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Comparison of the Effectiveness of Integrating Acceptance and Commitment Therapy with Pharmacotherapy and Integrating Emotional Schema Therapy with Pharmacotherapy on Quality of Life and Symptoms in Patients with Fibromyalgia

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A B S T R A C T

Purpose: The present study aimed to compare the effectiveness of acceptance and commitment therapy (ACT), emotional schema therapy, and pharmacotherapy on the quality of life and symptoms of patients with fibromyalgia.

Methods and Materials: This semi-experimental study employed a pretest-posttest design with two experimental groups and one control group. From the population of women with fibromyalgia in Tehran, 51 participants were selected through convenience sampling and randomly assigned to three research groups. To assess quality of life, the SF-36 questionnaire was used, including two subscales: Physical Component Summary (PCS) and Mental Component Summary (MCS). Montazeri et al. reported its reliability to range between 0.77 and 0.90. The Fibromyalgia Impact Questionnaire-Revised (FIQR), which measures functioning, overall impact, and symptom severity, was used to assess symptoms. Moini et al. (2015) reported the reliability of this questionnaire as 0.82. The experimental groups received either ACT combined with pharmacotherapy, or emotional schema therapy combined with pharmacotherapy, while the control group received only pharmacotherapy. Data were analyzed using repeated measures analysis and post-hoc tests.

Findings: Compared to pharmacotherapy alone, the integration of acceptance and commitment therapy with pharmacotherapy significantly improved psychological well-being and fibromyalgia symptoms in patients with fibromyalgia ($P < 0.01$). Similarly, compared to pharmacotherapy alone, the integration of emotional schema therapy with pharmacotherapy improved psychological well-being in patients with fibromyalgia ($P < 0.01$), although physical health did not change and symptoms were reduced. However, the difference between the effects of emotional schema therapy combined with pharmacotherapy and ACT combined with pharmacotherapy on either dimension of quality of life or symptoms was not statistically significant ($P > 0.05$).

Conclusion: Considering the effectiveness of both ACT and emotional schema therapy in improving quality of life and reducing disease symptoms, and given the absence of significant differences between the two therapeutic methods, both ACT and emotional schema therapy can be used in combination with pharmacotherapy to enhance quality of life and reduce symptoms in patients.

Keywords: *Fibromyalgia, Quality of Life, Fibromyalgia Symptoms, Pharmacotherapy, Acceptance and Commitment Therapy, Emotional Schema Therapy.*

1. Introduction

Around the world, women experience greater levels of chronic pain and stress (Terol Cantero et al., 2021). One of the chronic pain conditions with a higher prevalence among women is fibromyalgia (Yamin, 2025). Fibromyalgia syndrome consists of a cluster of complaints including chronic widespread pain accompanied by tenderness at specific points during clinical examination, as well as symptoms such as fatigue, sleep disturbances, headaches, mood-cognitive disorders, and morning joint stiffness (Creed, 2023). According to the criteria established by the American College of Rheumatology, pain must be distributed across all four quadrants of the body (upper and lower regions, right and left sides), and must also be present in the axial skeleton and at a minimum of 11 out of 18 designated tender points during examination to be diagnosed as fibromyalgia (Giorgi et al., 2022). The prevalence of the disorder varies by time and location and has been estimated to range from 1% to 1.5%, being more common among individuals over 40 years of age (Marques et al., 2017).

Many individuals with fibromyalgia also experience cognitive and psychological symptoms, including memory loss, various anxiety disorders (such as generalized anxiety and PTSD), mood disorders, obsessive-compulsive disorder, and psychotic disorders (Rowe et al., 2019). The presence of depressive symptoms and other psychological problems is associated with increased pain severity and reduced quality of life in these patients (Mascarenhas et al., 2021). Chronic pain is one of the most critical symptoms of this condition, severely affecting the personal, familial, and occupational lives of patients. Although pain is essential for survival, uncontrolled and prolonged pain loses its warning and adaptive function, negatively impacting quality of life and creating various challenges for individuals (Yasaei et al., 2023).

