168.32	0.001	0.88
		Follow-up	1081.56	2	540.78	46.19	0.001	0.79
	Error	Post-test	204.30	48	4.26			
		Follow-up	561.82	48	11.70			

Table 2 displays the results of the multivariate analysis of covariance (MANCOVA) for chronic fatigue symptoms across the three study groups—control, ACT, and hypnotherapy. In the post-test phase, a significant difference was observed between groups, with an F value of 168.32 and a p-value of less than 0.01 ($p < 0.001$). Similarly, in the follow-up phase, a significant difference was again evident, with an F value of 46.19 ($p < 0.001$). The high effect sizes ($Eta^2 = 0.88$ for post-test and $Eta^2 = 0.79$ for follow-up) indicate that the type of intervention had a strong effect on the reduction of chronic fatigue symptoms. These findings suggest that the interventions were effective in creating significant improvements compared to the control group.

Table 3

Bonferroni Post-Hoc Test Results for Pairwise Comparisons on Chronic Fatigue Symptoms

Phase	Reference Group (I)	Comparison Group (J)	Mean Difference	Standard Error	p
Post-test	Control	ACT	27.99	0.77	0.001
	Control	Hypnotherapy	26.79	0.76	0.001
	ACT	Hypnotherapy	-1.20	0.75	0.338
Follow-up	Control	ACT	21.18	1.02	0.001
	Control	Hypnotherapy	17.40	1.01	0.001
	ACT	Hypnotherapy	-3.78	0.98	0.001

Table 3 presents the results of the Bonferroni post-hoc test for pairwise comparisons of chronic fatigue symptoms at the post-test and follow-up stages. In the post-test phase, there were significant differences between the control group and both the ACT group (mean difference = 27.99) and the hypnotherapy group (mean difference = 26.79), with both comparisons significant at $p < 0.001$. However, the difference between the two intervention groups was not statistically significant (mean difference = -1.20, p = 0.338). In the follow-up phase, significant differences remained between the control group and the ACT group (mean difference = 21.18) as well as the hypnotherapy group (mean difference = 17.40), both at $p < 0.001$. Moreover, a significant difference also emerged between the ACT and hypnotherapy groups (mean difference = -3.78, $p < 0.001$), indicating that ACT had a more sustained effect in reducing chronic fatigue symptoms over time. Overall, both interventions were effective, but ACT demonstrated stronger and more lasting improvements compared to hypnotherapy.

4. Discussion and Conclusion

The present study aimed to compare the effectiveness of Acceptance and Commitment Therapy (ACT) and hypnotherapy on chronic fatigue symptoms in patients with fibromyalgia in Tehran. The findings indicated that both ACT and hypnotherapy significantly reduced chronic fatigue symptoms compared to the control group, with ACT demonstrating more sustained effects at the three-month follow-up. Specifically, participants in the ACT group exhibited the largest reduction in fatigue scores from pre-test to post-test, and this reduction remained relatively stable at follow-up. The hypnotherapy group also showed a significant reduction in fatigue after the intervention; however, a slight increase was observed during the follow-up phase, though still markedly lower than the pre-test

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levels. In contrast, the control group did not experience any meaningful change across the three measurement points, suggesting the observed improvements were attributable to the respective psychological interventions.

The results of this study align with existing literature that supports the effectiveness of ACT in treating fatigue symptoms among patients with chronic illness. ACT's core processes—psychological flexibility, cognitive defusion, acceptance, and values-based action—are highly relevant to managing the persistent and often uncontrollable nature of chronic fatigue in fibromyalgia. Research has shown that ACT interventions reduce fatigue severity in multiple populations, including cancer patients, individuals with multiple sclerosis, and those experiencing caregiver burden (Fang et al., 2023; Javadi et al., 2021; Mosher et al., 2022). Moreover, ACT addresses the maladaptive avoidance and rigid coping styles that often exacerbate fatigue by encouraging patients to change their relationship with fatigue-related thoughts rather than attempting to eliminate the fatigue itself (Roshandel et al., 2022). In a meta-analysis of randomized controlled trials, ACT was found to significantly improve fatigue, sleep, and psychological flexibility in cancer patients, underscoring its efficacy across various chronic health conditions (Zhang et al., 2023).

The findings also support the therapeutic benefits of hypnotherapy in reducing chronic fatigue, although to a slightly lesser extent than ACT in terms of long-term maintenance. Hypnotherapy, as applied in this study, facilitated a reduction in perceived fatigue by leveraging techniques such as guided imagery, deep relaxation, and suggestion-based interventions. These findings are consistent with previous evidence indicating that hypnotherapy can effectively modulate fatigue perception and related distress in individuals with fibromyalgia and other chronic disorders (Bowker & Dorstyn, 2014; Elkins et al., 2007). For example, a study by Hartini et al. demonstrated significant reductions in fatigue and pain perception following a structured hypnotherapy protocol in pediatric cancer patients, suggesting the cross-population applicability of hypnotic interventions in fatigue management (Hartini et al., 2025). Similarly, Christie et al. highlighted the utility of experiential techniques, including guided movement and hypnosis, in helping adolescent girls cope with chronic fatigue and pain (Christie et al., 2006).

