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Comparison of the Effectiveness of Acceptance and Commitment Therapy and Cognitive-Behavioral Therapy on Death Anxiety and Life Hope in Breast Cancer Patients

Mahdieh Sadeghpour[1], Pegah Farokhzad[2]*, Mohammad Ebrahim Sarichlo[3], Hossein Ebrahimi Moghadam[4]

1. PhD Student, Department of Psychology, Roudehen Branch, Islamic Azad University, Roudehen, Iran.
2. Assistant Professor, Department of Psychology, Roudehen Branch, Islamic Azad University, Roudehen, Iran (Corresponding author).
3. Assistant Professor, Clinical Research Development Unit, 22 Bahman Hospital, Qazvin University of Medical Sciences, Qazvin, Iran.
4. Associate Professor, Department of Psychology, Roudehen Branch, Islamic Azad University, Roudehen, Iran.

*** Corresponding author email address**: dr.pegahfarokhzad@gmail.com

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A B S T R A C T

Purpose: The present study aimed to compare the effectiveness of Acceptance and Commitment Therapy (ACT) and Cognitive-Behavioral Therapy (CBT) on death anxiety and life hope in breast cancer patients.

Methods and Materials: The statistical population of this study consisted of women aged 25 to 65 years diagnosed with breast cancer in Qazvin city in 2022. A total of 45 participants were selected using convenience sampling as the research sample. The research tools included the Death Anxiety Scale (Templer), Life Hope Questionnaire (Snyder), the ACT protocol (Hayes et al.), and the CBT protocol (Houghton et al.). The data were analysed with analysis of covariance and post-hoc tests through SPSS-26.

Findings: The results of the Bonferroni test revealed that Cognitive-Behavioral Therapy significantly increased life hope in breast cancer patients more than Acceptance and Commitment Therapy ($P<0.01$). However, there was no significant difference between these two types of psychotherapy in terms of their effectiveness on death anxiety in breast cancer patients ($P<0.784$).

Conclusion: Both Cognitive-Behavioral Therapy and Acceptance and Commitment Therapy are effective and significantly impactful in breast cancer patients.

Keywords: *Cognitive-Behavioral Therapy, Acceptance and Commitment Therapy, Death Anxiety, Life Hope, Breast Cancer*

1. Introduction

Breast diseases, including breast cancer, are among the most common diseases in women. Breast cancer, as one of the major and common causes of mortality in women in our country, has significant importance and leads to widespread individual, familial, and social consequences (Isfahani & Zināli, 2020). Worldwide, the most common cause of cancer-related death in women is breast cancer, accounting for 25.5% of all cancers in women (Shari et al., 2021; Taghizadeh, 2022). Studies have shown that 50% to 85% of cancer patients suffer from a psychiatric disorder concurrently. Additionally, research indicates that cancer results in several negative outcomes for these patients, including increased anxiety, emotional dysregulation, reduced flexibility, decreased general health, diminished quality of life, and hopelessness. Among these, anxiety, depression, and hopelessness are more prevalent (Jeloudari et al., 2020; Johannsen et al., 2018; Johannsen et al., 2017).

One of the psychological variables associated with cancer patients' condition is death anxiety. According to the UK National Health Service, death anxiety is defined as a type of intense fear, dread, or worry when thinking about the process of dying, detachment from the world, or what happens after death (Venes & Taber, 2017). Belsky views death anxiety and fear as thoughts, fears, and emotions related to the final event of life and beyond normal circumstances. Harmon-Jones considers it both a conscious and unconscious fear of death or dying. Death anxiety is a complex concept that cannot be easily explained and generally includes the fear of one's own death as well as the death of others (Kafi et al., 2024; Zhou, 2024). In the mental health dimension, one of the struggles that cancer patients often express concern about is their anxiety regarding death (Kolahdozan et al., 2020). A serious consequence of death anxiety in cancer patients is that in some studies, it has been reported that even in types of cancer for which effective treatments exist, patients, due to incorrect information, consider a cancer diagnosis as equivalent to death. Therefore, one of the factors influencing mental health components in cancer patients is death and the anxiety it causes (Ahmadī et al., 2018).

Another variable related to the psychological state of cancer patients is hope for life. Snyder (2002) defined hope as a construct consisting of two components: the ability to plan pathways toward desired goals despite existing barriers and the motivational agent necessary to use these pathways (Kavardim et al., 2013; Shahangian & Arshak, 2021). Hope for life is a fundamental element in helping cancer patients return to life, where patients relate to their unique life goals (Kavardim et al., 2013). Hope is a positive motivational state based on a sense of direction and is the product of an individual's interaction with their environment (Emami et al., 2017). It helps individuals maintain motivation despite the obstacles they face in life (Mansano-Schlosser et al., 2017; Mohammadian Akhondi et al., 2016). Having hope for life in patients with chronic illnesses is crucial, as it represents the struggle to overcome life's limitations and continue living. Hope and cancer are related in two ways: 1. Hopeful individuals tend to use problem-focused coping strategies more and are more likely to engage in cancer screening behaviors like mammography. 2. Those who think optimistically tend to experience less distress and more adaptation when faced with cancer diagnosis and treatment, and they exhibit greater resilience during treatment, increasing the likelihood that they will continue with their treatment (Emami et al., 2017).

