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Comparison of the Effectiveness of Acceptance and Commitment Therapy and Cognitive-Behavioral Therapy on Resilience in Patients with Breast Cancer

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A B S T R A C T

Objective: The present study aimed to compare the effectiveness of Acceptance and Commitment Therapy (ACT) and Cognitive-Behavioral Therapy (CBT) on the resilience of patients with breast cancer.

Methods and Materials: The statistical population of this quasi-experimental study included all women aged 25 to 65 years with breast cancer in Qazvin in 2022, among whom 45 participants were selected using convenience sampling and randomly assigned to three groups of 15 individuals. The research instruments included the Connor-Davidson Resilience Scale, the Acceptance and Commitment Therapy package (Hayes et al.), and the Cognitive-Behavioral Therapy package (Hawton et al.). Data analysis was performed at the descriptive level using mean and standard deviation, and at the inferential level using Multivariate Analysis of Covariance (MANCOVA) and Bonferroni post hoc test with SPSS-22 software.

Findings: The results of the study showed a statistically significant difference in resilience levels between breast cancer patients in the experimental groups (ACT group and CBT group) and the control group ($P < 0.05$). In other words, both interventions, ACT and CBT, significantly improved resilience in breast cancer patients compared to the control group. Furthermore, the Bonferroni test results indicated no statistically significant difference in the effectiveness of ACT and CBT on resilience in breast cancer patients.

Conclusion: Therefore, it can be concluded that both psychotherapies are beneficial for enhancing resilience in breast cancer patients.

Keywords: *Cognitive-Behavioral Therapy, Acceptance and Commitment Therapy, Resilience, Breast Cancer.*

1. Introduction

Breast cancer is among the most common diseases affecting women and is considered one of the significant causes of mortality among women in our country, causing extensive individual, familial, and societal harm (Ghodrati et al., 2024; Zamani Gharaghoosh et al., 2021). Alarmingly, the prevalence of cancer is increasing, with projections indicating that by 2030, the number of new cancer cases worldwide will rise by 50%, reaching 28 million (Fisher et al., 2023; Katsura et al., 2022; Nicolescu et al., 2024). According to the latest statistics from the Cancer Research Center, the incidence rate of breast cancer among Iranian women is 27.5 per 100,000 individuals (Seyed Ali Tabar & Zadhasn, 2023). Globally, breast cancer remains the most common cause of cancer-related mortality among women, accounting for 25.5% of all female cancers (Sung et al., 2021).

One psychological variable associated with the condition of cancer patients is resilience. Garmezy and Masten (1991) define resilience as a process, capacity, or outcome of successful adaptation to threatening conditions (Golparvar & Parsakia, 2023). In other words, resilience represents positive adaptation in response to adversity (Arab Sheibani, 2021). Another definition describes resilience as a process of adaptation and successful transition despite risks, hardships, and adversity (Taghva et al., 2020). Resilience is not merely passive endurance against harm or threats but involves active and constructive participation in one's surrounding environment. It reflects the ability to maintain biological and psychological equilibrium in dangerous situations. Resilience is a critical factor in coping with the negative outcomes of chronic illnesses such as cancer (Darbani & Parsakia, 2023; Golparvar & Parsakia, 2023). It is defined as the capacity or ability to return to a baseline state and adapt to a new normal by alleviating or transforming stress (Mogbel Esfahani & Haghayegh, 2019). Individuals with low resilience exhibit self-destructive behaviors, emotional instability, and difficulty managing adverse circumstances (Abdi Zarrin & Mahdavi, 2018). However, resilient individuals can endure, resist, and respond positively to pressure or change (Matyas & Pelling, 2015). High-resilience individuals are better equipped to manage the pain associated with illness, reducing depression symptoms through effective coping. In contrast, prolonged illness often diminishes patients' resilience, leading to catastrophic perceptions of pain (McCrae et al., 2019).

Given the psychological status of cancer patients and the outcomes associated with a cancer diagnosis, addressing psychological and psychotherapeutic dimensions, alongside medical and physical treatments, is crucial for improving the overall well-being of cancer patients. Over the past decades, treatments for chronic physical illnesses such as cancer have shifted from solely physical and pharmacological approaches to multidimensional biopsychosocial interventions. Recently, the evolution of psychotherapy models has increasingly focused on positive psychological aspects of human functioning (Fathi et al., 2020). This study aligns with the shift from physical to psychological treatments for cancer, particularly focusing on non-pharmacological interventions like Cognitive-Behavioral Therapy (CBT) and Acceptance and Commitment Therapy (ACT).

