The Effectiveness of Acceptance and Commitment Therapy on Depression, Anxiety, and Quality of Life in Men with Asthma

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Article Info

ABSTRACT

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Objective: The aim of this research was to investigate the effectiveness of Acceptance and Commitment Therapy (ACT) in reducing depression, anxiety, and improving the quality of life in men with asthma.

Methods and Materials: This study was quasi-experimental with a pretest-posttest design and a control group. The sample consisted of 30 men with asthma who were randomly assigned into two groups of 15: the intervention group, which received Acceptance and Commitment Therapy, and the control group, which did not receive any intervention. The research instruments included the Beck Depression Inventory-II (BDI-II), State-Trait Anxiety Inventory (STAI), and Asthma Quality of Life Questionnaire (AQLQ).

Findings: The results showed that Acceptance and Commitment Therapy significantly reduced depression and anxiety and improved the quality of life in the intervention group compared to the control group.

Conclusion: These findings indicate the efficacy of this therapy in improving the psychological state and quality of life in patients with asthma.

Keywords: Acceptance and Commitment Therapy, Depression, Anxiety, Quality of Life, Asthma

1. Introduction

Asthma is a relatively common disease that affects the lives of approximately 300 million people worldwide, and its prevalence is on the rise globally. For this reason, it has been considered a public health issue for the past 35 years and is currently recognized as one of the significant, preventable causes of disability and mortality that is also costly from a medical standpoint (Sanging-Talaksi et al., 2023). Moreover, studies have shown that the prevalence of asthma and chronic bronchitis in Iran is reported to be between 4.8% and 5.6% (Bonnert et al., 2024; Khajevandi et al., 2024).

Multiple epidemiological studies have demonstrated that patients with asthma and other respiratory diseases suffer from a higher prevalence of psychiatric disorders compared to the general population (Li et al., 2023). Previous studies have indicated that patients with asthma suffer from mental disorders, particularly anxiety, depression, and the risk of suicide (Sanging-Talaksi et al., 2023). Generally, patients suffering from depression report strong feelings of sadness, hopelessness, and despair, along with difficulties in understanding, cognition, behavior, and action. Several inventories have been used to assess depression (Han et al., 2019). The emergence of changes in personality categories, various approaches to defining depression (disorder-based versus symptom-based approaches), and multiple diagnostic classification systems like the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), each with its own distinct definition of depression, provide explanations. According to the Diagnostic and Statistical Manual of Mental Disorders, a patient with major depression must exhibit at least five symptoms within a two-week period. The fifth symptom includes depressed mood most of the day, diminished interest or pleasure in all or nearly all activities, changes in appetite and weight, changes in sleep and activity, low energy, feelings of guilt, difficulty thinking and making decisions, and recurrent thoughts of death and suicide (APA, 2022).

Observational studies in various populations have shown that anxiety and depression are common among patients with asthma and are associated with greater exacerbations, increased use of healthcare resources, and poorer symptom control (MacKenzie et al., 2023; Sanggamgem et al., 2023; Sanging-Talaksi et al., 2023). Since asthma symptoms may resemble anxiety, asthma patients sometimes experience cognitive responses that can lead to anxiety; as a result, asthma patients may experience higher levels of anxiety compared to the general population. Anxiety is the most common mental health problem and is strongly associated with other psychiatric disorders, representing a major burden globally (Bandelow & Michaelis, 2022). Anxiety is a distressing feeling associated with a current traumatic situation or the anticipation of news related to an indefinite object. Anxiety disorders are the most prevalent category of psychiatric disorders, with 11.6% of people experiencing one of its types within a year. These disorders have a lifetime prevalence of 4.7% to 9.1% in adolescents and young adults (MacKenzie et al., 2023; Zhang et al., 2019). Individuals with these disorders are prone to intense fear or anxiety responses to perceived threats, leading to disturbances and

impairment in their functioning (Fang & Dingge, 2020). Anxiety disorders, including panic disorder, generalized anxiety disorder, and social anxiety disorder, involve excessive worry and fear, leading to debilitating effects on life, disruption in school and work performance, difficulty coping with daily life, increased social isolation, and reduced quality of life (MacKenzie et al., 2023).