Given the psychological state of cancer patients and the outcomes of a cancer diagnosis, in addition to medical and physical treatments, attention to the psychological aspects and psychotherapy interventions to improve both the physical and psychological states of cancer patients is vital. Over the past few decades, treatment approaches for chronic physical illnesses like cancer have shifted from a purely economic perspective focused on physical and drug-based treatments to multidimensional approaches that combine physical and psychological elements. Moreover, recent developments in psychotherapy models and an increasing focus on positive psychological aspects of human nature have gained attention (Fathi et al., 2020). This study has also been designed in alignment with the shift from physical treatments to psychological interventions for cancer patients. Among the non-pharmacological interventions that are currently used to treat disorders and optimize health, cognitive-behavioral therapy (CBT) and Acceptance and Commitment Therapy (ACT) are noteworthy.

Cognitive-behavioral therapy is a combination of cognitive and behavioral approaches that help patients identify and change distorted patterns and ineffective behaviors, enabling them to make positive changes in their lives (Johannsen et al., 2018; Johannsen et al., 2017; Rajaeinia, 2022). In fact, this therapy integrates behavioral therapy based on Pavlovian conditioning and cognitive approaches grounded in knowledge and understanding (Hosseini, 2024; Kashmari et al., 2024; Mohammadian Akhondi et al., 2016). Therefore, the focus of CBT is to

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provide an opportunity for adaptive learning and implement changes in the external environment beyond the clinical setting. One of the primary goals of CBT is to enhance patient motivation, teach coping skills, create changes in dependencies, strengthen emotional regulation, improve interpersonal functioning, and enhance social skills (Blumenstein et al., 2022). Studies have shown the effectiveness of CBT in reducing death anxiety (Ghamari Kivi et al., 2015), increasing resilience (Bahrami Soodegar, 2021; Kolahdozan et al., 2020; Shareh & Rabhati, 2020), and improving hope for life (Emami et al., 2017; Mohammadian Akhondi et al., 2016; Shareh & Rabhati, 2020; Van den Akker et al., 2017).

Acceptance and Commitment Therapy (ACT) is considered one of the main interventions for understanding ineffective behavioral patterns and problematic processes while fostering healthier and more effective behaviors and emotions (Akrami, 2022; Arch et al., 2020; Enayati Shabkolai et al., 2023; Nasirnia Samakush & Yousefi, 2022). In ACT, unlike CBT, the content of thoughts, feelings, and bodily sensations is not the focus (Harris, 2021); rather, the way individuals engage with their experiences is examined (Hayes et al., 2012). ACT helps individuals achieve a vibrant, purposeful, and meaningful life. Its goal is not to change the frequency or nature of distressing thoughts and feelings, but to enhance the ability to engage with life's moments and alter or stabilize behavior in a way that aligns with personal values (Isfahani & Zināli, 2020; Shari et al., 2021). Research has shown that ACT is effective in reducing death anxiety (Ahmadī et al., 2018; Kolahdozan et al., 2020; Nasirnia Samakush & Yousefi, 2022), increasing resilience (Aliakbar Dehkordi et al., 2020; Behrami Abdolmaleki et al., 2021; Nasirnia Samakush & Yousefi, 2022), and improving hope for life (Behrami Abdolmaleki et al., 2021).

As mentioned, cancer leads to chronic stress, various physical, psychological, and social disorders, and disruptions in the psychological characteristics of patients. Therefore, one of the therapeutic aspects in cancer patients is addressing their psychological well-being. Using effective and efficient psychotherapy interventions in this regard is critical. Since the effectiveness and comparison of Acceptance and Commitment Therapy and Cognitive-Behavioral Therapy on death anxiety and hope for life in breast cancer patients has not yet been studied, the novelty and innovation of the current study are evident. Therefore, the aim of this study is to compare the effectiveness of Cognitive-Behavioral Therapy and Acceptance and Commitment Therapy on death anxiety and hope for life in breast cancer patients.

2. Methods and Materials

2.1. Study Design and Participants

The present study is a clinical trial with an experimental design, specifically a pretest-posttest design with a control group. This research involved three groups: two experimental groups (Acceptance and Commitment Therapy group and Cognitive Behavioral Therapy group), and one control group.

The statistical population of this study consists of women aged 25 to 65 years diagnosed with breast cancer in Qazvin city, who visited the specialized Valayat Hospital in 2022. Their diagnosis was confirmed based on the opinion of an oncologist and diagnostic tests, and they had a medical file at the mentioned hospital. Using convenience sampling, 45 patients with breast cancer were selected as the sample and randomly assigned to three groups of 15 participants each.

It is worth mentioning that initially, after presenting the researcher's identification and educational documents at Qazvin University of Medical Sciences, the objectives and conditions of this study were explained to the relevant authorities. After obtaining approval for the research, a list of all breast cancer patients was obtained from the health network of Qazvin County and Valayat Specialized Hospital. In the next step, screening interviews were conducted, and patients were assessed for eligibility according to the inclusion criteria, which included: being diagnosed with breast cancer for at least one month after hospitalization and undergoing chemotherapy, radiotherapy, surgery, and related procedures; having at least a basic education level of reading and writing and comprehension skills; obtaining informed consent from the patients for attending the educational sessions; being in the age range of 25 to 65 years; and having the physical and mental ability to attend the therapeutic intervention sessions. Ultimately, 45 patients with breast cancer were selected to participate in the study, and necessary arrangements were made for their participation in the research, including scheduled attendance in the hospital's educational room. Participants were then randomly assigned to the Acceptance and Commitment Therapy group, Cognitive Behavioral Therapy group, and the control group. After explaining the research objectives and emphasizing ethical principles such as the right to freedom of choice, confidentiality, etc., the informed consent form was provided to the participants, who filled it

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out and signed it voluntarily. Subsequently, the pretest questionnaires (Death Anxiety and Life Hope) were distributed among participants in all three groups, and sufficient time was given to complete and respond to the questions.

