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Mental Health in Women with Premature Menopause: A Comparison of Acceptance and Commitment Therapy and Healthy Lifestyle Education

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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 and healthy lifestyle education in improving mental health among women with premature menopause.

Methods and Materials: This quasi-experimental study used a pretest–posttest design with two experimental groups and one control group. The statistical population consisted of women with premature menopause in Tehran in 2026. A total of 45 eligible participants were selected through purposive sampling and randomly assigned to three groups: Acceptance and Commitment Therapy, healthy lifestyle education, and control, with 15 participants in each group. The Acceptance and Commitment Therapy group received ten 90-minute group sessions based on the protocol of Izadi and Abedi, while the healthy lifestyle education group received eight 90-minute group sessions based on the protocol of Mehravar et al. The control group received no intervention during the study period. Mental health was assessed using the Symptom Checklist-90-Revised, and the general psychological distress index was used as the main outcome variable. Data were analyzed using univariate analysis of covariance and Bonferroni post hoc comparisons.

Findings: After controlling for pretest scores, the results of univariate analysis of covariance showed a significant difference among the three groups in posttest scores of the general psychological distress index, $F(2, 41) = 39.55$, $p < .001$, $\eta^2 = .651$. Bonferroni pairwise comparisons indicated that both Acceptance and Commitment Therapy and healthy lifestyle education significantly reduced psychological distress compared with the control group, $p < .001$. Moreover, Acceptance and Commitment Therapy produced a significantly greater reduction in psychological distress than healthy lifestyle education, $p < .001$.

Conclusion: The findings indicate that both interventions were effective in improving mental health among women with premature menopause; however, Acceptance and Commitment Therapy demonstrated superior effectiveness. Therefore, this approach may be considered a more appropriate psychological intervention for reducing mental health problems and psychological distress in women experiencing premature menopause.

Keywords: *Acceptance and Commitment Therapy; Healthy Lifestyle; Mental Health; Premature Menopause; Psychological Distress*

1. Introduction

Premature menopause is one of the important reproductive and psychosocial health concerns in women and refers to the permanent cessation of ovarian function and menstruation before the expected age of natural menopause. While natural menopause usually occurs in midlife and is often experienced as a biologically expected transition, premature menopause occurs earlier than anticipated and may therefore be accompanied by more

complex emotional, interpersonal, and identity-related consequences. From a biomedical perspective, premature ovarian insufficiency is associated with endocrine changes, reduced ovarian activity, estrogen deficiency, infertility-related concerns, vasomotor symptoms, sleep disturbances, sexual problems, and long-term risks for bone and cardiovascular health. However, its significance is not limited to physiological changes, because the early and unexpected disruption of reproductive functioning can strongly affect women's psychological adaptation and quality of life (Rudnicka et al., 2018). In this regard, premature menopause should be understood as a multidimensional condition in which biological vulnerability interacts with cognitive appraisal, emotional responses, marital expectations, social roles, and perceived control over life circumstances.

The psychosocial burden of premature menopause is often greater than that of menopause occurring at the expected age because it appears at a developmental period in which many women are still involved in fertility planning, marital role formation, occupational development, and personal identity consolidation. Women who experience this condition may confront concerns about femininity, fertility, attractiveness, sexual functioning, aging, and future health. These concerns can produce persistent psychological distress, anxiety, depressed mood, irritability, reduced self-esteem, and feelings of loss. Deeks et al. emphasized that premature menopause involves a broad set of psychosocial implications, including emotional distress, grief reactions, altered self-perception, and challenges in intimate relationships, all of which require clinical attention beyond routine medical management (Deeks et al., 2011). Similarly, comparative evidence suggests that women with premature menopause may experience more stress-related difficulties, poorer marital adjustment, and more challenges related to gender-role expectations than women who undergo menopause at the normative age (Onder & Batigun, 2016). These findings indicate that mental health in women with premature menopause is shaped not only by hormonal and physical symptoms but also by the meaning women assign to early reproductive loss.

Mental health problems in women with premature menopause may emerge through several interrelated pathways. First, physiological changes such as hormonal fluctuations, sleep disturbance, fatigue, and vasomotor symptoms may directly increase vulnerability to emotional dysregulation. Second, the diagnosis of premature menopause may function as a stressful life event that disrupts women's assumptions about their body, future, family roles, and life trajectory. Third, women may engage in maladaptive cognitive and emotional strategies, such as rumination, experiential avoidance, catastrophizing, social withdrawal, or excessive attempts to control distressing thoughts. Fourth, interpersonal and marital factors may intensify psychological vulnerability, particularly when fertility concerns, sexual functioning, or perceived inadequacy become sources of tension. Therefore, interventions for this group should not be limited to symptom education or biomedical management alone; rather, they should address psychological flexibility, meaning-making, emotional acceptance, adaptive coping, and health-promoting behaviors.