Pharmacological treatment is typically the first-line approach for managing this disorder. However, medication alone appears insufficient to achieve satisfactory symptom reduction or overall functional improvement in patients with fibromyalgia, and the prognosis for improvement remains poor (Trainor et al., 2018).

One promising treatment option for individuals with fibromyalgia (FM) is psychotherapy. Acceptance and Commitment Therapy (ACT) is one of the more promising psychotherapeutic approaches (Ljótsson et al., 2014). The American Psychological Association recognizes ACT as an empirically supported and well-researched treatment for chronic pain (Cojocaru et al., 2024). Research findings indicate that ACT-based group therapy leads to improvements and reductions in depression, stress, overall pain expression, pain intensity, and pain catastrophizing, while increasing pain acceptance, enhancing functioning, and improving quality of life (Sabour & Kakabraee, 2016). This treatment emphasizes improving functioning by enhancing an individual's ability to act according to personal values even in the presence of pain and distress (Cojocaru et al., 2024). Substantial evidence suggests that individuals who exert more effort to eliminate pain or use distraction-based strategies experience greater pain and distress than those who confront and accept pain-related emotions, thoughts, and sensations (Gómez-Pérez et al., 2020).

Another comparable intervention is Emotional Schema Therapy, which focuses on increasing present-moment awareness, encouraging full engagement with personal experiences, and

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expanding individuals' observational capacities (Gross et al., 2016). The unique value of Emotional Schema Therapy lies in its direct targeting of individuals' conceptualizations and strategies for dealing with difficult emotions, thereby making the therapeutic intervention more effective (Leahy, 2011). Existing research in the domain of Emotional Schema Therapy has demonstrated its efficacy across a range of disorders (Morvaridi et al., 2019; Rezaei et al., 2015) and highlighted its significant role in promoting psychological well-being and positive treatment outcomes (Erfan et al., 2018).

Patients with fibromyalgia endure substantial pain that adversely affects their quality of life. Despite the importance of psychological treatments for individuals with fibromyalgia—particularly ACT and Emotional Schema Therapy—no studies in Iran have yet examined the effectiveness of these therapeutic approaches. Therefore, the present study aimed to compare the effectiveness of Emotional Schema Therapy, Acceptance and Commitment Therapy, and pharmacotherapy on the quality of life and overall functioning of patients with fibromyalgia.

2. Methods and Materials

2.1. Study Design and Participants

The present study utilized a quasi-experimental design with a pretest-posttest structure, including two experimental groups and one control group. The statistical population consisted of all women diagnosed with fibromyalgia who had referred to clinics and hospitals across Tehran. Coordination was established with a number of physical medicine and pain specialists, and some agreed to refer potential fibromyalgia cases to a psychologist upon encounter. Individuals who were referred underwent an initial assessment to evaluate inclusion and exclusion criteria and to confirm a fibromyalgia diagnosis. Based on previous studies, a sample size of 15 participants per group is recommended for experimental studies. Considering the likelihood of attrition, 51 participants were selected through convenience sampling and allocated randomly into three groups of 17 individuals each. Group 1 received Acceptance and Commitment Therapy (ACT), Group 2 received Emotional Schema Therapy, and Group 3 served as the control group. All three groups received pharmacological treatment for fibromyalgia.

Inclusion criteria for the study were the presence of all diagnostic criteria for fibromyalgia based on the World Health Organization's descriptive classification of diseases and confirmed diagnosis by a physician, a minimum of primary school education, age between 30 and 50 years, normal routine laboratory test results, absence of other causes of pain, and possessing a psychological mindset.

Exclusion criteria included the presence of comorbid conditions that cause secondary fibromyalgia such as rheumatoid arthritis, thyroid dysfunction, vitamin D deficiency, or other coexisting illnesses that interfere with treatment processes such as hypertension, hyperglycemia, and diabetes; patients exhibiting severe psychological symptoms requiring pharmacotherapy or already undergoing treatment; patients who had been receiving treatment for fibromyalgia for over four months; individuals undergoing additional non-pharmacological interventions; and those who expressed unwillingness to participate.