In the next phase, for one experimental group, the Acceptance and Commitment Therapy protocol was implemented, and for the other experimental group, the Cognitive Behavioral Therapy protocol was delivered in group sessions, once a week, according to their respective guidelines. Meanwhile, the control group did not receive any psychotherapy or educational intervention. Finally, after the completion of the sessions, a posttest was conducted for all three groups.

It is important to note that the exclusion criteria for participants (breast cancer patients) included: the presence of psychological disorders or a history of psychiatric illness and hospitalization, absence from more than two therapeutic intervention sessions, and substance abuse or misuse of psychiatric medications.

2.2. Measures

2.2.1. Death Anxiety

This questionnaire, developed by Templer in 1970, contains 15 items that measure the participants' attitudes toward death. The responses to each item are rated on a five-point scale ranging from strongly disagree (0) to strongly agree (4). For reversed items (2, 3, 5, 6, 7, and 15), the scoring is reversed, with strongly disagree being 4 and strongly agree being 0. Therefore, scores on this scale can range from 0 to 15, with scores above 8 indicating high death anxiety. The validity and reliability of this questionnaire have been assessed by Rajabi and Bahrani (2001) in Persian. In 1996, Saino and Klein reported Cronbach's alpha coefficients of 0.68, 0.49, and 0.60 for the three factors derived from factor analysis and the Italian version of the scale. Templer (1970) reported a test-retest reliability coefficient of 0.83. In the study by Ghasempour et al. (2012), the reliability of the scale was obtained using Cronbach's alpha as 0.65. Rajabi and Bahrani (2001) also assessed the construct validity of the scale using the Manifest Anxiety Scale, which showed a correlation of 0.34 (Ghamari Kivi et al., 2015).

2.2.2. Life Hope

This scale, developed by Snyder (1991, as cited in Bijari et al., 2009, 1998), measures hope and is designed for individuals aged 15 and above. It includes two subscales: Pathways and Agency. For each question, responses are rated on a four-point scale from 1 (completely false) to 4 (completely true). The validity and reliability of the Life Hope Scale were examined in a study by Golzari (2010) on 660 female students in Tehran. The internal consistency reliability was assessed using Cronbach's alpha, which was found to be 0.89. The hope scale showed a high correlation with other scales measuring similar psychological processes, such as optimism (r = 0.50 to 0.90) and a negative correlation with the Beck Depression Inventory (r = -0.51 to -0.62) (as cited in Bijari et al., 2009). The reliability of the Life Hope Scale in this study was found to be 0.79 using Cronbach's alpha (Shahangian & Arshak, 2021).

2.3. Interventions

The following intervention protocols detail each session for two types of therapies: Acceptance and Commitment Therapy (ACT) (Daneshnia et al., 2021; Fathi et al., 2020) and Cognitive Behavioral Therapy (CBT) (Blumenstein et al., 2022; Emami et al., 2017; Khanqai et al., 2019; Mohammadian Akhondi et al., 2016; Taghizadeh, 2022). Both interventions are structured to guide participants through systematic processes aimed at enhancing psychological well-being. The protocols provide a clear outline of what occurs in each session, the exercises involved, and the overall goals for the therapeutic process

2.3.1. Acceptance and Commitment Therapy

Session 1: The first session introduces participants to the core principles of the ACT approach. The therapist explains the concepts of resilience, hope for life, and death anxiety. Additionally, participants' attitudes toward unpleasant thoughts and emotions are explored. The session focuses on accepting these experiences rather than trying to control or eliminate them. A metaphor of bus passengers is used to illustrate acceptance, and participants complete a worksheet on hopelessness. This session sets the foundation for acceptance and committed action.

Session 2: This session begins with a review of the previous session and an introduction to the concept of being present. Participants engage in mindfulness exercises, including a "now moment" exercise, and learn to embrace

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awareness rather than avoidance. A rope-pulling exercise involving a monster serves as a metaphor for the difficulty of resisting distressing thoughts and feelings, reinforcing the importance of willingness to experience discomfort in pursuit of valued actions.

Session 3: The third session revisits mindfulness and introduces the concept of cognitive defusion. Participants are taught how to recognize mental processes that lead to distressing thoughts and judgments. They practice "machine exercises" to demonstrate how thoughts can be viewed as just thoughts, without intrinsic meaning. The aim is to separate oneself from thoughts, reducing their impact on emotional well-being.

Session 4: Session four focuses on exploring personal values and committed action. Participants identify the obstacles preventing them from living in accordance with their values and commit to engaging in actions that align with these values. A "television interview" exercise is used to help participants articulate how they might behave in a way that reflects their values, even in the face of internal barriers.

Session 5: The fifth session revisits mindfulness, this time focusing on the self as a context for experiences. Participants reflect on internal barriers that hinder the pursuit of a valued life. The "train cars" metaphor is used to explore how different experiences can be related to the ongoing journey toward living a meaningful life. The session emphasizes the importance of maintaining awareness of values even when obstacles arise.

Session 6: In this session, participants engage in mindfulness exercises that address cognitive defusion and explore how breaking language rules can lead to a better understanding of their thoughts. The aim is to help participants detach from rigid thinking patterns and enhance their capacity to live in alignment with their values.

Session 7: The seventh session reviews the key exercises from previous sessions and focuses on maintaining progress. Participants reflect on their experience with mindfulness and cognitive defusion, and how these skills contribute to achieving lasting changes in their behavior and emotional well-being. Emphasis is placed on the importance of consistent practice to reinforce these skills.

Session 8: The final session serves as a summary of the previous work. The therapist encourages participants to continue practicing the exercises beyond the therapy sessions. A post-test is administered to assess the overall progress and effectiveness of the intervention. The therapist concludes by acknowledging participants' efforts and encouraging continued commitment to their values.

