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Comparison of the Effectiveness of Cognitive-Behavioral Therapy and Acceptance and Commitment Therapy on Quality of Life in Asthma Patients

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A B S T R A C T

Objective: The aim of the present study was to compare the effectiveness of Cognitive-Behavioral Therapy (CBT) and Acceptance and Commitment Therapy (ACT) on the quality of life in asthma patients.

Methods and Materials: The research design was experimental with a pretest-posttest and control group. The statistical population consisted of all asthma patients who visited treatment centers in Tehran between April and July 2024 for the management and treatment of their condition. A total of 90 individuals were selected through convenience sampling and randomly assigned to three groups: CBT group (30 individuals), ACT group (30 individuals), and a control group (30 individuals). The data collection tool was the World Health Organization Quality of Life Questionnaire. The intervention treatments were administered in 8 weekly sessions, each lasting 90 minutes, while the control group did not receive any specific treatment during this period. The data were analyzed using Multivariate Analysis of Covariance (MANCOVA).

Findings: The results indicated that both CBT and ACT were effective in improving the quality of life of asthma patients ($P < 0.05$), and there was no significant difference between the effectiveness of these two therapeutic approaches ($P > 0.05$).

Conclusion: The findings potentially provide important practical implications for professionals and therapists regarding the effectiveness of the therapeutic methods used in improving asthma outcomes.

Keywords: *Cognitive-Behavioral Therapy, Acceptance and Commitment Therapy, Quality of Life, Asthma*

1. Introduction

Asthma is a chronic disease that affects 5% of the global population, and over 40% of individuals with asthma are hospitalized at least once a year due to asthma attacks and increased stress caused by the disease. Therefore, asthma has drawn the attention of researchers as a psychosomatic disorder. With the rising prevalence and severity of asthma in recent decades, the disease, as a chronic defect in the airways, with consequences such as inflammation, irritability, and airway spasms in the lungs, has had a significant impact on individuals' cognitive, emotional, behavioral, and social functioning (Giordano et al., 2023). A review of research from the past two decades reveals that the understanding of asthma pathology and treatment has shifted from a purely biological and medical perspective to a holistic approach, encompassing physical, psychological, and social dimensions (Balazadeh et al., 2021).

It should be noted that asthma has caused numerous problems for patients and countries, and if not properly treated, it can threaten individuals' quality of life (Tavakkol et al., 2022). From the perspective of the World Health Organization, quality of life is defined as an individual's perception of their circumstances in life in relation to their goals, expectations, standards, and perspectives, which in turn enhances social functioning, addresses psychological issues, and improves physical health and adaptation (Perelman & Kolosov, 2023). The quality of life of individuals with asthma is influenced by the challenges posed by the disease. Therefore, the primary expected outcome of asthma treatment and symptom management is symptom control, risk reduction, and prevention of death due to asthma-related complications (Van Dijk et al., 2023). As mentioned above, in addition to the physical symptoms of asthma, psychological and social issues such as stress, depression, and anxiety are also prevalent in asthma patients. The combination of living with asthma and accompanying psychological issues creates difficult conditions for the affected individuals (Tavakkol et al., 2022). Asthma patients face numerous challenges, including a weakened immune system due to continuous medication use, high treatment costs, frequent hospitalizations, and absence from work due to recurrent symptom flare-ups. Moreover, the long-term treatment process leads to economic and familial problems, significantly reducing their quality of life (McGovern et al., 2019).

Among modern psychotherapies, numerous interventions with diverse content, such as mindfulness-based cognitive therapy, metacognitive therapy, exposure-based cognitive-behavioral therapy, stress management group therapy, music therapy, and relaxation therapy, have been employed to address psychological issues related to asthma (Ansari et al., 2021; Bonnert et al., 2020; Bonnert et al., 2024; Feldman et al., 2016; Khosrovarad & Malkooti-Far, 2021; Nasiri-Kalmarzi et al., 2018). One of these interventions that may significantly increase asthma patients' awareness of the psychological consequences of the disease and its management is cognitive-behavioral therapy (Kew et al., 2016). In cognitive-behavioral therapy, patients learn to consider their thoughts as assumptions that need to be evaluated for validity. This therapy teaches cognitive and behavioral techniques through exposure exercises during sessions, cognitive restructuring, and assigning homework (Sicouri, 2023). Given the relatively high prevalence of asthma in the general population and its association with outcomes such as poor quality of life, the positive impact of cognitive-behavioral therapy on improving these variables can be anticipated.