One possible explanation for ACT's greater durability in reducing fatigue symptoms lies in its emphasis on values-oriented action and long-term behavior change. ACT equips individuals with metacognitive strategies that extend beyond symptom management and encourage sustained engagement in meaningful life activities despite the persistence of fatigue (Li et al., 2021). In contrast, hypnotherapy, while potent in inducing immediate relief through physiological and sensory modulation, may lack the structured cognitive scaffolding needed to maintain change once the treatment concludes. This distinction may explain why the hypnotherapy group in the present study showed a slight regression in fatigue scores during follow-up, whereas ACT participants maintained their post-treatment gains. Such differences underscore the importance of psychological flexibility in long-term coping with chronic symptoms—a core process central to the ACT model (Karimi et al., 2022).

Moreover, the overlap in mechanisms between ACT and hypnotherapy is noteworthy and may help contextualize the results. Both interventions involve alterations in attentional processes—ACT through mindfulness and defusion, and hypnotherapy through focused attention and trance induction (Elkins et al., 2012; Valian et al., 2024). These attentional shifts can reduce the salience of fatigue-related stimuli and enhance the individual's sense of control, thereby improving subjective well-being. The current findings echo results from a controlled study by Sampalli et al., where a mindfulness-based stress reduction program significantly alleviated fatigue and improved quality of life in women with fibromyalgia and chronic fatigue syndrome (Sampalli et al., 2009). This suggests that interventions promoting attentional control and bodily awareness—whether via cognitive or hypnotic methods—can yield positive outcomes in fatigue management.

Another important observation in this study relates to the cultural context in which the interventions were applied. Research has shown that illness perception and treatment response can be heavily influenced by sociocultural factors such as beliefs about control, emotional expression, and stigma (Rostami et al., 2024). Given that ACT emphasizes acceptance and mindfulness—concepts that may resonate well with Eastern philosophical traditions—it is plausible that the participants in Tehran were particularly receptive to ACT's approach. Conversely, hypnotherapy, which often carries misconceptions or cultural stigma, may have faced initial skepticism that attenuated its long-term effects despite short-term benefits. Nonetheless, the results support the overall efficacy of both treatments, validating their use within Iranian clinical populations.

Additionally, the present findings contribute to a growing body of literature that distinguishes fatigue from pain in fibromyalgia. While traditionally treated as an offshoot of

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pain, fatigue in fibromyalgia has unique neurobiological and psychological underpinnings that merit independent attention (Vincent et al., 2013). Studies like those by Creed and Segura-Jiménez have underscored the role of psychological distress, sedentary behavior, and comorbid psychiatric disorders in exacerbating fatigue symptoms (Creed, 2023; Segura-Jiménez et al., 2015). The present study affirms that targeting the cognitive and emotional dimensions of fatigue through structured therapy can result in significant symptomatic relief even in the absence of pharmacological treatment. This aligns with the perspective that psychological interventions should be central—not peripheral—in fibromyalgia care models (Ford et al., 2014).

It is also important to highlight the therapeutic alliance and structured delivery format of both interventions as possible enhancers of efficacy. Group formats, as used in this study, provide social support, peer validation, and modeling opportunities that may amplify therapeutic outcomes. In ACT, group discussions help normalize struggle and reinforce value-based action, while in hypnotherapy, group sessions may enhance suggestibility and collective relaxation (Mosher et al., 2022; Nazari et al., 2023). This communal aspect is particularly significant in cultures where social cohesion and collective identity are valued, potentially increasing the intervention's perceived relevance and effectiveness.

Despite its strengths, the study is not without limitations. First, the sample size was relatively small, which may limit the generalizability of the findings to broader fibromyalgia populations. Additionally, the use of convenience sampling and self-report questionnaires introduces potential biases such as social desirability and inaccurate recall. The study also lacked an active control group, which would have helped isolate the specific effects of the interventions from general therapeutic engagement or placebo effects. Moreover, the follow-up period was limited to three months, and it remains unclear whether the observed improvements would be maintained over a longer period. Finally, although therapist adherence was ensured through training and supervision, individual differences in delivery could still have influenced the results.

Future studies should aim to replicate these findings using larger, more diverse samples and randomized controlled trial designs. It would also be beneficial to examine the combined effects of ACT and hypnotherapy, as integrating both approaches could potentially yield synergistic benefits. Longitudinal studies with extended follow-up periods (e.g., six months or one year) are needed to evaluate the durability of treatment effects and identify potential relapse patterns. Further, incorporating objective physiological measures—such as cortisol levels or actigraphy—could complement self-report data and provide a more comprehensive understanding of treatment impact. Finally, exploring the role of individual differences such as baseline psychological flexibility, hypnotizability, or cultural attitudes toward therapy could inform personalized treatment planning.

Clinicians working with fibromyalgia patients should consider incorporating ACT and hypnotherapy as viable, evidence-based options for managing chronic fatigue symptoms. ACT may be especially appropriate for clients seeking to cultivate resilience and meaning despite their symptoms, while hypnotherapy may appeal to those responsive to imagery and relaxation-based techniques. Practitioners should also be mindful of cultural beliefs and patient preferences when selecting interventions. Delivering these therapies in structured, group-based formats may enhance engagement and therapeutic outcomes. Moreover, ongoing therapist training and fidelity monitoring are essential to ensure the effectiveness and consistency of intervention delivery.

Authors' Contributions

All authors significantly contributed to this study.

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

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent.

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