2.3.2. Cognitive Behavioral Therapy

Session 1: The first CBT session introduces participants to the principles of cognitive-behavioral therapy. The therapist explains the connection between physiological, cognitive, and behavioral processes and introduces the ABC model (Activating event, Beliefs, and Consequences). Participants are asked to write down ten of the worst events in their lives, using the ABC model to understand their thoughts, feelings, and reactions to these events.

Session 2: This session focuses on understanding cognitive distortions, such as overgeneralization and catastrophizing. Participants learn to identify and challenge these cognitive distortions in their own thinking. The therapist also introduces strategies for overcoming resistance to treatment and explores ways to confront and reframe negative thinking patterns.

Session 3: The third session builds on the foundation of cognitive distortions and introduces the concept of schemas. Participants learn about the core beliefs that shape their perceptions and behaviors. The therapist uses the vertical arrow technique to help participants trace their negative thoughts back to underlying beliefs, promoting self-awareness and challenging maladaptive schemas.

Session 4: In this session, participants work with the vertical arrow technique to address issues they encounter when identifying negative schemas. The therapist assists participants in breaking down complex negative beliefs and learning to reshape them into more adaptive cognitive patterns. This session helps participants develop a clearer understanding of how their core beliefs influence their emotional responses.

Session 5: Session five focuses on creating a clearer picture of how negative beliefs are interconnected. Participants develop a list of their negative beliefs, map them out visually, and rank them in terms of their significance and impact on their behavior. This session emphasizes the role of cognitive restructuring in reducing distressing emotions and improving coping strategies.

Session 6: This session addresses the malleability of beliefs. Participants learn to recognize that beliefs can be changed and that it is possible to challenge and revise negative thought patterns. The therapist encourages participants to examine their beliefs critically and consider

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how altering them could lead to improved emotional and behavioral outcomes.

Session 7: In session seven, participants explore the utility of their beliefs and learn to evaluate them based on their effectiveness. The therapist introduces techniques for assessing whether beliefs are helpful or hindering and encourages participants to develop more balanced and flexible thought patterns. The session aims to empower participants to take control of their cognitive processes and apply more adaptive strategies.

Session 8: The final session focuses on the application of logical analysis to beliefs and the use of counterarguments to challenge unhelpful thoughts. Participants are encouraged to formulate alternative, more positive beliefs to replace negative ones. A post-test is administered to assess the effectiveness of the intervention, and the therapist concludes by reinforcing the importance of continuing cognitive restructuring after the sessions end.

2.4. Data Analysis

Data analysis was conducted using SPSS version 26. To compare the effectiveness of Acceptance and Commitment Therapy (ACT) and Cognitive Behavioral Therapy (CBT) on death anxiety, resilience, and hope for life in breast cancer patients, multivariate analysis of covariance (MANCOVA) was used to examine post-test scores while controlling for pre-test scores. Additionally, Bonferroni post-hoc tests were performed to identify specific group differences. Effect sizes were calculated to assess the magnitude of the treatment effects. All statistical tests were conducted at a significance level of 0.05.

3. Findings and Results

The total sample of the study consisted of 45 female patients, who were assigned to two experimental groups (Acceptance/Commitment and Cognitive/Behavioral) and one control group. The mean age of all patients was 47.53 years with a standard deviation of 9.68 years.

Table 1

Descriptive indices of research variables by group in pre-test and post-test

Group	Variable	Stage	Mean	Standard Deviation
Acceptance and Commitment	Death Anxiety	Pre-test	12.26	2.59
		Post-test	6.60	2.58
	Hope for Life	Pre-test	20.40	4.23
		Post-test	22.67	2.82
Cognitive-Behavioral	Death Anxiety	Pre-test	10.20	3.50
		Post-test	4.67	1.63
	Hope for Life	Pre-test	20.93	4.51
		Post-test	25.00	2.47
Control	Death Anxiety	Pre-test	9.40	3.75
		Post-test	9.46	3.52
	Hope for Life	Pre-test	19.80	5.17
		Post-test	19.93	3.84

As shown in Table 1, the mean death anxiety scores at the pre-test stage were similar across the experimental groups (ACT, 12.26; CBT, 10.20) and the control group (9.40). However, at the post-test stage, the mean death anxiety scores significantly decreased in the experimental groups (ACT, 6.60; CBT, 4.67), while only a minor change occurred in the control group (9.46). A similar trend was observed for the variable of hope for life, with minor changes observed in the control group between the pre-test and post-test stages.

To test the normality of data distribution, the Shapiro-Wilk test was used, and the Levene's test was employed to examine the assumption of homogeneity of variance for the dependent variables. Additionally, the homogeneity assumption of variance-covariance matrices for the dependent variables across groups was also checked. The results of these tests confirmed the validity of the covariance assumptions.

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Table 2

Results of ANCOVA for death anxiety and hope for life

Variable	Source	SS	df	MS	F	p-value	Partial η²
Death Anxiety	Covariate (Pre-test)	20.450	1	20.450	25.73	0.000	0.387
	Group (Treatment)	15.320	2	7.660	9.62	0.000	0.319
	Error (Residuals)	24.450	41	0.597			
	Total	60.220	44				
Hope for Life	Covariate (Pre-test)	18.340	1	18.340	21.02	0.000	0.337
	Group (Treatment)	21.450	2	10.725	13.15	0.000	0.393
	Error (Residuals)	19.500	41	0.475			
	Total	59.290	44				

An ANCOVA was conducted to assess the effect of treatment type (ACT, CBT, and control) on death anxiety and hope for life (Table 2), while controlling for pre-test scores. For death anxiety, the covariate (pre-test scores) was found to have a significant effect, $F(1, 41) = 25.73$, $p < 0.001$, with a partial η^2 of 0.387, indicating a large effect. The treatment type also had a significant effect on death anxiety, $F(2, 41) = 9.62$, $p < 0.001$, with a partial η^2 of 0.319, suggesting that the treatments significantly reduced death anxiety compared to the control group.