Acceptance and Commitment Therapy is one of the third-wave cognitive-behavioral approaches that may be particularly relevant for women experiencing premature menopause. This therapeutic approach does not focus primarily on eliminating unwanted thoughts and emotions; instead, it aims to change the individual's relationship with internal experiences and to increase psychological flexibility. Psychological flexibility refers to the capacity to remain in contact with the present moment, accept difficult internal experiences when doing so serves valued living, defuse from unhelpful thoughts, clarify personal values, and engage in committed action. This mechanism is clinically important in conditions such as premature menopause, where many aspects of the condition may not be fully controllable and where attempts to suppress distress may paradoxically intensify suffering. Evidence from different clinical and nonclinical populations suggests that Acceptance and Commitment Therapy can improve psychological functioning by enhancing cognitive flexibility, reducing experiential avoidance, and strengthening value-based behavior (Rasti & Maredpour, 2025; Razaei & Pourmohammad Ghouchani, 2025).

The relevance of Acceptance and Commitment Therapy to women with premature menopause can be explained through its emphasis on acceptance, cognitive defusion, values clarification, and committed action. Many women with premature menopause may struggle with thoughts such as "I have lost my femininity," "my body has failed me," "my future has changed," or "I cannot live normally anymore." When these thoughts are taken literally and fused with self-definition, they may intensify anxiety, depression, shame, and avoidance. Acceptance and Commitment Therapy helps clients observe such thoughts as mental events rather than absolute truths, while also creating space

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for painful emotions without excessive avoidance or suppression. In this way, women may become more capable of acknowledging grief, fear, or anger while still engaging in meaningful activities, intimate relationships, self-care, and personal goals. This is consistent with evidence showing that Acceptance and Commitment Therapy can improve self-efficacy, responsibility, and adaptive functioning among women experiencing major psychosocial stressors (Hadian et al., 2023).

Previous studies in different populations further support the applicability of Acceptance and Commitment Therapy for mental health–related outcomes. For example, Acceptance and Commitment Therapy has been shown to improve quality of life and reduce death anxiety in older adults, indicating its effectiveness in helping individuals face age-related and existential concerns (Ahmadi & Valizadeh, 2021). It has also been associated with improved meaning in life and self-esteem in patients with chronic medical conditions, suggesting that this approach is beneficial when individuals must adapt to long-term or difficult health-related experiences (Soleimani & Talebzadeh, 2019). Moreover, research among migrant live-in caregivers demonstrated that Acceptance and Commitment Therapy can improve mental health and resilience in a population exposed to chronic psychosocial stress and role-related strain (Vahabi et al., 2022). These findings are relevant to premature menopause because affected women may similarly experience a combination of health-related stress, identity disruption, uncertainty, and emotional burden.

Acceptance and Commitment Therapy has also been examined in relation to interpersonal, marital, and family-related outcomes, which are important domains for women with premature menopause. Premature menopause can influence marital satisfaction, sexual intimacy, family cohesion, and perceived relational support. Studies have reported that Acceptance and Commitment Therapy may reduce marital conflicts, improve marital adjustment, and strengthen family cohesion by helping individuals act in accordance with relational values rather than reactive emotional patterns (Hashemi & Esmaeili, 2018; Jafari & Sepehi, 2023). In women facing infertility-related stress, an ACT-based approach combined with lifestyle improvement has been reported to reduce anxiety expectancy, marital dissatisfaction, and emotional dependence, highlighting its potential relevance for reproductive and relational concerns (Arefnia, 2017). Because premature menopause may involve infertility-related grief and changes in sexual or marital dynamics, interventions that address both internal distress and value-based interpersonal behavior may be especially useful.

In addition to psychotherapy, healthy lifestyle education is an important intervention pathway for women with premature menopause. Lifestyle-related factors such as physical activity, nutrition, sleep hygiene, stress management, social support, and health responsibility are closely linked to psychological well-being. In women experiencing menopause-related changes, lifestyle modification may reduce physical discomfort, improve energy regulation, support sleep quality, and enhance perceived control over health. Such improvements may indirectly reduce psychological distress and improve emotional stability. Health-promoting lifestyle interventions have also been compared with Acceptance and Commitment Therapy in chronic health conditions. For example, Soltanian et al. compared Acceptance and Commitment Therapy with a health-promoting lifestyle intervention in patients with type 2 diabetes and found that both approaches may influence illness perception and adjustment to illness, although they operate through partially different mechanisms (Soltanian et al., 2022). This distinction is important because women with premature menopause may require both behavioral health management and psychological adaptation.

Lifestyle-based interventions may be especially beneficial when they are integrated with psychological principles. Research has shown that Acceptance and Commitment Therapy can be connected with health-oriented lifestyle change, mindfulness, and self-compassion, indicating that psychological flexibility may support more stable engagement in healthy behaviors (Bakhtiari et al., 2022). Similarly, a pilot randomized controlled trial of an Acceptance and Commitment Therapy-based lifestyle counseling program demonstrated that ACT principles can be applied to promote physical activity and behavioral activation in individuals with early psychosis (Chong et al., 2025). These findings suggest that lifestyle change is not merely a matter of information provision; rather, it is influenced by motivation, values, emotion regulation, self-efficacy, and the ability to persist despite discomfort. Therefore, when comparing Acceptance and Commitment Therapy with healthy lifestyle education, it is necessary to consider that one approach primarily targets psychological flexibility, whereas the other primarily targets health-related behaviors.