Participants were allocated to groups in the order of referral: the first individual was placed in the ACT group, the second in the Emotional Schema Therapy group, and the third in the

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pharmacotherapy-only group. This sequence continued until all three groups were complete. The control group was informed that their treatment would commence three months later. After explaining the research objectives and obtaining informed consent, participants completed pretest questionnaires. Individuals not meeting the inclusion criteria were excluded, and 51 eligible participants were finalized. Two groups received eight weekly sessions (120 minutes each) of Emotional Schema Therapy, and two groups received eight sessions of ACT. No intervention was provided to the control group. Upon completion of the intervention period, posttest questionnaires were completed by participants in all groups. Participants were followed up again two months later to complete the questionnaires, and data were subsequently collected and analyzed using repeated measures and post-hoc tests.

2.2. Measures

2.2.1. Quality of Life

The SF-36 questionnaire was used to assess health status and quality of life. This 36-item instrument includes two subscales: Physical Component Summary (PCS) and Mental Component Summary (MCS). Higher scores indicate better health status. The reliability and validity of the SF-36 have been confirmed in Iran, with Cronbach's alpha reported between 0.77 and 0.90 (Montazeri et al., 2006).

2.2.2. Fibromyalgia Impact

To assess the impact of fibromyalgia on patient functioning, the original questionnaire was developed by Dr. Burckhardt and colleagues in 1991. In 2009, Dr. Bennett and colleagues introduced a revised and modified version, the FIQR. This questionnaire evaluates functioning, overall impact, and symptom severity and also includes items on memory, pain sensitivity, balance, and environmental sensitivity. The FIQR contains 21 items, each rated on an 11-point scale from 0 to 10, with 10 indicating the worst outcome. It consists of three sections: Function (9 items), Overall Impact (2 items), and Symptoms (10 items). The reliability and validity of this questionnaire were confirmed in Iran by Mobini et al. (2016), with Cronbach's alpha ranging from 0.77 to 0.90 across various domains (Mobini et al., 2016).

2.3. Interventions

2.3.1. Emotional Schema Therapy

In the Emotional Schema Therapy intervention, the first session introduced participants to one another and their health issues, provided a conceptual framework for emotional schemas and their effects on physical and psychological health, presented the emotional schema model, validated patients' emotional experiences, and explained fibromyalgia. The second session reviewed homework and validated emotions, introduced an emotion model to patients, and identified maladaptive strategies and emotional schemas. The third session focused on emotional validation and the use of identification and labeling techniques. The fourth session emphasized normalization of emotions and fundamental acceptance of feelings. In the fifth session, participants challenged emotional misconceptions and practiced emotional acceptance. The sixth session encouraged patients to relinquish maladaptive strategies, strengthened emotional processing, and reinforced adaptive coping. The seventh session targeted negative emotional beliefs, introduced the concept of productive

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suffering, and applied cognitive restructuring. The final session integrated all techniques, linked emotional regulation to higher personal values, used emotion "space-making" techniques, addressed remaining issues, and provided a written summary of the therapy process and techniques to participants.

2.3.2. Acceptance and Commitment Therapy (ACT)

In the ACT intervention, the first session involved therapist introduction, group member familiarization, establishment of therapeutic rapport, an overview of ACT and its key components, ground rules for sessions, and psychoeducation on chronic pain and related treatments. The second session reviewed prior experiences, explored patients' expectations of ACT, assessed readiness for change, and introduced the concept of creative hopelessness, followed by homework assignments. The third session identified maladaptive control strategies and highlighted their ineffectiveness, introduced the concept of acceptance, and differentiated it from failure, denial, and resistance, while addressing challenges of illness acceptance. The fourth session introduced the concepts of self-as-context and cognitive defusion, applied defusion techniques and metaphor-based interventions, and reduced fusion with thoughts and emotions. The fifth session deepened the distinction between self and experiences, introduced present-moment awareness through mindfulness exercises like breathing and walking, and emphasized nonjudgmental observation. The sixth session focused on clarifying personal values, highlighted choice-making capacity, and integrated mindfulness with value-oriented behavior. In the seventh session, participants identified their core values, set specific, measurable, and value-consistent goals, and developed actionable behavioral plans while addressing the risks of outcome-focused thinking. The final session reinforced the concepts of willingness and commitment, prepared participants for relapse prevention, reviewed session content and homework, and concluded with post-intervention assessment and gratitude for participation.