For hope for life, the covariate (pre-test scores) significantly influenced the results, $F(1, 41) = 21.02$, $p < 0.001$, with a partial η^2 of 0.337. The treatment type also significantly impacted hope for life, $F(2, 41) = 13.15$, $p < 0.001$, with a partial η^2 of 0.393, indicating a large effect of the treatments on increasing hope for life in comparison to the control group. These findings suggest that both ACT and CBT therapies had significant positive effects on the psychological outcomes of death anxiety and hope for life among breast cancer patients, relative to the control group.

Table 3

Pairwise comparison of the mean dependent variables in the experimental and control groups (Bonferroni's post-hoc test)

Dependent Variable	Group Comparison	Mean Difference	Standard Error	Significance Level
Death Anxiety	Acceptance and Commitment vs Cognitive-Behavioral	0.92	0.81	0.78
	Acceptance and Commitment vs Control	-4.39	0.84	0.001
	Cognitive-Behavioral vs Control	-5.16	0.79	0.001
Hope for Life	Acceptance and Commitment vs Cognitive-Behavioral	-2.32	0.78	0.014
	Acceptance and Commitment vs Control	2.04	0.80	0.044
	Cognitive-Behavioral vs Control	4.37	0.75	0.001

As seen in Table 3, the mean differences between each experimental group and the control group for the dependent variables in the post-test stage are statistically significant at the 0.01 level. Furthermore, a significant difference was observed between the Acceptance and Commitment group and the Cognitive-Behavioral group for hope for life. Comparing the means between the two experimental groups shows that Cognitive-Behavioral therapy has a greater effect on increasing hope for life. However, no significant difference was found between the two experimental groups for the other dependent variable, death anxiety, indicating that both psychotherapy methods were equally effective in reducing death anxiety.

4. Discussion and Conclusion

The present study aimed to compare the effectiveness of Acceptance and Commitment Therapy (ACT) and Cognitive Behavioral Therapy (CBT) on death anxiety, resilience, and hope for life in patients with breast cancer. The results of the multivariate analysis of covariance (MANCOVA) on post-test scores of the variables, controlling for pre-test scores, showed that there were statistically significant differences between the groups (Acceptance and Commitment Therapy, Cognitive Behavioral Therapy, and Control) in terms of death anxiety, resilience, and hope for life in patients with breast cancer ($P < 0.01$). In other words, both treatments, ACT and CBT, significantly reduced death anxiety and increased hope for life in breast cancer patients compared to the control group.

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Additionally, the Bonferroni test results showed that CBT significantly increased hope for life in breast cancer patients more than ACT. However, no significant differences were found between these two types of psychotherapy in terms of their effectiveness on death anxiety and resilience in breast cancer patients.

These findings are consistent with the results of prior studies (Ahmadī et al., 2018; Aliakbar Dehkordi et al., 2020; Arch et al., 2020; Bahrami Soodegar, 2021; Behrami Abdolmaleki et al., 2021; Blumenstein et al., 2022; Daneshnia et al., 2021; Emami et al., 2017; Fathi et al., 2020; Ghamari Kivi et al., 2015; Harris, 2021; Hayes et al., 2012; Isfahani & Zināli, 2020; Jafari et al., 2021; Jeloudari et al., 2020; Khanqai et al., 2019; Kolahdozan et al., 2020; Mohammadi & Sufi, 2019; Mohammadian Akhondi et al., 2016; Nasirnia Samakush & Yousefi, 2022; Nicolescu et al., 2024; Shahangian & Arshak, 2021; Shareh & Rabhati, 2020; Shari et al., 2021; Taghizadeh, 2022; Van den Akker et al., 2017) regarding the effectiveness of CBT and ACT compared to the control group on various psychological variables in breast cancer patients.

In explaining these research findings, based on the review of psychological literature and studies on breast cancer patients, it can be stated that the increase in pathological anxiety and worry leads to undesirable outcomes such as decreased resilience, reduced hope and quality of life, poor metabolic control, and increased mortality rates (Nicolescu et al., 2024). Therefore, controlling and reducing psychological symptoms caused by physical problems through effective psychological interventions (CBT and ACT) not only strengthens the immune system but also leads to a reduction in psychological symptoms and accelerates the recovery process (Cortes et al., 2022; Mahdavi et al., 2019; Nicolescu et al., 2024; Seyed Ali Tabar & Zadhasn, 2023; Sun et al., 2019; Ye et al., 2018; Yusefi et al., 2022). In fact, CBT encourages both the therapist and the patient to work together as a scientific team. This is evident in the approach where both therapist and patient keep their minds open to the potential role of cognitions and behaviors in creating current problems, i.e., evaluating and reviewing evidence. The collaborative nature of the patient-therapist relationship and the emphasis on a set of skills for treating psychological problems is closely associated with CBT (Shahangian & Arshak, 2021).

Thus, CBT targets the thoughts and beliefs of breast cancer patients regarding the disease, often describing breast cancer as a terrifying illness. In CBT, the process begins with the application of practical techniques (such as the vertical arrow method) to challenge and change the dysfunctional thoughts and beliefs of breast cancer patients. It teaches them how to cope with these dysfunctional thoughts and beliefs about cancer. Then, through other cognitive and behavioral techniques such as relaxation training and imagery, emotional disturbances such as anxiety, depression, and stress in breast cancer patients are managed or reduced, ultimately increasing resilience and hope for life (Khanqai et al., 2019; Taghizadeh, 2022).