Anxiety is a component of personality structure, and from this perspective, some anxieties in childhood, adolescence, and young adulthood can be considered normal, with positive effects on developmental processes. This is because anxiety provides opportunities for individuals to enhance their coping mechanisms to deal with stressors and anxiety-inducing situations (Li et al., 2023). Asthma patients who are aware of having anxiety-depression syndrome may mistakenly perceive normal asthma symptoms as excessive asthma symptoms. This misinterpretation of symptoms has negative consequences on the patient's health and their ability to manage the disease, such as improper medication use, disproportionate access to healthcare facilities, and mortality (Han et al., 2019; Li et al., 2023).

On the other hand, severe asthma symptoms can significantly impact physical, psychological, and social functioning, as well as overall quality of life (Sanggamgem et al., 2023). According to the World Health Organization, quality of life (QOL) refers to individuals' perception of their position in life, within the context of the cultural background and value systems, in accordance with their goals, expectations, and standards (Jafarzadeh Dizaji et al., 2021). Furthermore, quality of life is defined as the result of the interaction between individuals' personalities and the continuity of life events. Life events occur across multiple domains of life, such as freedom, knowledge, economy, security, social relationships, religion, environment, and recreation, and quality of life influences all these domains (Ferreira et al., 2022). Quality of life is a subjective and dynamic concept, varying from one time to another. The quality of life for students encompasses multiple dimensions: educational, research, physical, psychological, cultural, social, welfare, recreational, economic, and future personal growth (Li et al., 2023; Saadati & Parsakia, 2023). Quality of life is a component of the health status of asthma patients. The exacerbation of asthma symptoms also leads to a decrease in quality of life (Sanging-Talaksi et al., 2023). Research has shown that quality of life in asthma has a considerable effect on asthma care (Jafarzadeh Dizaji et al., 2021).

Studies show that various therapeutic methods exist for reducing psychological problems, one of which is Acceptance and Commitment Therapy (ACT), whose effectiveness in treating anxiety and depression has been established and in reducing stress (Ferreira et al., 2022; Han et al., 2019; Zhang et al., 2019). ACT is related to a research program called relational frame theory. This approach emphasizes accepting thoughts and feelings instead of changing their form, content, or frequency. ACT has six core principles: cognitive defusion, acceptance, contact with the present moment, self-as-context, values, and committed action. Cognitive defusion refers to preventing cognitive fusion. Acceptance means creating space for feelings, senses, desires, and other unpleasant private experiences without trying to change them, avoid them, or re-encounter them. Contact with the present moment involves full awareness of the here-and-now experience with openness, interest, acceptance, focus, and complete engagement with what is happening. One principle emphasizes acceptance or willingness to experience pain or other distressing events without trying to control them, while the other principle involves committed action based on personal values, with a willingness to take meaningful actions before eliminating unwanted experiences (Fang & Dingge, 2020; Ferreira et al., 2022). The goal of ACT training is to create psychological flexibility, which involves developing the ability to choose an action and solution from among available options that are more suitable and practical than others, rather than merely taking action to avoid intrusive thoughts, feelings, and desires (Han et al., 2019). In this method, psychological flexibility is fostered by teaching individuals to increase their acceptance of their psychological experiences, understand the inefficiency of avoidant behaviors in the face of psychological experiences, and accept these experiences without any internal or external reactions. Next, individuals learn to be aware of all moments of their lives and can determine their actions and personal values independently of their experiences, ultimately motivating them to engage in committed actions (Ferreira et al., 2022).

So far, no comprehensive research has been conducted on the effectiveness of Acceptance and Commitment Therapy on depression, anxiety, and quality of life in men with asthma. Therefore, given the importance and prominent role of complementary therapies in improving this disease, the present study seeks to answer the question of whether Acceptance and Commitment Therapy is effective in reducing depression and anxiety and improving quality of life in men with asthma.