Another intervention approach that has shown considerable effectiveness in addressing psychological distress, particularly in psychosomatic patients, is Acceptance and Commitment Therapy (ACT). In therapies based on the acceptance and commitment approach, psychological distress is associated with attempts to avoid or manage negative emotions and thoughts (Bahodirovna et al., 2023; Mahmoudi-Nodj et al., 2022). ACT comprises six core processes that ultimately lead to psychological flexibility: acceptance, cognitive defusion, self as context, being present, values, and committed action (Ahmadi & Valizadeh, 2021; Chong et al., 2019). In the first stage, the individual is encouraged to accept their psychological experiences. In the next step, the focus is on increasing psychological awareness in the present moment. In the third stage, the individual is trained to separate themselves from their mental experiences to act independently from these experiences. In the following step, excessive focus on self-imagery or personal narratives (such as the victim mentality) that the individual has created for themselves is reduced. The fifth step involves helping the individual recognize and clarify their core personal values and transform them into specific behavioral goals (values clarification). Finally, the therapy encourages commitment to action, meaning engaging in goal-directed behavior aligned with clearly defined values (Zargar et al., 2022).

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Based on previous research, cognitive-behavioral therapy and acceptance and commitment therapy have demonstrated considerable efficacy in improving psychological symptoms in asthma patients (Abbasi et al., 2020; Ansari et al., 2021; Bahodirovna et al., 2023; Gibson Watt et al., 2023; Särnholm et al., 2023; Sicouri, 2023). Therefore, these two therapies were selected for comparison in this study. A clear advantage of these therapies over other psychological interventions is that they consider both motivational and cognitive aspects, aiming for greater therapeutic effectiveness and sustainability (Scott et al., 2023; Zargar et al., 2022). Furthermore, according to the present research, there has been no comparative investigation of the effects of these two therapeutic methods on the psychological outcomes of asthma patients in studies conducted within the country. Therefore, it is necessary to simultaneously assess the effectiveness of both therapies in asthma patients. Given the increasing prevalence of asthma in recent years in the country, the primary objective of the present study was to compare the effectiveness of cognitive-behavioral therapy and acceptance and commitment therapy on the quality of life in asthma patients.

2. Methods and Materials

2.1. Study Design and Participants

This study was an applied research project. The research design was experimental, with a pretest-posttest and control group. The statistical population comprised all asthma patients who visited healthcare centers in Tehran for treatment and disease management between April and July 2024. The sample size consisted of 90 individuals who were selected using purposive sampling. The selected sample was randomly assigned to three groups: the cognitive-behavioral therapy group (30 individuals), the acceptance and commitment therapy group (30 individuals), and a control group (30 individuals). The initial sample size was 96, but six participants withdrew for various reasons, such as the distance of the intervention site from their residence, conflicting obligations during session times, and lack of spousal consent to continue participating. Based on the division of Tehran into four regions, one hospital center from each region was selected. Accordingly, the selected sample included asthma patients from Day Hospital (North), Imam Sajjad Hospital (East), Lolagar Hospital (West), and Amir Al-Momenin Hospital (South). The inclusion criteria for participants were a minimum of one year of asthma diagnosis, less than one year since diagnosis, absence of other chronic illnesses, age range of 18 to 60 years, literacy, no history of psychological disorders, and no previous psychotherapy. The exclusion criteria included unwillingness to continue participating, incomplete questionnaire responses, worsening health conditions, or any other issue that impeded participation.