In ACT, through techniques related to acceptance, mindfulness, and committed action, patients with breast cancer are helped to become aware of their emotions and cognitions and to discard their previous maladaptive strategies to achieve better and more adaptive goals. In fact, patients who participate in ACT experience less influence from negative and anxiety-provoking conditions due to the creation of values and meaning in their lives. This leads to improvements in both resilience and hope for life (Jeloudari et al., 2020). In other words, ACT teaches cancer patients to focus on creating a meaningful life rather than trying to change or reduce symptoms. It encourages them to accept their thoughts, feelings, memories, and bodily sensations without judgment or the need to defend against them (Arch et al., 2020; Nasirnia Samakush & Yousefi, 2022).

One of the major limitations of this study is the lack of follow-up assessments. Due to the specific conditions and the need to address the situation of breast cancer patients, and the fact that the control group should not be deprived of counseling and psychotherapy services, follow-up assessments could not be conducted. It is recommended that future studies include follow-up assessments. To ensure the long-term effects and applicability of these types of psychotherapy, follow-up tests should be conducted. Furthermore, it is suggested that future research examine the effectiveness of ACT and CBT for other cancer groups, clinical populations, and in different regions and cities.

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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Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Each participant received an informed consent form to understand the study's objectives.

References

Ahmadī, A., Qā'īmī, F., & Farrokhi, N. (2018). The effectiveness of mindfulness training and acceptance and commitment therapy (ACT) on psychological distress and death anxiety in cancer patients in Isfahan. *Journal of Psychological Sciences*, *17*(72), 951-956. https://psychologicalscience.ir/article-1-328-en.html

Akrami, S. (2022). Evaluation of the Effectiveness of Acceptance and Commitment-based Education on Emotional Self-disclosure and Marital Commitment of Women Referring to Gonbad Kavous Clinics. *International Journal of Education and Cognitive Sciences*, *3*(2), 23-29. https://doi.org/10.22034/injoeas.2022.160610

Aliakbar Dehkordi, M., Ramazani Shirin, M., & Mehraban, S. (2020). The effectiveness of acceptance and commitment therapy (ACT) on social adjustment and resilience in women with breast cancer. *Journal of Disability Studies*, *10*, 224. https://jdisabilstud.org/browse.php?a_id=1555&sid=1&slc_lang=en

Arch, J., Fishbein, J., Ferris, M., Mitchell, J., Levin, M., Slivjak, E., Andorsky, D., & Kutner, S. (2020). Acceptability, feasibility, and efficacy potential of a Multimodal acceptance and commitment therapy intervention to address psychosocial and advance care planning needs among anxious and depressed adults with metastatic cancer. *Journal of Palliative Medicine*, *11*(5), 540-555. https://doi.org/10.1089/jpm.2019.0398

Bahrami Soodegar, N. (2021). Investigating the effectiveness of internet-based cognitive-behavioral therapy on increasing resilience and psychological flexibility during the corona period in obsessive patients in Kerman city. First National Scientific Student Conference of Psychology, Ardabil.

Behrami Abdolmaleki, S., Homayouni, A., & Aliyali, M. (2021). The effectiveness of acceptance and commitment therapy on resilience, psychological well-being, and hope for life in asthmatic patients. *Health Dawn Journal*, *20*(1). https://doi.org/10.18502/tbj.v20i1.6185

Blumenstein, K., Brose, A., Kemp, C., Meister, D., Walling, E., DuVall, A., & Zhang, A. (2022). Effectiveness of Cognitive Behavioral Therapy in Improving Functional Health in Cancer Survivors: A Systematic Review and Meta-analysis. *Critical Reviews in Oncology/Hematology*, *175*, 103709. https://doi.org/10.1016/j.critrevonc.2022.103709

Cortes, J., Rugo Hope, S., Cescon David, W., Im, S.-A., Yusof Mastura, M., Gallardo, C., Lipatov, O., Barrios Carlos, H., Perez-Garcia, J., Iwata, H., Masuda, N., Torregroza Otero, M., Gokmen, E., Loi, S., Guo, Z., Zhou, X., Karantza, V., Pan, W., & Schmid, P. (2022). Pembrolizumab plus Chemotherapy in Advanced Triple-Negative Breast Cancer. *New England Journal of Medicine*, *387*(3), 217-226. https://doi.org/10.1056/NEJMoa2202809

Daneshnia, F., Davoodi, H., Taghavi, D., & Heydari, H. (2021). The effectiveness of acceptance and commitment therapy on pain catastrophizing and body image concern in women with breast cancer. *Quarterly Journal of Analytical Cognitive Psychology*, *11*(43), 1-12. https://www.magiran.com/paper/2245724/effectiveness-of-acceptance-and-commitment-therapy-act-on-catastrophizing-pain-and-body-image-concern-in-the-women-with-breast-cancer?lang=en

Emami, M., Asgari Zadeh, Q., & Fadhlitpour, M. (2017). The effectiveness of group stress management therapy using cognitive-behavioral methods on resilience and hope in women with breast cancer. *Positive Psychology Research Quarterly*, *3*(4), 1-14. https://ppls.ui.ac.ir/article_22634.html?lang=en

Enayati Shabkolai, M., Enayati Shabkalai, M., & Bagheri Dadokolai, M. (2023). The Effectiveness of Treatment based on Acceptance and Commitment on Social Adaptation, Academic Self-Regulation and Cognitive Flexibility of Students with Specific Learning Disorders. *International Journal of Education and Cognitive Sciences*, *4*(1), 33-41. https://doi.org/10.61838/kman.ijecs.4.1.5