2. Methods and Materials

2.1. Study Design and Participants

This study was a quasi-experimental design with a pretest-posttest control group. The main objective of the study was to examine the effectiveness of Acceptance and Commitment Therapy (ACT) in reducing depression, anxiety, and improving the quality of life in men with asthma. The study included two groups: an ACT intervention group and a control group that received no intervention. Participants were selected through purposive sampling from men aged 20 to 35 years with asthma. A total of 30 participants were randomly assigned to either the ACT group (15 participants) or the control group (15 participants). The inclusion criteria were a medical diagnosis of asthma, willingness to participate in therapy sessions, and an age range of 20 to 35 years. The exclusion criteria included severe psychiatric disorders requiring immediate intervention or the inability to attend sessions.

Before the intervention, all participants in both the ACT and control groups attended an initial individual assessment session, during which they completed the Beck Depression Inventory, the State-Trait Anxiety Inventory, and the Asthma Quality of Life Questionnaire. This assessment served as the pretest. The ACT group underwent eight weeks of structured therapy sessions, based on the principles of ACT, focusing on the acceptance of unpleasant psychological experiences and the development of psychological flexibility skills. The control group received no intervention and continued their usual medical care. Immediately after the therapy sessions ended, all participants completed the same pretest questionnaires again to assess the immediate effects of the intervention. A final follow-up assessment was conducted three months after the intervention to evaluate the durability of the treatment effects.

Before the study began, all participants were informed about the study's purpose, and written consent was obtained. The study was conducted following the ethical principles outlined by the university's ethics committee, and all guidelines for ethical research involving human participants were adhered to.

2.2. Measures

2.2.1. Depression

The Beck Depression Inventory-II (BDI-II) is one of the most widely used self-report tools for measuring the severity of depression. The second version of this inventory includes 21 items, each with four response options (from 0 to 3). The total score is the sum of all item scores, with a range of 0 to 63. Higher scores indicate greater severity of depression. This questionnaire has shown good reliability and validity in various studies (Tayebmanesh & Saadati, 2023).

2.2.2. State-Trait Anxiety

The State-Trait Anxiety Inventory (STAI) includes two separate scales for assessing state anxiety and trait anxiety. Each scale contains 20 items. State anxiety is defined as a temporary reaction to stressful situations, whereas trait anxiety is defined as a stable personality trait. Each item is rated on a four-point Likert scale (from 1 to 4), with higher scores indicating higher anxiety (Adelifard et al., 2023).

2.2.3. Asthma Quality of Life

The Asthma Quality of Life Questionnaire (AQLQ), developed by Jones et al. (1992), consists of 32 items across four domains (symptoms, daily activities, emotional impacts, and environmental impacts). Participants rate the items based on the impact of asthma over the past week. Each item is scored on a seven-point Likert scale (from 1: very poor to 7: very good). Higher scores indicate better quality of life (Abbasi et al., 2020).

2.3. Intervention

2.3.1. Acceptance and Commitment Therapy

Participants in the experimental group received eight weekly sessions of Acceptance and Commitment Therapy. Each session lasted 90 minutes and was conducted by a psychologist specializing in ACT. The intervention was designed based on six core processes of ACT: cognitive defusion, acceptance, contact with the present moment, self-as-context, values clarification, and committed action. The primary aim of the sessions was to increase psychological flexibility and enhance participants' ability to confront unpleasant psychological experiences without attempting to change or avoid them. Instead of focusing on changing thoughts and emotions, participants were trained to accept them as part of their personal experience (Ferreira et al., 2022; Han et al., 2019; Zhang et al., 2019).

Session 1: Introduction to ACT and Problem Conceptualization

The goal of this session is to introduce participants to the principles of Acceptance and Commitment Therapy (ACT) and differentiate between experiential avoidance and acceptance. Participants learn about the role thoughts and emotions play in their lives and how they impact quality of life. The session includes a "deep breathing" exercise aimed at increasing present-moment awareness, followed by a discussion on personal unpleasant experiences. A foundational acceptance exercise is introduced to help participants reflect on their thoughts and emotions without avoiding or trying to control them.