Cognitive-Behavioral Therapy has proven effective in addressing emotional problems, combining cognitive and behavioral approaches to help patients identify and alter distorted patterns and maladaptive behaviors, fostering positive changes in their lives (Johannsen et al., 2017). CBT, developed by Aaron T. Beck in the early 1960s, is based on the cognitive model, which posits that thoughts, emotions, and behaviors are interconnected. Beck emphasized that emotions stem not from specific situations but from cognitive processing and interpretation of those situations (Seyedi Asl et al., 2018; Seyedi Asl et al., 2020). Integrating behavioral therapy, grounded in Pavlovian conditioning, with cognitive approaches, CBT emphasizes providing opportunities for adaptive learning and implementing changes beyond clinical settings. Major goals include enhancing patient motivation, teaching coping skills, improving interpersonal functioning, and fostering social skills (Chang et al., 2015). CBT involves cognitive and behavioral techniques such as exposure exercises, cognitive restructuring, and homework assignments. These interventions disrupt maladaptive cycles, encouraging individuals to explore the relationship between negative thoughts and feelings of inadequacy.

Acceptance and Commitment Therapy (ACT) focuses on understanding maladaptive behavioral patterns and problematic processes to foster healthier, more effective emotions and behaviors (Arch et al., 2020; Nasirnia Samakosh & Yousefi, 2022). Unlike CBT, ACT does not analyze the content of thoughts, feelings, or bodily sensations (Gross et al., 2018). Instead, it examines how individuals engage with their experiences (Hayes et al., 2006; Hayes et al., 2012). ACT aims to help individuals lead

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a fulfilling, purposeful life by enhancing their ability to live in the moment and align their behaviors with personal values rather than attempting to eliminate distressing thoughts or feelings (Saeidi et al., 2021).

The six core processes of ACT are: (1) Acceptance, (2) Cognitive Defusion, (3) Contact with the Present Moment, (4) Self-as-Context, (5) Values, and (6) Committed Action. These processes, classified under mindfulness and behavior change, combine to create psychological flexibility (Harris, 2021). ACT helps patients increase psychological acceptance, reduce ineffective control efforts, and fully embrace unwanted mental experiences without inner or outer reactions to eliminate them. Subsequently, patients develop present-moment awareness and learn to dissociate from mental experiences to act independently. In the later stages, patients identify core personal values and translate them into specific behavioral goals, ultimately fostering committed action aligned with these values (Thomas et al., 2014).

This approach emphasizes acceptance, personal and spiritual values, and living according to accepted values, making it particularly suitable for cancer patients (Mohammadi & Soufi, 2019). Research supports the effectiveness of ACT in improving psychological outcomes and resilience in cancer patients (Ali Akbar Dehkordi et al., 2020; Eilenberg et al., 2016; Hughes et al., 2017; Mogbel Esfahani & Haghayegh, 2019).

Given the psychological needs of breast cancer patients and prior research comparing CBT and ACT, the present study aims to compare the effectiveness of CBT and ACT on resilience in breast cancer patients.

2. Methods and Materials

2.1. Study Design and Participants

The present study is a clinical trial using an experimental design with a pretest-posttest control group format. The statistical population consisted of women aged 25 to 65 years with breast cancer who, in 2022, visited Velayat Specialty Hospital in Qazvin, and whose diagnoses were confirmed by an oncologist and diagnostic tests. Participants were selected through convenience sampling with a voluntary approach. Initially, 45 patients were voluntarily selected and randomly assigned to three groups of 15 participants each.