2.2. Measures

2.2.1. Quality of Life

The World Health Organization's Quality of Life Questionnaire is a 26-item instrument that assesses an individual's overall and general quality of life. This scale was developed in 1996 by a team of WHO experts. It consists of four subscales and a total score. These subscales include physical health, mental health, social relationships, and environmental health, as well as a total score. The first two questions evaluate the overall quality of life. Participants provide their responses on a Likert scale ranging from very poor (1) to very good (5) for each question. A higher score indicates better quality of life (World Health Organization, 1996). In Iran, Nejat et al. (2006) standardized this questionnaire, and the Cronbach's alpha coefficient for the healthy population was 0.70 for social health, 0.73 for mental health, 0.55 for social relationships, and 0.84 for environmental communication. The test-retest reliability after two weeks was reported as 0.70. Factor analysis of the 26 items on this scale revealed four subscales corresponding to physical, psychological, social, and environmental health, similar to the original scale, indicating its structural validity. In the study by Rajabi, Kamali, and Mousavi (2022), the reliability of the Quality of Life Questionnaire was determined using Cronbach's alpha, which was confirmed at 0.79 (Tavakkol et al., 2022).

2.3. Interventions

2.3.1. Cognitive-Behavioral Therapy

Cognitive-behavioral therapy was conducted in 8 weekly 90-minute sessions, and the cognitive-behavioral model used in this study was based on Fateh Ali Lavasani's package, which was generally derived from Beck's model (Qasemnejad et al., 2021).

Session 1:

The first session begins with welcoming the participants, introducing group rules and regulations, and familiarizing group members with one another. The session includes an introduction to asthma and an overview of the cognitive-

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behavioral therapy (CBT) approach. A pre-test is conducted to assess baseline psychological and quality of life metrics, followed by psychoeducation on asthma and its psychological impacts.

Session 2:

The second session focuses on teaching relaxation techniques and breathing exercises. Participants are guided through progressive muscle relaxation and diaphragmatic breathing to help manage stress and anxiety related to asthma. Homework is assigned, encouraging participants to practice these techniques before the next session.

Session 3:

In this session, previous homework is reviewed, and desensitization techniques are introduced. Participants create a hierarchy of avoidant situations related to asthma triggers and stress. The exposure process begins, coupled with relaxation exercises to reduce anxiety. Participants are assigned homework to continue practicing exposure and relaxation exercises.

Session 4:

The fourth session involves reviewing previous assignments and focusing on worry management. The group discusses common worries associated with asthma and learns techniques to identify and challenge cognitive distortions. Participants practice cost-benefit analysis of their worries, identifying the pros and cons of their anxious thoughts. Homework involves applying these techniques in daily life.

Session 5:

In this session, participants learn the technique of worry postponement and attention diversion, focusing on redirecting thoughts away from anxiety-provoking situations. Activity scheduling is introduced to help patients engage in positive and productive activities. Homework assignments include practicing worry postponement and scheduling activities for the week.

Session 6:

This session explores the link between depression and inactivity, introducing behavioral activation. Participants identify goals and activities that can improve their mood and reduce depressive symptoms. A plan is created for each participant to gradually increase their involvement in rewarding activities, with assigned homework to implement this plan.

Session 7:

The seventh session focuses on cognitive restructuring, helping participants identify and challenge negative thoughts. They learn how to replace distorted thoughts with more realistic and balanced thinking. Homework includes practicing cognitive restructuring techniques in response to negative thoughts that arise during the week.

Session 8:

The final session reviews stress management techniques, including logical problem-solving skills. Participants are also introduced to strategies for maintaining a healthy lifestyle to support long-term asthma management. A post-test is conducted to assess changes from the pre-test, and feedback is gathered from participants.

2.3.2. Acceptance and Commitment Therapy

The content of the acceptance and commitment therapy sessions was delivered following the protocol by Hayes et al. (2013) in 8 weekly 90-minute sessions (Ahmadi & Valizadeh, 2021; Ali-Asgari et al., 2019; Karimzadeh, 2022).

Session 1:

The first session starts with completing research questionnaires and introducing group members to each other. Group rules, such as confidentiality and regular attendance, are established. An overview of ACT and its goals is presented. Participants engage in assessment and conceptualization of their problem behaviors, understanding their causes and consequences. A homework assignment is given to identify problem behaviors and reflect on the causes and outcomes.