Session 2: Cognitive Defusion and Understanding Thoughts

In this session, participants are introduced to the concept of cognitive defusion, learning how to observe their thoughts without becoming entangled in them. Exercises such as "labeling thoughts" help create distance between the individual and their thoughts. The session utilizes metaphors like "leaves on a stream" to visually explain cognitive defusion and how to allow thoughts to flow without attachment, fostering greater mental flexibility.

Session 3: Acceptance and the Importance of Emotions

This session focuses on the concept of acceptance, explaining its crucial role in psychological well-being. Participants learn how acceptance can help them handle unpleasant emotions more effectively. Exercises such as "creating mental space" are introduced to help participants accept negative emotions without resistance. The metaphor "monster at the party" is used to illustrate how acceptance allows for personal growth even in the face of discomfort.

Session 4: Contact with the Present Moment

Participants are guided to enhance their awareness of the present moment and reduce the influence of negative thoughts. A "mindful meditation" exercise is employed to encourage heightened awareness of thoughts and feelings as they arise in the present. The session teaches participants how to observe their thoughts and emotions without judgment, aiming to strengthen their mindfulness and attentiveness to the present experience.

Session 5: Self-as-Context

The goal of this session is to help participants understand the concept of "self-as-context," contrasting it with the "conceptualized self." Through the "observer self" exercise, participants practice observing themselves and their

experiences without judgment. The metaphor "the sky and clouds" is introduced to explain how one's thoughts and emotions (clouds) can exist while the self (the sky) remains stable and unaffected.

Session 6: Values Clarification

This session focuses on helping participants identify their personal values and set meaningful goals based on those values. The "values" exercise is used to guide participants in exploring what matters most in their lives. The concept of a "compass" is introduced, representing how values can direct and guide participants toward meaningful life choices and actions that align with their personal values.

Session 7: Committed Action and Making Changes

In this session, participants focus on taking committed action and overcoming avoidant behaviors. The "small steps" exercise encourages participants to begin taking actions that align with their values, even if those steps are small. Potential obstacles to achieving these goals are discussed, and strategies to overcome barriers are developed to ensure participants continue progressing toward their values-based actions.

Session 8: Review and Progress Evaluation

The final session provides an opportunity to review the material covered throughout the ACT intervention and evaluate the progress participants have made. The "performance review" exercise is used to reflect on their achievements and identify the next steps for maintaining their psychological flexibility and continued growth. Goals and values are revisited, and a future plan for sustained action is established.

2.4. Data analysis

Data analysis was performed using SPSS version 24. The normality of data distribution was assessed using the Shapiro-Wilk test. Repeated measures ANOVA was used to compare the pretest, posttest, and follow-up results between groups. Bonferroni post-hoc tests were used to examine pairwise differences. The significance level for all tests was set at 0.05.

3. Findings and Results

The minimum age of participants in this study was 20, and the maximum age was 35. Given the significance level greater than 0.05, there was no significant difference between the three groups, indicating that the groups were homogeneous in terms of age. The educational level of participants in both the intervention and control groups was also evaluated. Based on a significance level greater than 0.05 ($P > 0.05$), there was no significant difference between the two groups in terms of educational level, indicating that the groups were homogeneous in this regard.