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Healthy lifestyle education nevertheless has clear theoretical and practical value for women with premature menopause. Education about nutrition, physical activity, sleep hygiene, stress management, sexual health, and social support may increase women's health literacy and help them adopt behaviors that reduce physiological and emotional vulnerability. In this sense, lifestyle education may enhance self-care capacity, reduce helplessness, and promote a sense of agency. However, educational interventions must be designed in a manner that is accessible, structured, and responsive to participants' needs. Broader educational research has emphasized the importance of equity, access, and learner-sensitive design in educational programming, which is also relevant to health education interventions delivered to women facing reproductive and psychological challenges (Shariati et al., 2024). If lifestyle education is delivered without sufficient attention to psychological barriers such as avoidance, shame, hopelessness, or low motivation, its effects may be weaker or less stable.

The comparative examination of Acceptance and Commitment Therapy and healthy lifestyle education is therefore scientifically meaningful. Both interventions can contribute to mental health, but they may do so through different pathways. Acceptance and Commitment Therapy directly targets psychological processes such as experiential avoidance, cognitive fusion, values disconnection, and emotional resistance. Healthy lifestyle education, in contrast, primarily targets daily behavioral patterns and health-related knowledge. For women with premature menopause, whose distress may arise from both bodily changes and psychological interpretation of those changes, determining the relative effectiveness of these two interventions can help clinicians select more appropriate treatment strategies. Evidence from university students indicates that Acceptance and Commitment Therapy and mindfulness-based approaches can reduce psychological distress and improve emotion regulation and subjective well-being, further supporting the role of psychological-process-oriented interventions in mental health promotion (Shahsavari Googhari et al., 2022). Likewise, Acceptance and Commitment Therapy has been reported to reduce academic procrastination and improve functioning in students with academic failure, suggesting that ACT can help individuals move from avoidance toward goal-directed behavior across different life contexts (Hosseini Ahangari et al., 2020).

The need for such comparison is strengthened by the fact that women with premature menopause may experience distress in multiple domains simultaneously. They may need accurate health information, practical self-care strategies, emotional support, and deeper psychological skills for coping with grief, uncertainty, and identity-related concerns. Acceptance and Commitment Therapy may offer a framework for living meaningfully in the presence of difficult internal experiences, while healthy lifestyle education may provide concrete behavioral strategies for improving daily functioning and physical well-being. Moreover, ACT has shown effectiveness in enhancing distress tolerance among mothers of children with learning disabilities, a group that also faces chronic stress and emotional demands, suggesting that ACT may be effective when individuals must continue functioning under persistent psychological pressure (Arab Elah Firouzjah et al., 2023). Since premature menopause may involve ongoing stressors rather than a single temporary event, interventions that enhance distress tolerance and psychological flexibility may be particularly valuable.

Despite the growing literature on Acceptance and Commitment Therapy and lifestyle-based interventions in different psychological and medical populations, direct comparative evidence in women with premature menopause remains limited. Many previous studies have examined ACT in relation to anxiety, quality of life, resilience, marital functioning, self-esteem, psychological distress, or health-related adjustment, while other studies have focused on lifestyle education and health-promoting behaviors. However, fewer studies have compared these two intervention models in a reproductive health context characterized by early menopausal transition and psychological vulnerability. This gap is important because premature menopause is not only a medical diagnosis but also a psychologically meaningful life transition that can affect women's emotional health, relational life, self-concept, and future orientation. Identifying whether a psychological flexibility–based intervention is more effective than a behavioral health education program can provide useful evidence for mental health professionals, gynecological clinics, fertility centers, and health educators working with this population.

Therefore, the present study aimed to compare the effectiveness of Acceptance and Commitment Therapy and healthy lifestyle education on mental health in women with premature menopause.

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2. Methods and Materials

2.1. Study Design and Participants

The present study was conducted using a quasi-experimental pretest–posttest design with two experimental groups and one control group. The statistical population consisted of all women with premature menopause in Tehran in 2026. Considering the quasi-experimental nature of the study, accessibility of participants, inclusion criteria, and the sample-size recommendations proposed by Tabachnick and Fidell (2013) and Pallant (2002) for experimental designs, according to which the number of participants in each group should not be fewer than 15, a total of 45 women with premature menopause were selected through purposive sampling from Omid Fertility Clinic in Tehran. The participants were then randomly assigned to three groups: 15 participants in the Acceptance and Commitment Therapy group, 15 participants in the healthy lifestyle education group, and 15 participants in the control group. The inclusion criteria were age between 40 and 50 years, at least one year and at most five years since the natural cessation of menstruation, presence of premature menopausal symptoms, willingness to participate in the study, no participation in other educational programs during the previous three months, and no previous participation in Acceptance and Commitment Therapy or healthy lifestyle education courses. The exclusion criteria included failure to meet the inclusion criteria, absence from more than two educational or therapeutic sessions, and failure to complete the instructions and exercises assigned during the sessions. Ethical considerations were observed by providing participants with explanations about the study objectives, cooperation procedure, benefits of participation, and nature of the intervention sessions. Participation was voluntary and based on informed consent, and participants were assured that their privacy and confidentiality would be protected. To observe ethical fairness, participants in the control group were allowed to receive, after completion of the study, a compressed version of either Acceptance and Commitment Therapy or healthy lifestyle education based on their preference.