Session 2:

In this session, participants review the previous homework and discuss problematic behaviors, their causes, and consequences. The group explores painful experiences and evaluates them through the lens of "creative hopelessness," which aims to reduce the desire to control emotions and behaviors. Various metaphors like "the man in the hole" and "tug-of-war with a monster" are used to illustrate these concepts. Homework involves tracking weekly experiences, including thoughts, feelings, and actions.

Session 3:

The third session begins with a review of homework and a discussion about the futility of controlling thoughts and emotions. Metaphors such as "falling in love," "polygraph," and "the jelly donut" are introduced to explain how control can be the problem. Participants are introduced to the concept of willingness, and daily willingness tracking is assigned as homework.

Session 4:

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This session introduces the concept of cognitive defusion through metaphors like "passengers on the bus," the "milk, milk, milk" exercise, and "soldiers marching." The idea of clean versus dirty pain is discussed, emphasizing how detachment from distressing thoughts can reduce suffering. Participants are encouraged to differentiate between clean and dirty pain, with homework assignments to reflect on these distinctions.

Session 5:

In this session, the concept of self-as-context is introduced using metaphors like "the chessboard" and "furniture in a house." The session encourages participants to observe their experiences without becoming overly attached to personal narratives. Participants explore how reducing personal involvement in events can improve psychological flexibility.

Session 6:

This session focuses on mindfulness techniques, such as the five senses exercise, seated meditation, and the "problem-creating and three-second pause" technique. Participants are assigned mindfulness homework, practicing these exercises daily for 15–20 minutes.

Session 7:

In this session, participants clarify their values by reflecting on the question, "What do you want to pursue in your life?" They engage in exercises to prioritize values and identify key life goals. Homework involves completing a value-ranking form to help participants focus on living a value-driven life.

Session 8:

The final session deepens the understanding of willingness and commitment using metaphors like "the beggar at the door" and "planting trees." Participants complete post-tests related to cortisol levels and psychological distress, and feedback is collected.

2.4. Data Analysis

In this study, in addition to using descriptive statistics, multivariate analysis of covariance (MANCOVA) was employed to test the research hypotheses. Data analysis was conducted using SPSS version 26.

3. Findings and Results

The demographic characteristics of the study sample are as follows: The participants in the Cognitive-Behavioral Therapy (CBT) group ranged in age from 21 to 40 years, with a mean age of 32.13 years. In the Acceptance and Commitment Therapy (ACT) group, the age range was 22 to 39 years, with a mean age of 30.17 years. The control group had participants aged between 23 and 38 years, with a mean age of 31.47 years. Regarding education levels, 56.7% of participants in the CBT group had a high school diploma or lower, 30% had an associate or bachelor's degree, and 13.3% had a master's degree or higher. In the ACT group, 46.7% had a high school diploma or lower, 33.3% had an associate or bachelor's degree, and 20% had a master's degree or higher. In the control group, 50% had a high school diploma or lower, 36.7% had an associate or bachelor's degree, and 13.3% had a master's degree or higher.

Table 1 presents the mean and standard deviation of the dependent variables in the pre-test and post-test stages for the intervention groups.

Table 1

Descriptive Statistics for Quality of Life and its Subscales in the Study Groups

Variable	Stage	Group	Mean	Standard Deviation
Physical Health	Pre-test	Cognitive-Behavioral Therapy	7.10	1.99
		Acceptance and Commitment Therapy	7.53	2.21
		Control	7.47	1.91
	Post-test	Cognitive-Behavioral Therapy	11.53	1.65
		Acceptance and Commitment Therapy	11.77	2.07
		Control	7.57	1.55
Mental Health	Pre-test	Cognitive-Behavioral Therapy	7.40	1.45
		Acceptance and Commitment Therapy	7.03	1.38
		Control	7.63	1.22
	Post-test	Cognitive-Behavioral Therapy	10.67	1.79
		Acceptance and Commitment Therapy	9.90	1.73
		Control	7.53	1.11
Social Relations	Pre-test	Cognitive-Behavioral Therapy	6.97	1.54
		Acceptance and Commitment Therapy	6.73	1.74