Table 1

Comparison of Mean (SD) Scores for Study Variables

Variable	Group	Pretest	Posttest	Follow-up
Depression	ACT Group	28.8 (2.59)	21.2 (1.66)	21.06 (1.43)
	Control Group	28.4 (2.99)	28.0 (3.07)	28.2 (3.19)
Anxiety	ACT Group	49.8 (4.05)	33.4 (4.71)	34.1 (4.79)
	Control Group	50.3 (4.32)	49.8 (4.24)	49.6 (4.15)
Quality of Life	ACT Group	63.6 (6.77)	69.7 (4.99)	69.2 (5.03)
	Control Group	63.8 (5.68)	63.9 (5.62)	63.6 (5.70)

Table 1 shows the mean scores for depression, anxiety, and quality of life in both the ACT intervention and control groups. As observed, there is no significant difference between the groups in the pretest. However, after the intervention, the ACT group shows significant improvements compared to the control group, a trend that persists at the follow-up stage. To assess the normality of the dependent variables, the Shapiro-Wilk test was used, and since the test results were non-significant, the data are considered normally distributed. The next assumption of homogeneity of variances was tested using Levene's test, which revealed that F was only significant for the posttest and follow-up depression scores. Due to equal group sizes, this assumption was considered manageable, and homogeneity was maintained for other variables. Box's M test was also conducted, and although F was significant, this assumption was manageable given the equal group sizes. Mauchly's test for sphericity indicated that the assumption of sphericity was violated, so the Greenhouse-Geisser correction was applied to adjust the degrees of freedom in the ANOVA calculations.

For hypothesis testing, a mixed multivariate ANOVA was performed. Table 2 summarizes the results of the mixed multivariate ANOVA on depression, anxiety, and quality of life.

Table 2

Results of Mixed Multivariate ANOVA on Depression, Anxiety, and Quality of Life

Source	Test	Value	F	df Hypothesis	df Error	Sig.	Effect Size (Eta Squared)
Time	Pillai's Trace	0.593	29.9	2	41	0.001	0.593
	Wilks' Lambda	0.407	29.9	2	41	0.001	0.593
	Hotelling's Trace	1.45	29.9	2	41	0.001	0.593
	Roy's Largest Root	1.45	29.9	2	41	0.001	0.593
Time * Group	Pillai's Trace	0.438	5.88	4	84	0.001	0.219
	Wilks' Lambda	0.564	6.80	4	82	0.001	0.249
	Hotelling's Trace	0.772	7.71	4	80	0.001	0.278
	Roy's Largest Root	0.768	16.1	2	42	0.001	0.435

As shown in Table 2, all tests (Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root) indicate significant differences in depression, anxiety, and quality of life based on group, assessment time, and group-time interaction.

Table 3

Results of Mixed ANOVA for Group and Time Effects on Dependent Variables

Source	Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	Effect Size (Eta Squared)
Within-Subjects	Time						
	Depression	461.5	1.06	433.3	173.9	0.001	0.805
	Anxiety	2292.5	1.01	2250.6	113.02	0.001	0.729
	Quality of Life	688.4	1.04	660.4	54.3	0.001	0.564
Time * Group							
	Depression	272.3	2.13	127.8	51.3	0.001	0.710
	Anxiety	1208.8	2.03	593.3	29.7	0.001	0.587
	Quality of Life	395.2	2.08	189.5	15.6	0.001	0.426
Error							
	Depression	111.4	84	1.32			
	Anxiety	851.9	42.7	19.9			
	Quality of Life	531.6	43.7	12.1			
Between-Subjects	Group						
	Depression	501.8	2	250.9	10.3	0.001	0.330
	Anxiety	2754.4	2	1377.2	32.03	0.001	0.604
	Quality of Life	635.3	2	317.6	4.51	0.017	0.177
Error							
	Depression	1020.0	42	24.2			
	Anxiety	1805.8	42	42.9			
	Quality of Life	2957.7	42	70.4			

Based on the mixed ANOVA results in Table 3, the main effect of assessment time and the interaction between group and assessment time are significant for all three dependent variables. This indicates that the scores for depression, anxiety, and quality of life differed significantly at pretest, posttest, and follow-up across all participants, regardless of group. Bonferroni post-hoc tests revealed that depression scores in the intervention group showed a significant reduction from pretest to posttest, while scores remained stable in the control group during follow-up. Similarly, anxiety scores in the intervention group significantly decreased from pretest to posttest, while the control group showed no significant change in follow-up. The quality of life scores in the intervention group improved significantly from pretest to posttest, with sustained improvements during follow-up, while the control group showed no significant change in follow-up.