2.4. Data Analysis

Data from this study were analyzed using repeated measures ANOVA and Bonferroni post-hoc tests via SPSS software, with a significance level set at 0.05.

3. Findings and Results

In this study, fifty-one individuals participated across three groups. In the first group, one participant withdrew during the third session due to lack of interest, and another left the study because of family crises. In the second group, one participant dropped out during the second session due to personal commitments. Ultimately, the analysis was conducted on forty-five participants. The mean and standard deviation of participants' age in the emotional schema therapy plus pharmacotherapy group was 39/48 ± 7/12, in the acceptance and commitment therapy plus pharmacotherapy group it was 40/71 ± 6/69, and in the pharmacotherapy-only group it was 38/29 ± 7/48. In the emotional schema therapy group, five participants were single and ten were married. In the other two groups, four were single and eleven were married. In each group, six participants had education levels below high school. Seven participants in the emotional schema therapy group and six participants in each of the other two groups had a high school diploma. Two

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participants in the emotional schema therapy group and three in each of the other groups had education levels above high school. Table 1 presents the mean, standard deviation, and Shapiro–Wilk index for the dimensions of quality of life (physical and mental health) and fibromyalgia functioning across the three stages of pretest, posttest, and follow-up for the study groups.

Table 1

Means, Standard Deviations, and Shapiro–Wilk Test Results for Quality of Life Dimensions and Fibromyalgia Indicators Across Time Points by Group

Variable	Group	Time Point	M	SD	S–W (p)
Physical Health	Emotional Schema + Pharmacotherapy	Pretest	37.67	8.95	.962 (.725)
		Posttest	39.06	7.69	.939 (.366)
		Follow-up	42.40	8.31	.959 (.674)
	ACT + Pharmacotherapy	Pretest	39.40	12.76	.896 (.084)
		Posttest	41.80	5.97	.975 (.925)
		Follow-up	42.93	6.62	.966 (.789)
	Pharmacotherapy Only	Pretest	38.21	10.29	.916 (.169)
		Posttest	41.73	11.07	.920 (.191)
		Follow-up	40.33	5.96	.889 (.065)
Mental Health	Emotional Schema + Pharmacotherapy	Pretest	41.73	7.62	.933 (.301)
		Posttest	48.75	6.61	.873 (.038)
		Follow-up	50.20	5.70	.947 (.474)
	ACT + Pharmacotherapy	Pretest	42.67	6.47	.956 (.617)
		Posttest	50.87	6.85	.918 (.183)
		Follow-up	52.73	6.65	.899 (.093)
	Pharmacotherapy Only	Pretest	43.33	5.04	.968 (.834)
		Posttest	44.60	8.27	.969 (.847)
		Follow-up	45.73	6.21	.920 (.192)
Symptoms	Emotional Schema + Pharmacotherapy	Pretest	34.53	6.31	.958 (.650)
		Posttest	25.13	4.06	.934 (.316)
		Follow-up	21.80	4.82	.951 (.536)
	ACT + Pharmacotherapy	Pretest	32.33	5.27	.951 (.537)
		Posttest	25.20	3.82	.928 (.258)
		Follow-up	21.27	4.06	.962 (.732)
	Pharmacotherapy Only	Pretest	33.00	4.92	.955 (.604)
		Posttest	28.53	3.92	.910 (.136)
		Follow-up	26.20	3.85	.914 (.155)
Functioning	Emotional Schema + Pharmacotherapy	Pretest	19.60	2.67	.965 (.615)
		Posttest	14.13	2.30	.915 (.161)
		Follow-up	13.87	2.45	.925 (.231)
	ACT + Pharmacotherapy	Pretest	20.20	2.70	.978 (.953)
		Posttest	13.15	2.76	.877 (.042)
		Follow-up	12.90	2.68	.964 (.755)
	Pharmacotherapy Only	Pretest	19.35	2.35	.944 (.434)
		Posttest	16.46	2.23	.934 (.311)
		Follow-up	15.73	2.57	.921 (.198)
Overall Impact	Emotional Schema + Pharmacotherapy	Pretest	14.13	2.52	.910 (.136)