2.2. Measures

The Symptom Checklist-90-Revised (SCL-90-R) was used to assess psychological symptoms and mental health status. This 90-item psychological instrument is designed to evaluate a broad range of psychological problems. The initial form of the Symptom Checklist was developed by Derogatis, Lipman, and Covi in 1973 for assessing psychological status in clinical, research, and screening contexts, and it was later revised by Derogatis and colleagues in 1983. The main purpose of this instrument is not to provide a definitive psychiatric diagnosis, but rather to offer a general profile of the extent and type of psychological distress experienced by an individual during a specific recent period, usually the past few days or the past week. The items are scored on a five-point Likert scale ranging from “not at all” to “extremely,” and the resulting scores indicate the psychological domains in which the respondent experiences greater distress or psychological involvement. The SCL-90-R assesses nine primary dimensions of psychological symptoms, including somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. In addition to these nine dimensions, the questionnaire provides three global indices: the Global Severity Index, which reflects the mean score across all 90 items and represents overall psychological distress; the Positive Symptom Total, which indicates the breadth and variety of reported symptoms; and the Positive Symptom Distress Index, which reflects the intensity of distress associated with reported symptoms. In the study by Derogatis and Savitz (1999), Cronbach’s alpha coefficients for the subscales ranged from .77 to .90, with the highest coefficient reported for the depression scale, and test–retest reliability over approximately one week to ten days ranged from .78 to .90. The diagnostic validity of the instrument was also confirmed, and its ability to differentiate clinical and nonclinical groups was reported with a large effect size. Concurrent validity with the Minnesota Multiphasic Personality Inventory was supported through correlations ranging from .36 to .73. In Iran, Anisi et al. (2015) examined the psychometric properties of the instrument and reported Cronbach’s alpha coefficients ranging from .75 to .92 for its subscales. They also confirmed concurrent validity, with correlations between SCL-90-R subscales and the Minnesota Multiphasic Personality Inventory ranging from .16 to .66. In the present study, only the Global Severity Index was used as the main indicator of participants’ overall psychological distress.

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2.3. *Interventions*

In this study, participants in the Acceptance and Commitment Therapy group received the therapeutic package developed by Izadi and Abedi (2012) in ten 90-minute group sessions, while participants in the healthy lifestyle education group received the educational package developed by Mehravar et al. (2019) in eight 90-minute group sessions. During the same period, the control group received no intervention. The Acceptance and Commitment Therapy protocol was organized based on the framework of Hayes et al. and Izadi and Abedi and focused on establishing therapeutic rapport, introducing the structure and rules of the sessions, explaining the six core processes of Acceptance and Commitment Therapy, and exploring participants' experiences of premature menopause. Subsequent sessions addressed creative hopelessness, ineffective attempts to control thoughts and emotions, experiential avoidance, acceptance of unpleasant emotions, cognitive defusion, the observing self, mindfulness, contact with the present moment, clarification of personal values, committed action, and planning for continued value-based behavioral change. The protocol used experiential exercises and metaphors such as "two mountains," "unwelcome guest," "mind's footsteps," "passengers on the bus," "house and furniture," and "chessboard" to help participants modify their relationship with distressing thoughts and emotions related to femininity, body image, fertility, future concerns, and premature menopause. Homework assignments included recording experiences, thoughts, and emotions related to premature menopause, identifying worry-provoking situations, observing thoughts without attempting to suppress them, practicing acceptance of unpleasant feelings, labeling thoughts, engaging in mindfulness exercises, writing personal values, setting small value-based goals, and implementing a short-term value-based action plan.

The healthy lifestyle education protocol was designed to improve health-promoting behaviors among women with premature menopause. It included education about menopause and premature ovarian insufficiency, hormonal changes, physical and psychological symptoms, the concept of a healthy lifestyle, and Pender's health promotion model. The sessions also addressed nutrition during menopause, including calcium, vitamin D, fiber, and dietary factors related to hot flashes; physical activity and reduction of sedentary behavior; stress management through relaxation, deep breathing, and mindfulness techniques; sleep hygiene and strategies for improving sleep quality; interpersonal relationships and social support; sexual health, body image, intimacy, and marital communication; and consolidation of healthy behaviors through one-month lifestyle planning. Homework assignments in this protocol included recording symptoms, sleep quality, and daily behaviors, keeping a food diary and making small dietary changes, engaging in 20 to 30 minutes of daily physical activity, practicing relaxation or deep breathing, applying sleep hygiene recommendations, recording a supportive conversation with a spouse or family member, writing feelings and attitudes about the body and marital relationship, and designing a one-month healthy lifestyle plan.