4. Discussion and Conclusion

In this study, the effectiveness of Acceptance and Commitment Therapy (ACT) in reducing depression, anxiety, and improving the quality of life in men with asthma was examined. The results of this study indicated that ACT had a positive impact on reducing depression and anxiety while improving the quality of life in these individuals. These findings align with many previous studies that demonstrate ACT as an effective approach for reducing psychological issues such as anxiety and depression, as well as enhancing quality of life.

The findings of this study showed a significant decrease in the mean depression scores in the therapy group. This result is consistent with previous studies that have shown the positive effects of ACT on reducing depression. For example, a study by Han et al. (2019) demonstrated that ACT could reduce depression symptoms and improve quality of life (Han et al., 2019). Similarly, studies like Ferreira et al. (2022) confirmed that this type of therapy can also reduce stress and anxiety, indirectly contributing to the reduction of depression (Ferreira et al., 2022). In contrast, no significant changes were observed in the depression scores of the control group, which did not receive any intervention. This highlights the importance of psychological interventions in improving the mental health of individuals with asthma. As demonstrated by studies such as those by Sanging-Talaksi et al. (2023), individuals with asthma are more prone to depression due to the physical and psychological challenges posed by the disease and require psychological support (Sanging-Talaksi et al., 2023).

The results of this study also revealed a significant reduction in the mean anxiety scores in the intervention group. These findings are consistent with numerous studies. For instance, similar results were reported by McKenzie et al. (2023), indicating that ACT not only reduces anxiety but also alleviates other psychological issues (MacKenzie et al., 2023). One reason for ACT's success in reducing anxiety is its focus on accepting unpleasant experiences and using mindfulness exercises throughout the treatment. For example, in this study, exercises such as "deep breathing" and "mindful meditation" were employed, helping participants remain in the present moment and accept their thoughts and emotions without attempting to change them. This approach is similar to findings by Fang and Dingge (2020), who demonstrated that increasing present-moment awareness can reduce anxiety (Fang & Dingge, 2020).

One of the most important findings of this study was the improvement in the quality of life for individuals with asthma in the intervention group. This result highlights the positive effects of ACT on all aspects of an individual's life. According to the World Health Organization's definition of quality of life, which includes physical, psychological, social, and cultural dimensions, this therapy positively influenced not only psychological aspects but also improved social abilities and physical functioning. Sanggamgem et al. (2023) also concluded that controlling asthma symptoms and using stress and anxiety management techniques can improve patients' quality of life. However, some studies have shown that ACT may not be as effective in improving quality of life as it is in reducing anxiety and depression (Sanggamgem et al., 2023). For example, Zhang et al. (2019) found that ACT's impact on quality of life may vary among individuals, with factors such as disease severity and social support playing a significant role in the therapy's effectiveness (Zhang et al., 2019).

Despite the positive findings of this study, some studies have reported different results regarding the effects of ACT. For instance, research by Li et al. (2023) concluded that in some cases, improvements in the quality of life for asthma patients using ACT may be short-term, with a reduced impact over the long term (Li et al., 2023). This study suggests that combined therapies or longer-term interventions may yield better results. Additionally, studies such as Bandelow et al. (2022) have shown that various factors, including education level and socioeconomic status, can influence the effectiveness of this type of therapy (Bandelow & Michaelis, 2022). In the present study, all participants were of the same age and educational level, which may limit the generalizability of the results to other groups.

5. Limitations & Suggestions

Overall, the findings of this study suggest that Acceptance and Commitment Therapy (ACT) can be an effective method for reducing depression, anxiety, and improving the quality of life in men with asthma. These results align with previous studies, indicating that ACT can be a useful tool for managing psychological issues related to chronic illnesses such as asthma. However, to generalize the findings to broader populations, further studies involving more diverse groups in various conditions are necessary.

Acknowledgments

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

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

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed in this article.

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