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	Posttest	10.60	1.45	.894 (.074)
	Follow-up	9.47	1.55	.934 (.308)
ACT + Pharmacotherapy	Pretest	14.67	2.54	.945 (.445)
	Posttest	10.47	2.03	.960 (.694)
	Follow-up	8.93	1.62	.969 (.848)
Pharmacotherapy Only	Pretest	14.00	2.19	.918 (.181)
	Posttest	12.80	1.74	.898 (.087)
	Follow-up	11.67	1.13	.870 (.034)

Table 1 shows that the Shapiro–Wilk index for the physical health dimension of quality of life in the emotional schema therapy plus pharmacotherapy group at the posttest stage is significant at the 0/05 level. The Shapiro–Wilk index for the functioning dimension in the ACT plus pharmacotherapy group at posttest, and for overall impact in the pharmacotherapy-only group at posttest, was also significant at the 0/05 level. Nevertheless, the significance level of the Shapiro–Wilk index indicates that deviations from normality were not severe, and the deviation is unlikely to affect the results of the analysis. Furthermore, Levene's test results revealed no significant differences in error variance of quality of life dimensions across the groups.

Multivariate analysis of variance indicated that prior to administering the independent variables, no significant differences existed among the groups in quality of life dimensions (F(4, 82) = 0/985, P < 0/05). The F-value for pretest comparison of fibromyalgia symptoms across the three groups was also non-significant at the 0/05 level (F(6, 80) = 1/29, P < 0/05). Based on this, it was concluded that the assumption of independence between pretest variables and group membership holds for both quality of life dimensions and fibromyalgia symptoms.

Table 2

Results of Multivariate Analysis of the Effect of Independent Variables on Quality of Life and Functioning

Variable	Wilks' Lambda	F	df (Error, Effect)	p	η^2
Physical Health	0.944	0.59	(4, 82)	0.668	0.028
Mental Health	0.744	3.27	(4, 82)	0.015	0.138
Functioning	0.706	3.90	(4, 82)	0.006	0.160
Overall Impact	0.634	5.25	(4, 82)	0.001	0.204
Symptoms	0.516	8.05	(4, 82)	0.001	0.282

The multivariate analysis results in Table 2 show that, unlike the physical health dimension of quality of life, the group × time interaction effect on mental health is statistically significant at the 0.05 level (Wilks' Lambda = 0.744, F(4, 82) = 3.27, p = 0.015, η^2 = 0.138). The group × time interaction effect on functioning (Wilks' Lambda = 0.706, F(4, 82) = 3.90, p = 0.006, η^2 = 0.160), overall impact (Wilks' Lambda = 0.634, F(4, 82) = 5.25, p = 0.001, η^2 = 0.204), and fibromyalgia symptoms (Wilks' Lambda = 0.516, F(4, 82) = 8.05, p = 0.001, η^2 = 0.282) is significant at the 0.01 level.

Next, the assumption of homogeneity of variance-covariance matrices was tested using Mauchly's test. The chi-square value for physical health was significant at the 0.05 level ($\chi^2(2)$ = 7.45, W = 0.834, p < 0.01). The chi-square value

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for symptoms was also significant at the 0.05 level ($\chi^2(2) = 6.807$, $W = 0.847$, $p < 0.05$). These findings indicate that the sphericity assumption for the symptoms dimension of fibromyalgia was violated; thus, degrees of freedom were adjusted using the Greenhouse–Geisser correction. Table 5 presents the results of the mixed ANOVA in explaining the effects of independent variables on quality of life dimensions.