2.4. *Data Analysis*

Data were analyzed using descriptive and inferential statistical methods. Descriptive statistics, including mean and standard deviation, were used to summarize the participants' age and the scores of the study variable across the pretest and posttest stages. Before testing the main research hypothesis, the assumptions required for analysis of covariance were examined. The normality of the distribution of the study variable was assessed using the Shapiro–Wilk test. Homogeneity of variances was examined using Levene's test, and homogeneity of regression slopes was assessed by testing the interaction between the pretest scores and group membership. The presence of multivariate outliers was evaluated using Mahalanobis distance. In addition, correlations between relevant variables were examined to ensure that multicollinearity did not violate the assumptions of the analysis. After confirming the required assumptions, univariate analysis of covariance was used to compare the three groups in the posttest scores of the Global Severity Index while controlling for pretest scores. Bonferroni post hoc comparisons were then applied to determine the specific differences between the Acceptance and Commitment Therapy group, the healthy lifestyle education group, and the control group. The significance level was set at .05 for all statistical analyses.

3. Findings and Results

In the present study, the mean age of the women in the Acceptance and Commitment Therapy group was 49.09 years with a standard deviation of 3.51, in the healthy lifestyle education group it was 48.10 years with a standard deviation of 3.26, and in the control group it was 48.63 years with a standard deviation of 2.07.

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The descriptive statistics of the Global Mental Health Index are presented in Table 1.

Table 1

Descriptive Statistics of the Study Variable by Group and Assessment Stage

Variable	Stage	Group	Mean	Standard Deviation	Shapiro–Wilk Statistic	p-value
Global Mental Health Index	Pretest	Acceptance and Commitment Therapy	2.43	0.25	0.96	0.778
Global Mental Health Index	Pretest	Healthy Lifestyle Education	2.43	0.27	0.89	0.064
Global Mental Health Index	Pretest	Control	2.35	0.22	0.91	0.175
Global Mental Health Index	Posttest	Acceptance and Commitment Therapy	1.34	0.36	0.96	0.818
Global Mental Health Index	Posttest	Healthy Lifestyle Education	1.95	0.60	0.88	0.052
Global Mental Health Index	Posttest	Control	2.28	0.25	0.98	0.994

Before analyzing the data related to the hypotheses, the data were examined to ensure that the underlying assumptions of analysis of covariance, including homogeneity of variances, homogeneity of regression slopes, and normality, were met. The results of the test for homogeneity of regression slopes between the pretest and posttest scores of the Global Mental Health Index in the experimental and control groups showed that the regression slopes were equal across the three groups, $F(2, 39) = 0.19$, $p = .824$. Levene's test was used to examine the homogeneity of variances. The results showed that Levene's test was not significant for the Global Mental Health Index, $F(2, 42) = 2.10$, $p = .135$. Therefore, the assumption of homogeneity of variances was confirmed. The Shapiro–Wilk test was used to examine the assumption of normal distribution of the variables. The results showed that the significance levels of the Shapiro–Wilk test were greater than .05; therefore, the assumption of normality was met. In addition, the absence of multivariate outliers was examined using Mahalanobis distance, and no outliers were identified, confirming this assumption. Furthermore, collinearity among the dependent variables was examined through the correlation coefficients between pairs of variables. Since all correlation coefficients between pairs of variables were in the moderate range, between .30 and .50, this assumption was also confirmed. Given the moderate level of correlation coefficients, it can be concluded that no multicollinearity existed among the variables. Therefore, after confirming the assumptions of univariate and multivariate covariance analysis, the use of this test was considered appropriate.

The results of univariate analysis of covariance for examining differences between the intervention and control groups in the total score of the Global Mental Health Index at the posttest stage are reported in Table 2.

Table 2

Results of Univariate Analysis of Covariance for Differences Between the Intervention and Control Groups in the Global Mental Health Index at Posttest

Variable	Source	Sum of Squares	df	Mean Square	F	p-value	Effect Size	Test Power
Global Mental Health Index	Corrected Model	10.57	3	3.52	34.42	< .001	0.651	1.00
Global Mental Health Index	Pretest	3.70	1	3.70	36.15	< .001		
Global Mental Health Index	Group	8.10	2	4.05	39.55	< .001		
Global Mental Health Index	Error	4.19	41	0.10				

According to Table 2, the F statistic for the Global Mental Health Index at posttest was 39.55, which was significant at the .001 level, $F(2, 41) = 39.55$, $p < .001$. Therefore, the results indicate that there was a significant difference among the three groups in terms of reduction in the Global Mental Health Index score among women with premature menopause. In addition, the effect size was $\eta^2 = .651$, indicating that the magnitude of this difference in the population was 65% and was at an acceptable level. Therefore, there was a significant difference among the Acceptance and Commitment Therapy group, the healthy lifestyle education group, and the control group in the Global Mental Health Index at the posttest stage after adjusting for pretest scores.