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		Control	6.30	1.54
	Post-test	Cognitive-Behavioral Therapy	9.57	1.79
		Acceptance and Commitment Therapy	9.33	1.56
		Control	6.13	1.11
Environmental Health	Pre-test	Cognitive-Behavioral Therapy	5.93	1.86
		Acceptance and Commitment Therapy	6.90	1.56
		Control	6.67	2.07
	Post-test	Cognitive-Behavioral Therapy	8.63	1.87
		Acceptance and Commitment Therapy	8.90	1.79
		Control	7.60	1.19
Overall Quality of Life	Pre-test	Cognitive-Behavioral Therapy	27.40	3.45
		Acceptance and Commitment Therapy	28.20	3.83
		Control	28.07	2.93
	Post-test	Cognitive-Behavioral Therapy	40.40	3.65
		Acceptance and Commitment Therapy	39.90	3.39
		Control	28.83	2.33

Given the pre-test-post-test control group design of the current study, data were analyzed using Multivariate Analysis of Covariance (MANCOVA). The primary assumptions, including the normality of score distribution and homogeneity of variances between the experimental and control groups, were satisfied.

As all statistical assumptions were met, the results of the data analysis are presented in Table 2. The results indicate that there were no significant differences between the three groups at the pre-test stage. However, after controlling for the effect of the pre-test on the post-test, the differences between the groups were statistically significant ($P < 0.001$).

Table 2

Results of ANCOVA for Between-Group Effects on Quality of Life and its Subscales

Variable	Source	Sum of Squares	df	Mean Square	F	p	Eta Squared
Physical Health	Group	336.93	2	168.46	203.29	0.001	0.83
	Error	68.78	83	0.83			
	Total	10132.00	90				
Mental Health	Group	187.48	2	93.74	92.98	0.001	0.69
	Error	83.68	83	1.01			
	Total	8271.00	90				
Social Relations	Group	170.16	2	85.08	60.32	0.001	0.59
	Error	117.08	83	1.41			
	Total	6687.00	90				
Environmental Health	Group	30.03	2	15.02	6.60	0.002	0.14
	Error	188.92	83	2.28			
	Total	6580.00	90				
Overall Quality of Life	Group	2549.97	2	1274.98	254.31	0.001	0.86
	Error	416.11	83	5.01			
	Total	122544.00	90				

To determine whether the interventions had a significant effect on the quality of life and its subscales, and which treatment was more effective, a post-hoc LSD test was performed. Table 3 shows that there were significant differences between the groups, with no significant difference observed between the Cognitive-Behavioral Therapy (CBT) and Acceptance and Commitment Therapy (ACT) groups. However, both therapy groups showed a significant difference compared to the control group.

Table 3

LSD Post-hoc Test Results for the Impact of Treatment on Quality of Life and its Subscales

Dependent Variable	Groups Compared	Mean Difference	Significance (p)
Physical Health	CBT vs. Control	4.199	0.001

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	ACT vs. Control	4.210	0.001
	CBT vs. ACT	-0.013	0.957
Mental Health	CBT vs. Control	3.34	0.001
	ACT vs. Control	2.89	0.001
	CBT vs. ACT	0.442	0.105
Social Relations	CBT vs. Control	3.00	0.001
	ACT vs. Control	2.98	0.001
	CBT vs. ACT	0.021	0.948
Environmental Health	CBT vs. Control	1.24	0.003
	ACT vs. Control	1.267	0.002
	CBT vs. ACT	-0.024	0.953
Overall Quality of Life	CBT vs. Control	11.78	0.001
	ACT vs. Control	11.35	0.001
	CBT vs. ACT	0.425	0.48