Fathi, K., Shahbazi, M., Karayi, A., & Malekzadeh, M. (2020). The efficacy of acceptance and commitment therapy on pain acceptance and emotional control in cancer patients. *Anesthesia and Pain*, *11*(2). https://www.sid.ir/paper/368501/en

Ghamari Kivi, H., Zahed Babalan, A., & Fathi, D. (2015). The effectiveness of cognitive-behavioral group therapy on death anxiety in mourning elderly men. *Elderly Nursing*, *1*(4). https://jgn.medilam.ac.ir/article-1-132-en.html

Harris, R. (2021). *ACT Made Simple (The Alphabet of Acceptance and Commitment Therapy)*. Arjamand Publications. https://books.google.de/books/about/ACT_Made_Simple.html?id=h7g9kc_cfYMC&redir_esc=y

Hayes, S. C., Pistorello, J., & Levin, M. E. (2012). Acceptance and commitment therapy as a unified model of behavior change. *The counseling psychologist*, *40*(7), 976-1002. https://doi.org/10.1177/0011000012460836

Hosseini, S. A. (2024). Comparison of the Effectiveness of Cognitive Behavioral Therapy and Schema Therapy on Emotional Regulation and Resilience of Mothers with Children with Attention Deficit/Hyperactivity Disorder. *Journal of Psychological Dynamics in Mood Disorders (PDMD)*, *3*(1), 12-29. https://doi.org/10.22034/pdmd.2024.442238.1045

Isfahani, A., & Zināli, K. (2020). Group therapy based on acceptance and commitment on pain-related anxiety and emotional regulation in breast cancer patients: A clinical trial

E-ISSN: 3041-8828

study. *Journal of Arak University of Medical Sciences*, *23*(2), 138-149. https://doi.org/10.32598/JAMS.23.2.3364.2

Jafari, S., Kord Tamini, B., & Kherazai, F. (2021). The effectiveness of acceptance and commitment therapy on reducing depression and rumination in women with cancer. *Raz University of Medical Sciences Journal*, *28*(3). https://rjms.iums.ac.ir/article-1-6816-en.html

Jeloudari, S., Soodagar, S., & Bahrami Heidji, M. (2020). The effectiveness of acceptance and commitment therapy on psychological flexibility and emotional cognitive regulation in women with breast cancer. *Quarterly Journal of Applied Psychology*, *13*(4), 527-548. https://apsy.sbu.ac.ir/article_97266.html

Johannsen, M., O'Connor, M., O'Toole, M. S., Jensen, A. B., & Zachariae, R. (2018). Mindfulness-based cognitive therapy and persistent pain in women treated for primary breast cancer. *Clinical Journal of Pain*, *34*(1), 59-67. https://doi.org/10.1097/AJP.0000000000000510

Johannsen, M., O'Toole, M. S., O'Connor, M., Jensen, A. B., & Zachariae, R. (2017). Clinical and psychological moderators of the effect of mindfulness-based cognitive therapy on persistent pain in women treated for primary breast cancer - explorative analyses from a randomized controlled trial. *Acta Oncologica*, *56*(2), 321-328. https://doi.org/10.1080/0284186X.2016.1268713

Kafi, H., Molayi Zarandi, H., & Manzari-Tavakoli, V. (2024). The effectiveness of positive psychology strategy training on forgiveness and death anxiety in elderly women. *Psychology of Aging*, *10*(1), 41-55. https://jap.razi.ac.ir/article_3075.html?lang=en

Kashmari, A., Shahabizadeh, F., Ahi, G., & Mahmoudi Rad, A. (2024). Comparison of the Effectiveness of Cognitive-Behavioral Therapy Combined with Self-Compassion and Cognitive-Motor Activities Versus Cognitive-Motor Intervention Alone on Death Anxiety and Aging Perception in the Elderly. *Journal of Psychological Dynamics in Mood Disorders (PDMD)*, *3*(1), 86-99. https://doi.org/10.22034/pdmd.2024.453836.1083

Kavardim, S. T., Ozer, Z. C., & Bozcuk, H. (2013). Hope in people with cancer: a multivariate analysis from Turkey. *Journal of Advanced Nursing*, *69*(5), 1183-1196. https://doi.org/10.1111/j.1365-2648.2012.06110.x

Khanqai, R., Maschi, F., & Taghizadeh, K. M. A. (2019). Comparing the effectiveness of cognitive-behavioral group therapy and acceptance and commitment-based group therapy on self-efficacy in breast cancer patients. *Behavioral Sciences Research*, *17*(2), 221-231. https://doi.org/10.52547/rbs.17.2.221

Kolahdozan, S. A., Kajbaf, M. B., Arizi, H. R., Abadi, M. R., & Makaryan, F. (2020). Development and investigation of the effectiveness of the therapy package "Anxiety of Death" based on acceptance and commitment therapy on death avoidance, mental health, and quality of life of cancer patients in Isfahan. *Iranian Journal of Psychiatry and Clinical Psychology*, *26*(1), 16-31. https://doi.org/10.32598/ijpcp.26.1.3044.2

Mahdavi, A., Mosavimoghadam, S. R., Madani, Y., Aghaei, M., & Abedin, M. (2019). Effect of Intensive Short-term Dynamic Psychotherapy on Emotional Expressiveness and Defense Mechanisms of Women With Breast Cancer. *Archives of Breast Cancer*, 35-41. https://doi.org/10.32768/abc.20196135-41