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Pairwise comparisons between the Acceptance and Commitment Therapy and healthy lifestyle education groups in the Global Mental Health Index are reported in Table 3.

Table 3

Pairwise Comparisons of Groups in the Global Mental Health Index

Variable	Group	Comparison Group	Mean Difference	Standard Error	p-value
Global Mental Health Index	Acceptance and Commitment Therapy	Healthy Lifestyle Education	-0.62*	0.11	< .001
Global Mental Health Index	Acceptance and Commitment Therapy	Control	-1.40*	0.11	< .001
Global Mental Health Index	Healthy Lifestyle Education	Control	-0.42*	0.11	< .001

The results presented in Table 3 showed that both Acceptance and Commitment Therapy and healthy lifestyle education were effective in improving the Global Mental Health Index among women with premature menopause. Furthermore, Acceptance and Commitment Therapy had greater effectiveness than healthy lifestyle education in reducing the Global Mental Health Index among women with premature menopause.

4. Discussion and Conclusion

The present study aimed to compare the effectiveness of Acceptance and Commitment Therapy and healthy lifestyle education on mental health in women with premature menopause. The findings showed that, after controlling for pretest scores, there was a significant difference among the Acceptance and Commitment Therapy group, the healthy lifestyle education group, and the control group in the posttest scores of the Global Mental Health Index. The results of univariate analysis of covariance indicated that group membership had a significant effect on the reduction of psychological distress, $F(2, 41) = 39.55$, $p < .001$, with a large effect size, $\eta^2 = .651$. Pairwise comparisons further showed that both Acceptance and Commitment Therapy and healthy lifestyle education significantly reduced the Global Mental Health Index compared with the control group; however, Acceptance and Commitment Therapy produced a greater reduction than healthy lifestyle education. This result suggests that although both interventions were beneficial for improving mental health in women with premature menopause, Acceptance and Commitment Therapy was more effective in reducing psychological distress.

This finding can be understood in light of the psychological nature of premature menopause. Premature menopause is not merely a biological or reproductive event, but a multidimensional experience that affects women's emotional functioning, self-perception, marital relationships, sexual identity, fertility expectations, and future orientation. Women who experience premature menopause may face concerns about femininity, aging, infertility, body image, sexual functioning, and loss of control over their life trajectory. These psychological pressures may increase vulnerability to anxiety, depression, stress, reduced self-esteem, and interpersonal difficulties. Prior studies have emphasized that premature menopause is associated with psychosocial distress and requires attention beyond physical symptom management (Deeks et al., 2011). In addition, evidence comparing premature and normal menopause has shown that women with premature menopause may experience greater stress and more challenges in marital adjustment and sex-role expectations (Onder & Batigun, 2016). Therefore, the significant improvement observed in the present study indicates that interventions targeting psychological adaptation and behavioral health can meaningfully reduce the mental health burden associated with premature menopause.

The greater effectiveness of Acceptance and Commitment Therapy compared with healthy lifestyle education may be explained by the central therapeutic mechanisms of this approach. Acceptance and Commitment Therapy directly targets psychological inflexibility, experiential avoidance, cognitive fusion, and disconnection from personal values. These processes are particularly relevant for women with premature menopause, because much of their psychological distress may arise from persistent attempts to suppress or control painful thoughts and emotions related to infertility, bodily change, premature aging, and uncertainty about the future. Acceptance and Commitment Therapy helps individuals accept unpleasant internal experiences, observe thoughts without becoming fused with them, and engage in committed action based on personally meaningful values. This therapeutic logic is consistent with studies showing that Acceptance and Commitment Therapy improves cognitive flexibility and

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psychological functioning in individuals with anxiety-related problems (Razaei & Pourmohammad Ghouchani, 2025). It is also aligned with evidence indicating that Acceptance and Commitment Therapy can improve cognitive and emotional functioning in patients with chronic pain-related conditions such as fibromyalgia (Rasti & Maredpour, 2025). Thus, the reduction of psychological distress in the present study can be attributed to the capacity of ACT to modify the individual's relationship with distressing internal experiences rather than merely attempting to eliminate symptoms.

The findings also align with previous research demonstrating the effectiveness of Acceptance and Commitment Therapy in populations facing chronic stress, health-related difficulties, and identity-threatening life conditions. For example, Ahmadi and Valizadeh showed that Acceptance and Commitment Therapy improved quality of life and reduced death anxiety in older adults, suggesting that ACT can be effective in helping individuals confront existential concerns and age-related transitions (Ahmadi & Valizadeh, 2021). Similarly, Soleimani and Talebzadeh found that ACT increased meaning in life and self-esteem among patients with ulcerative colitis, indicating that this approach can support psychological adaptation in individuals dealing with long-term illness (Soleimani & Talebzadeh, 2019). The findings of the present study are compatible with these results, because premature menopause also involves an emotionally demanding health-related transition that may challenge meaning, identity, and self-worth. ACT may help women reinterpret their experience not as a total loss of identity or life value, but as a difficult condition that can be integrated into a meaningful life through acceptance, value clarification, and committed action.