4. Discussion and Conclusion

This study aimed to compare the effectiveness of Cognitive-Behavioral Therapy (CBT) and Acceptance and Commitment Therapy (ACT) on the quality of life in patients with asthma. The results demonstrated that both experimental groups, namely CBT and ACT, reported significantly higher quality of life than the control group. This indicates that both therapeutic approaches were effective in improving the quality of life of asthma patients. However, no significant difference was found in the effectiveness of these interventions on the dependent variables of the study. These findings are consistent with previous research (Ahmadi & Valizadeh, 2021; Ali-Asgari et al., 2019; Bahodirovna et al., 2023; Bonnert et al., 2020; Bonnert et al., 2024; Chong et al., 2019; Gibson Watt et al., 2023; Han & Kim, 2022; Hayes et al., 2003; Karimzadeh, 2022; Kew et al., 2016; Konstantinou et al., 2023; Luyster et al., 2020; Mahmoudi-Nodj et al., 2022; McGovern et al., 2019; Mohammadi et al., 2018; Qasemnejad et al., 2021; Razmpoosh et al., 2018; Rose et al., 2018; Särnholm et al., 2023; Scott et al., 2023; Sicouri, 2023; Zargar et al., 2022; Zhang et al., 2020; Zhang et al., 2022).

It is important to note that the quality of life in asthma patients is significantly influenced by the symptoms of asthma, anxiety, depression, social relationships, and patients' cognitive outlook toward their illness. In this study, CBT techniques aimed to improve quality of life and its four dimensions (physical health, mental health, social relations, and environmental health). Asthma symptoms, such as wheezing, coughing, and shortness of breath, often worsen in response to environmental stressors, reducing the patients' quality of life. Given that cognitive distortions and automatic negative thoughts can exacerbate asthma symptoms and induce immunological changes, this study sought to reduce these symptoms by providing education on challenging automatic negative thoughts related to asthma.

Another important aspect of asthma patients is their defective mood regulation, which includes anxiety and depression co-occurring with asthma, significantly affecting various dimensions of quality of life, such as physical, psychological, and social well-being, as well as environmental health and their overall perception of health. The use of stress management techniques, relaxation training, and breathing exercises significantly reduced physical tension and physiological anxiety symptoms in the patients (Zhang et al., 2020). Moreover, challenging automatic negative thoughts and encouraging patients to increase pleasurable activities and plan for success in daily activities effectively reduced patients' depressive moods. The improvement in depressive symptoms and emotional well-being in asthma patients subsequently led to an increase in their overall quality of life.

Another noteworthy aspect regarding asthma patients is their tendency to adopt ineffective communication styles, such as aggressive or passive behavior, in their social relationships. Therefore, teaching assertive communication skills to these patients within the CBT framework became a critical factor in enhancing positive social interactions, which in turn led to increased social support and significantly improved their quality of life (Scott et al., 2023). The effectiveness of CBT in improving asthma patients' quality of life is also attributable to the intervention's focus on problem-solving skills, combating negative thoughts, promoting logical thinking, relaxation training, desensitization, and planning pleasurable activities—all contributing to improved physical health, which in turn boosts psychological and social well-being.

Another crucial point in understanding the effectiveness of CBT in asthma patients is the unpredictable nature of

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asthma attacks, which often leads to fear of social situations and decreased social engagement. Providing accurate information about the nature of the illness as a corrective alternative to previous misconceptions helped reduce fear and enhance patients' ability to participate in social activities (Khosrovarad & Malkooti-Far, 2021). Less social isolation, increased interpersonal and social activities, and improved emotional well-being were outcomes that contributed to the overall improvement in the patients' quality of life.

One potential factor that may have contributed to the improvement in the quality of life among asthma patients is the increased sense of perceived control over the disease. Due to the chronic nature of asthma, patients often experience helplessness from depression and negative thoughts about their abilities, leading to a reduced perceived control over their symptoms and asthma attacks. Through CBT's self-management techniques, patients were taught that asthma symptoms and attacks, like any other daily experience, can be controlled by identifying triggers and regulating symptoms. As a result, the increased sense of control over their symptoms and reduced attacks improved their overall quality of life.

Another significant finding of the study was the effectiveness of Acceptance and Commitment Therapy (ACT) in enhancing the quality of life in asthma patients. This can be explained by ACT's focus on resolving cognitive-behavioral issues, enhancing mindfulness of emotions, and fostering unconditional acceptance of mental experiences. These elements empowered patients with the necessary skills to solve problems and improve their quality of life (Gibson Watt & colleagues, 2023). Given that asthma patients often struggle with cognitive distortions, negative thoughts, and ineffective thinking patterns, these issues not only increase the patient's negative focus on themselves, reduce self-esteem, and diminish hope for recovery but also aggravate asthma symptoms. In ACT, diverse techniques for challenging negative and irrational thoughts were introduced, ultimately leading to the selection of more effective problem-solving strategies (Mohammadi et al., 2018). Cognitive defusion, a core component of ACT, played a role in addressing the above aspects and contributed to improving the patients' quality of life.