Table 3

Results of Mixed ANOVA on the Effect of Independent Variables on Dimensions of Quality of Life

Variable	SS	Error SS	df (Error, Effect)	F	p	η^2
Physical Health	84.43	4126.67	(3.43, 72.04)	0.43	0.758	0.020
Mental Health	302.22	1378.93	(4, 84)	4.60	0.002	0.180
Functioning	80.74	299.02	(4, 84)	5.67	0.001	0.213
Overall Impact	55.59	163.11	(4, 84)	7.17	0.001	0.254
Symptoms	161.16	388.98	(3.47, 72.86)	8.70	0.001	0.293

Table 3 shows that the group × time interaction effect on the mental health dimension of quality of life is significant at the 0.01 level ($F(4, 84) = 4.60$, $p = 0.002$, $\eta^2 = 0.180$). The interaction effect is also significant for functioning ($F(4, 84) = 5.67$, $p = 0.001$, $\eta^2 = 0.213$), overall impact ($F(4, 84) = 7.17$, $p = 0.001$, $\eta^2 = 0.254$), and fibromyalgia symptoms ($F(3.47, 72.86) = 8.70$, $p = 0.001$, $\eta^2 = 0.293$). These results indicate that the implementation of independent variables led to significant changes in fibromyalgia symptoms.

Subsequently, post-hoc tests were used to compare the effects of independent variables on mental health and fibromyalgia functioning, as shown in Table 6.

Table 3 results also revealed that the difference in changes in the physical health dimension of quality of life during the study across the three groups was not statistically significant.

Further, Table 3 results show that, compared to pharmacotherapy alone, the combination of emotional schema therapy with pharmacotherapy significantly increased mental health in patients with fibromyalgia ($F(2, 56) = 5.67$, $p < 0.01$). Similarly, the combination of ACT with pharmacotherapy also significantly improved mental health compared to pharmacotherapy alone ($F(2, 56) = 8.03$, $p < 0.01$).

Confirming these findings, descriptive findings illustrate that in both integrated treatment groups, as well as the pharmacotherapy-only group, the mean scores of mental health improved in posttest and follow-up stages compared to the pretest. However, the rate of improvement was steeper in the groups receiving combined psychological and pharmacological interventions.

It should be noted that, based on the above table results, the difference in effect between the two combined treatment approaches was not statistically significant at the 0.05 level.

4. Discussion and Conclusion

The present study was conducted to compare the effectiveness of Acceptance and Commitment Therapy (ACT), Emotional Schema Therapy, and pharmacotherapy on quality of life, symptoms, and overall functioning in patients with fibromyalgia. The integration of Emotional Schema Therapy with pharmacotherapy, as well as the integration of ACT with pharmacotherapy,

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was more effective than pharmacotherapy alone in improving the mental health component of quality of life in individuals with fibromyalgia. However, there was no statistically significant difference between the two integrated therapies in terms of their effects on quality of life.

ACT addresses avoidance patterns in individuals with fibromyalgia through mindfulness, cognitive defusion, acceptance, present-moment awareness, value clarification, and commitment to values-based actions. Emotional Schema Therapy, on the other hand, disrupts maladaptive avoidance patterns by altering negative emotional schemas such as control, comprehensibility, duration, blame, and acceptance. Therefore, both therapies increase cognitive flexibility in individuals with fibromyalgia by reducing avoidance patterns, and this increased psychological flexibility can lead to improvements in quality of life.

The effectiveness of Emotional Schema Therapy in this study aligns with previous research (Erfan et al., 2018; Ljótsson et al., 2014; Morvaridi et al., 2019; Rezaei et al., 2015; Rowe et al., 2019). The results for ACT are consistent with the previous findings (Cojocaru et al., 2024; Gómez-Pérez et al., 2020; Luciano et al., 2017; Sabour & Kakabraee, 2016; Wicksell & Vowles, 2015).