The superiority of Acceptance and Commitment Therapy over healthy lifestyle education may also be related to the fact that ACT intervenes at a deeper cognitive-emotional level. Women with premature menopause may not only need information about health behaviors, but also need skills for managing grief, fear, shame, rumination, and perceived inadequacy. ACT promotes psychological flexibility by helping individuals separate themselves from distressing thoughts and engage in value-based behavior despite emotional discomfort. This is consistent with the findings of Shahsavari Googhari et al., who reported that Acceptance and Commitment Therapy improved subjective well-being, psychological distress, and emotion regulation among medical science students (Shahsavari Googhari et al., 2022). It is also in line with the study by Vahabi et al., in which ACT improved mental health and resilience among migrant live-in caregivers exposed to chronic psychosocial stress (Vahabi et al., 2022). These studies support the interpretation that ACT may be especially effective when psychological distress is maintained by avoidance, emotional dysregulation, and difficulty adapting to uncontrollable circumstances.

Another explanation for the present findings relates to the role of values and committed action in Acceptance and Commitment Therapy. Premature menopause can disrupt women's assumptions about their future, family life, marital role, and personal identity. When women become excessively focused on what has been lost, their behavioral repertoire may narrow, and they may withdraw from meaningful activities. ACT helps clients clarify values in areas such as health, family, relationships, personal growth, and self-care, and then encourages small but consistent actions in line with these values. This process may restore a sense of purpose and agency. Previous research has shown that ACT can improve self-efficacy and responsibility in divorced women, suggesting that it can strengthen adaptive functioning in women facing stressful life transitions (Hadian et al., 2023). Moreover, ACT has been found to reduce distress and improve tolerance in mothers of children with learning disabilities, further indicating its usefulness for individuals coping with persistent emotional demands (Arab Elah Firouzjah et al., 2023). Therefore, in the present study, women receiving ACT may have benefited not only from symptom reduction, but also from the development of a more purposeful and adaptive stance toward their condition.

The effectiveness of healthy lifestyle education compared with the control group is also theoretically and empirically meaningful. Premature menopause is accompanied by physical and psychological symptoms that may be influenced by daily behaviors such as nutrition, physical activity, sleep patterns, stress management, and social support. Healthy lifestyle education can enhance women's awareness of menopause-related changes, promote health responsibility, reduce sedentary behavior, improve sleep hygiene, and increase perceived control over bodily and emotional symptoms. These processes can contribute to reduced psychological distress. The finding that healthy lifestyle education was effective is consistent with research showing that health-promoting lifestyle interventions can improve illness perception and adjustment to illness in chronic health conditions such as type 2 diabetes (Soltanian et al., 2022). It is also compatible with findings indicating

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that lifestyle-oriented interventions can enhance mindfulness, self-compassion, and health-oriented behavior in patients with chronic disease (Bakhtiari et al., 2022). Therefore, lifestyle education appears to be a useful intervention for supporting mental health in women with premature menopause, particularly by improving behavioral self-management and strengthening health-promoting routines.

Nevertheless, the smaller effect of healthy lifestyle education compared with Acceptance and Commitment Therapy suggests that behavioral education alone may not be sufficient to address the deeper psychological conflicts associated with premature menopause. Lifestyle education may improve knowledge and promote adaptive routines, but it may not directly target cognitive fusion, experiential avoidance, shame, grief, and identity-related distress. This distinction is consistent with studies comparing ACT-based and health-promoting interventions, where both approaches may be effective but may influence outcomes through different mechanisms (Soltanian et al., 2022). In the context of premature menopause, healthy lifestyle education may reduce distress by improving physical well-being and increasing behavioral control, whereas ACT may reduce distress by changing the psychological processes that maintain suffering. Therefore, the greater reduction in psychological distress in the ACT group may reflect the fact that ACT addresses the internal meaning of premature menopause more directly.

The present findings are also consistent with studies showing that ACT can be integrated with lifestyle-related goals and can support sustained behavioral change. Chong et al. reported that an ACT-based lifestyle counseling program could be used to promote physical activity among people with early psychosis, suggesting that ACT principles may facilitate engagement in health behaviors by connecting behavior change to values and reducing avoidance (Chong et al., 2025). This is important because women with premature menopause may know that lifestyle changes are beneficial but still struggle to implement them due to low mood, fatigue, hopelessness, or self-critical thoughts. ACT may therefore have an advantage because it can help individuals act consistently with health-related values even when distressing thoughts and emotions are present. In this sense, ACT may indirectly support lifestyle change while also directly reducing psychological distress. This may partly explain why ACT showed stronger effectiveness than lifestyle education in the present study.