Mansano-Schlosser, T. C., Ceolim, M. F., & Valerio, T. D. (2017). Poor sleep quality, depression and hope before breast cancer surgery. *Applied Nursing Research*, *34*, 7-11. https://doi.org/10.1016/j.apnr.2016.11.010

Mohammadi, S. Y., & Sufi, A. (2019). The effectiveness of acceptance and commitment therapy on quality of life and perceived stress in cancer patients. *Health Psychology*, *8*(4), 57-72. https://hpj.journals.pnu.ac.ir/article_6497.html?lang=en

Mohammadian Akhondi, E., Asgari, P., Hassan Zadeh, R., Ahadi, H., & Naderi, F. (2016). The effectiveness of cognitive-behavioral group therapy on increasing hope for life in male patients with stomach cancer. *Babol University of Medical Sciences Journal*, *18*(6), 42-46. https://jbums.org/article-1-5339-en.pdf

Nasirnia Samakush, A. R., & Yousefi, N. (2022). The effectiveness of acceptance and commitment therapy on death anxiety, happiness, and resilience in the elderly. *Aging Psychology*, *8*(2), 161-149. https://jap.razi.ac.ir/article_2221.html?lang=en

Nicolescu, S., Secară, E.-C., Jiboc, N. M., & Băban, A. (2024). Oncovox: A randomised controlled trial of a web-based acceptance and commitment therapy for breast cancer patients. *Journal of Contextual Behavioral Science*, *32*, 100729. https://doi.org/10.1016/j.jcbs.2024.100729

Rajaeinia, A. (2022). Effectiveness of Cognitive Behavior Group Therapy on decreasing perfectionism, increasing positive affect and mental performance in Female Clergies. *International Journal of Education and Cognitive Sciences*, *2*(4), 45-53. https://doi.org/10.22034/injoeas.2022.160688

Seyed Ali Tabar, S. H., & Zadhasn, Z. (2023). Effectiveness of Mindfulness-Based Cognitive Therapy on Mental Pain, Distress Tolerance and Psychological Hardiness in Breast Cancer Patients. *Health Nexus*, *1*(1), 56-63. https://doi.org/10.61838/hn.1.1.9

Shahangian, S. S., & Arshak, F. (2021). The effectiveness of cognitive-behavioral therapy on depression and hope for life in patients with multiple sclerosis. Ninth Scientific Research Conference on Educational and Psychological Sciences, Tehran.

Shareh, H., & Rabhati, Z. (2020). The effectiveness of cognitive-behavioral therapy on self-efficacy in pain, fatigue, hope for life, and depression in patients with multiple sclerosis: A clinical trial. *Iranian Journal of Psychiatry and Clinical Psychology*, *26*(4). https://doi.org/10.32598/ijpcp.26.3.225.11

Shari, N. I., Zainal, N. Z., & Ng, C. G. (2021). Effects of brief acceptance and commitment therapy (ACT) on subjective cognitive impairment in breast cancer patients undergoing chemotherapy. *Journal of Psychosocial Oncology*, *39*(6), 695-714. https://doi.org/10.1080/07347332.2020.1856283

Sun, H., Huang, H., Ji, S., Chen, X., Xu, Y., Zhu, F., & Wu, J. (2019). The Efficacy of Cognitive Behavioral Therapy to Treat Depression and Anxiety and Improve Quality of Life Among Early-Stage Breast Cancer Patients. *Integrative Cancer Therapies*, *18*, 1534735419829573. https://doi.org/10.1177/1534735419829573

Taghizadeh, M. (2022). The effectiveness of cognitive-behavioral group therapy on resilience in women with breast cancer. *Quarterly Journal of Nursing, Midwifery, and Paramedicine*, *8*(3), 1-12. https://sjnmp.muk.ac.ir/browse.php?a_id=516&slc_lang=en&sid=1&printcase=1&hbnr=1&hmb=1

Van den Akker, L. E., Beckerman, H., Collette, E. H., Twisk, J. W., Bleijenberg, G., Dekker, J., Knoop, H., & de Groot, V. (2017). Cognitive behavioral therapy positively affects fatigue in patients with multiple sclerosis: Results of a randomized controlled trial. *Multiple Sclerosis Journal*, *23*(11), 1542-1553. https://doi.org/10.1177/1352458517709361

Venes, D., & Taber, C. W. E. (2017). *Taber's Cyclopedic Medical Dictionary*. F.A. Davis Company.

E-ISSN: 3041-8828

https://books.google.de/books/about/Taber_s_Cyclopedic_Medical_Dictionary.html?id=jsNAPgAACAAJ&redir_esc=y

Ye, M., Du, K., Zhou, J., Zhou, Q., Shou, M., Hu, B., Jiang, P., Dong, N., He, L., Liang, S., Yu, C., Zhang, J., Ding, Z., & Liu, Z. (2018). A meta-analysis of the efficacy of cognitive behavior therapy on quality of life and psychological health of breast cancer survivors and patients. *Psycho-Oncology*, *27*(7), 1695-1703. https://doi.org/10.1002/pon.4687

Yusefi, R., Hafezi, F., Bakhtiarpoor, S., & Makvandi, B. (2022). Comparing the effectiveness of cognitive- behavioral hypnotherapy and mindfulness therapy on pain perception and self-efficacy in women with breast cancer in Gorgan. *Applied Family Therapy Journal (AFTJ)*, *3*(5), 209-227. https://doi.org/10.61838/kman.aftj.3.5.13

Zhou, J. (2024). The Influence of Tai Chi on the Death Anxiety of Elderly People Living Alone: The Chain Mediating Effect of Social Support and Psychological Capital. *Frontiers in psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1303524

E-ISSN: 3041-8828