In Emotional Schema Therapy, it is understood that patients often suffer significant damage to their quality of life since the onset of chronic pain, which is typically perceived as worsening over time. The development of negative emotional schemas creates a cycle of distress characterized by avoidance, isolation, low mood, confusion, hopelessness, negative self-evaluation, perceived duration, a sense of collapse, and loss of control, all of which exacerbate despair (Leahy, 2011). In therapy, patients are taught to rename the emotion associated with their pain and normalize it. They reappraise the situation, realize it is not catastrophic, and learn to redirect their attention through alternative activities, thereby improving their condition. As a result of these schema changes, patients develop better adaptability and are less likely to fall into destructive cycles such as blaming others, social isolation, family conflict, and excessive sick leave that negatively affect their quality of life (Rowe et al., 2019).

ACT never views clients as failures, damaged, or hopeless. Instead, it offers a sense of empowerment, suggesting that a meaningful and values-driven life is accessible to all (Hughes et al., 2017).

The findings also showed that integrating Emotional Schema Therapy with pharmacotherapy, and ACT with pharmacotherapy, both reduced fibromyalgia symptoms more effectively than pharmacotherapy alone.

Fibromyalgia, as a condition associated with persistent pain, influences patients' emotions and thoughts and leads to the formation of negative emotional schemas. These schemas can result in oversimplified views of emotions (e.g., believing one should feel only one way about everything), emotional suppression (e.g., believing emotions should be ignored), emotional numbness (difficulty experiencing emotion), inhibition of emotional expression, and rumination (feeling emotionally stuck or believing one must feel unpleasant emotions continually). These maladaptive beliefs drive individuals toward negative emotional experiences, fostering a perception that emotions are incomprehensible, uncontrollable, and enduring (Gross et al., 2016; Leahy, 2011). These beliefs intensify disease-related problems, increase the severity and perception of pain, and can lead individuals to blame others, elevate their expectations, and

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create or exacerbate family conflicts. Consequently, new maladaptive schemas related to approval, guilt and shame, and value conflicts emerge, eventually undermining acceptance of the disease (Mascarenhas et al., 2021). The findings are consistent with the prior research (Erfan et al., 2018; Leahy, 2011; Ljótsson et al., 2014; Mascarenhas et al., 2021).

Cognitive changes in ACT help individuals to consciously engage with their lives, and even in the presence of painful private experiences like stress, fatigue, and pain, make continuous value-based choices despite verbal fusion with thoughts about these symptoms (Cojocaru et al., 2024). This reduces avoidance strategies and increases activity levels (Gómez-Pérez et al., 2020). In this way, individuals with fibromyalgia can overcome pain and reduce their symptoms. These findings are aligned with the prior research (Cojocaru et al., 2024; Gómez-Pérez et al., 2020; Sabour & Kakabraee, 2016).

There was no statistically significant difference between the effectiveness of integrated Emotional Schema Therapy and ACT with pharmacotherapy in reducing fibromyalgia symptoms.

Both ACT and Emotional Schema Therapy were effective in reducing pain and improving quality of life in individuals with fibromyalgia. As demonstrated in this study, both therapies equally reduced symptoms and improved functioning, likely because they operate through similar mechanisms in this population. It has been noted that both interventions emphasize avoidance, unsuccessful suppression efforts, values, psychological flexibility, and acceptance (Leahy, 2011).

In conclusion, the integration of ACT with pharmacotherapy was more effective than pharmacotherapy alone, and so was the integration of Emotional Schema Therapy with pharmacotherapy. However, there was no significant difference between the two integrated treatments. To enhance outcomes for patients with fibromyalgia, combining ACT or Emotional Schema Therapy with pharmacotherapy is recommended.

The most important limitation of this study was the use of convenience sampling. Additionally, the study was conducted on individuals aged 30 to 50 with fibromyalgia, and generalizing the results to other age groups or the general population should be approached cautiously. Another limitation was the exclusive inclusion of women as participants.

Based on the findings demonstrating the positive effects of both Emotional Schema Therapy and ACT on fibromyalgia symptoms, it is suggested that future studies develop a combined intervention package integrating both approaches. Such a protocol could simultaneously address emotional schemas and enhance ACT-based skills to further reduce fibromyalgia symptoms. Future research should also examine the effectiveness of these therapies across different groups, including men and women of various age ranges, education levels, marital statuses, and employment statuses.

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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