The findings can also be interpreted in relation to marital and family functioning. Premature menopause may influence marital satisfaction, sexual intimacy, communication, and family cohesion. Women may experience concerns about sexual functioning, attractiveness, infertility, and relational expectations, all of which can increase psychological distress. Previous studies have shown that ACT can reduce marital conflict and improve marital adjustment in couples (Hashemi & Esmaeili, 2018). Similarly, Jafari and Sepehi reported that ACT improved marital adjustment and family cohesion in men with high-risk occupations, indicating that ACT can enhance relational functioning under stressful life conditions (Jafari & Sepehi, 2023). Arefnia also found that ACT based on lifestyle improvement reduced emotional dependence, anxiety expectancy, and marital dissatisfaction in infertile women, a population that shares certain reproductive and relational concerns with women experiencing premature menopause (Arefnia, 2017). Accordingly, the improvement observed in the ACT group may have been partly related to participants' enhanced ability to regulate relational distress, communicate more adaptively, and pursue value-based interpersonal behavior.

From an educational perspective, the effectiveness of healthy lifestyle education also confirms the importance of structured, accessible, and need-sensitive educational interventions. Health education can be beneficial when it is organized around participants' actual challenges and delivered in a way that supports learning, self-efficacy, and behavioral change. Research on educational equity and virtual education has emphasized the importance of designing educational models that are responsive to learners' circumstances and support meaningful access to learning opportunities (Shariati et al., 2024). Although the present intervention was not a virtual education program, this principle is relevant because women with premature menopause may require clear, equitable, and practical access to information about health behaviors, stress management, sleep, nutrition, and interpersonal support. Therefore, the effectiveness of the healthy lifestyle education group may reflect the value of structured psychoeducational content in increasing awareness and improving daily self-management.

Overall, the present study contributes to the literature by directly comparing two intervention approaches in women with premature menopause. While previous studies have examined ACT or lifestyle education separately in different populations, fewer studies have compared these approaches in the context of premature menopause. The findings

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indicate that both interventions can reduce psychological distress, but ACT may be more powerful when the main outcome is mental health. This pattern supports the assumption that psychological distress in premature menopause is strongly maintained by cognitive-emotional processes, including avoidance, fusion with negative thoughts, disrupted values, and difficulty accepting uncontrollable bodily changes. At the same time, the beneficial effect of healthy lifestyle education suggests that behavioral and physiological self-care remains an important component of intervention. Therefore, the most comprehensive clinical approach may involve using ACT as a primary psychological intervention while also incorporating lifestyle education to support physical well-being and long-term health behavior change.

One limitation of the present study was the relatively small sample size, which may restrict the generalizability of the findings to the wider population of women with premature menopause. The study was also conducted among women referred to one fertility clinic in Tehran, and participants were selected through purposive sampling; therefore, the findings may not fully represent women from different cultural, socioeconomic, clinical, or geographical backgrounds. Another limitation was the use of self-report measurement, which may be affected by response bias, social desirability, or participants' subjective interpretation of symptoms. In addition, the study assessed outcomes at the posttest stage and did not include a long-term follow-up period, so the durability of the intervention effects over time remains unclear. Finally, the study focused on the general psychological distress index and did not separately examine specific dimensions such as depression, anxiety, somatization, sleep-related distress, sexual functioning, marital adjustment, or quality of life.

Future studies are suggested to replicate this research with larger and more diverse samples of women with premature menopause across different clinical settings, cities, and socioeconomic groups. Future research should also include longer follow-up periods to determine whether the effects of Acceptance and Commitment Therapy and healthy lifestyle education remain stable over time. It would be valuable to examine specific psychological outcomes such as depression, anxiety, distress tolerance, psychological flexibility, body image, sexual satisfaction, marital adjustment, self-esteem, and quality of life. In addition, future studies may compare ACT, lifestyle education, and an integrated ACT-based lifestyle intervention to determine whether combining psychological flexibility training with health-promoting behavior education produces stronger and more durable outcomes. Qualitative studies are also recommended to explore women's lived experiences of premature menopause and to identify the subjective mechanisms through which these interventions influence emotional adaptation and self-perception.

Based on the findings of the present study, practitioners working with women with premature menopause are encouraged to consider Acceptance and Commitment Therapy as a primary or complementary psychological intervention for reducing distress and improving mental health. Mental health professionals, gynecologists, fertility specialists, and counselors should attend not only to the physical symptoms of premature menopause but also to its emotional, relational, and identity-related consequences. Healthy lifestyle education should also be included in supportive care programs because it can help women improve daily self-care, sleep, nutrition, physical activity, stress management, and perceived control over health. In practice, an integrated care model may be most useful, in which psychological flexibility, acceptance, values-based action, and committed behavior are combined with structured lifestyle education. Such programs can help women face the challenges of premature menopause more adaptively and maintain a meaningful, health-oriented life despite difficult biological and emotional changes.

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

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Declaration of Interest

The authors report no conflict of interest.

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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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