Another key point in ACT's effectiveness for asthma patients is that the therapy provides the necessary foundation for accepting emotions. By employing mindfulness techniques and other acceptance-based approaches, ACT helps patients break free from ineffective efforts to control, suppress, or eliminate negative emotions and experiences. In ACT, asthma patients are encouraged to pursue their personal values and commit to actions aligned with those values (Han & Kim, 2022). This process resulted in an increased quality of life and improvements across its various dimensions for asthma patients.

Asthma patients often have negative emotional experiences stemming from the physical and psychological burdens of the illness. Therefore, in ACT, mindfulness techniques were used to equip patients with the ability to observe their mental images rather than becoming fused with their thoughts and emotions. This allowed patients to employ problem-solving skills more effectively, leading to a decrease in cognitive fusion and an increase in quality of life (Zhang et al., 2022). Ultimately, these processes led to improved problem-solving abilities and increased quality of life for the patients. Moreover, the significant effect size (86%) for the quality of life variable suggests that ACT succeeded in enhancing psychological flexibility in asthma patients, thereby empowering them to face future challenges more effectively.

The final and central finding of the study regarding the difference in effectiveness between the two therapeutic approaches revealed no significant difference in their impact. This can be explained by the fact that when individuals have acted based on irrational beliefs for a prolonged period, these beliefs become ingrained and automatically activate in stressful situations, preventing the patient from replacing these beliefs with rational alternatives learned during therapy. Both CBT and ACT require practice, persistence, and time for these new beliefs to replace pessimistic, global, and stable attributional styles in patients. Therefore, both therapeutic approaches demonstrated similar effectiveness in reducing psychological problems and enhancing quality of life by addressing behavioral, cognitive, and emotional avoidance, ultimately leading to comparable outcomes. This similarity in effectiveness is largely attributable to the shared therapeutic elements of both interventions.

Another explanation for these results is that basic beliefs and automatic negative thoughts significantly influence patients' negative emotions. Individuals with psychological vulnerability often cling to these beliefs (as they relate to physical, cognitive, and emotional symptoms). Therefore, in the initial stages of therapy, patients must accept these beliefs according to the therapeutic model and subsequently work indirectly to change them. This principle is clearly reflected in both CBT and ACT approaches.

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5. Limitations & Suggestions

One of the main limitations of this study is the reliance on self-reported data, which can be subject to biases such as social desirability or inaccurate recall. Additionally, the sample size, while sufficient for initial analysis, limits the generalizability of the findings to a broader population. The study was also restricted to asthma patients in a specific geographic region (Tehran), which may not represent asthma patients in other regions or countries. Another limitation is the absence of long-term follow-up to assess the sustainability of the treatment effects over time.

Future research should consider using larger and more diverse samples to enhance the generalizability of the findings. Expanding the study to different regions or countries could provide a more comprehensive understanding of the effectiveness of CBT and ACT for asthma patients across various cultures. Longitudinal studies should be conducted to assess the long-term effects of these therapies on the quality of life of asthma patients, as well as to explore whether booster sessions or continuous treatment might be necessary for sustained benefits. Additionally, integrating objective physiological measures, such as pulmonary function tests, could provide more robust data alongside self-reported outcomes.

The findings of this study have practical implications for mental health professionals and healthcare providers working with asthma patients. Incorporating CBT and ACT into routine asthma care could help patients manage both the psychological and physical symptoms of the disease, ultimately improving their quality of life. Training healthcare providers in these therapeutic approaches could lead to more comprehensive asthma management programs, integrating psychological interventions with medical treatment. Additionally, these therapies could be offered in both individual and group formats to cater to different patient preferences and needs, promoting greater accessibility and treatment adherence.

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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

This article is derived from the first author's doctoral dissertation. All authors equally contributed to this article.

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