Initially, the researcher approached Qazvin University of Medical Sciences and presented identification and academic credentials, explaining the research conditions and objectives to relevant authorities. Upon obtaining approval, a list of breast cancer patients was obtained from Qazvin's health network and Velayat Specialty Hospital. Subsequently, through screening interviews and based on inclusion criteria, 45 patients with breast cancer were selected to participate in the study. Coordination was made for the participants to visit the hospital's educational room at specified times. Participants were then randomly assigned to three groups: ACT, CBT, and a control group. The research objectives were explained to all participants, emphasizing ethical principles such as freedom of choice, confidentiality, and informed consent. Participants voluntarily completed and signed the informed consent forms. For the pretest, all participants from the three groups completed the Connor-Davidson Resilience Scale, with sufficient time provided for answering the questions. In the intervention phase, the ACT package was implemented for one experimental group, and the CBT package was conducted for the other experimental group. Both interventions were delivered in weekly group sessions according to their respective protocols. The control group received no psychotherapy or educational interventions. Finally, after completing the intervention sessions, all three groups completed the posttest to evaluate the outcomes.

2.2. Measure

2.2.1. Resilience

To assess resilience, the Connor-Davidson Resilience Scale (CD-RISC, 2003) was used. This scale is recognized for effectively differentiating resilient individuals from non-resilient ones in both clinical and non-clinical groups, making it applicable for research and clinical settings. The CD-RISC comprises 25 items scored on a Likert scale ranging from 0 ("not true at all") to 4 ("true nearly all the time"). The scoring is as follows: not true at all = 0, rarely true = 1, sometimes true = 2, often true = 3, always true = 4. Thus, the total score ranges from 0 to 100, with higher scores indicating greater resilience. Factor analysis indicates five components: personal competence, trust in personal instincts, tolerance of negative affect, positive acceptance of change, secure relationships, control, and spiritual influences. Connor and Davidson (2003) reported a Cronbach's alpha reliability coefficient of 0.89. Additionally, the test-retest reliability over a four-week interval was 0.87. The scale was standardized for the Iranian population by Mohammadi (2005), who reported a

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Cronbach's alpha reliability coefficient of 0.89 for the scale (Abdi Zarrin & Mahdavi, 2018; Bahremand Nia, 2021).

2.3. Intervention

2.3.1. Acceptance and Commitment Therapy

The ACT intervention aims to enhance psychological flexibility by increasing acceptance, mindfulness, and values-based actions. This approach helps participants manage distressing thoughts and emotions while committing to meaningful, value-driven behaviors. Each session builds on previous lessons, incorporating mindfulness practices, metaphors, and experiential exercises to support resilience and psychological growth.

Session 1: Introduction to the intervention, group rules, and an overview of resilience, hope, and death anxiety. Participants explore their attitudes toward unpleasant thoughts and feelings, focusing on acceptance and committed action. The session includes completing a hopelessness worksheet, understanding the impossibility of eliminating distressing thoughts and feelings, and introducing the "Passengers on the Bus" metaphor.

Session 2: Review of the previous session and exercises focusing on present-moment awareness, mindfulness, and willingness over avoidance. Participants practice mindful breathing and learn about willingness versus avoidance through the "Tug-of-War with a Monster" exercise.

Session 3: Discussion of previous sessions and the functions of cognitive defusion. Participants engage in mindfulness exercises like the "Machines Exercise," exploring the evolution of the mind and practicing awareness of judgments.

Session 4: Examination of values and committed action, identifying barriers to value-driven behavior. Exercises include the "Television Interview" and identifying obstacles to acting in line with personal values.

Session 5: Focus on mindfulness and self-as-context. Participants identify internal barriers to living a meaningful life and engage in exercises such as the "Wagons Exercise."

Session 6: Review of cognitive defusion and mindfulness practices. Participants explore breaking linguistic rules to disrupt unhelpful thought patterns.

Session 7: Consolidation of progress and review of exercises. Participants discuss maintaining results and their application beyond the therapy sessions.

Session 8: Summary of the sessions and encouragement to continue practicing skills after the intervention. Participants complete the posttest, and the sessions conclude.

2.3.2. Cognitive-Behavioral Therapy

The CBT intervention focuses on identifying and altering maladaptive cognitive and behavioral patterns. It combines cognitive restructuring, behavioral experiments, and problem-solving strategies to foster resilience and reduce emotional distress. Each session builds incrementally, teaching participants practical tools to challenge and modify unhelpful beliefs and behaviors.

Session 1: Introduction to group rules and the interaction between physiological, cognitive, and behavioral processes. The ABC model (Activating Event, Beliefs, Consequences) is introduced. Participants complete homework by writing ten significant life events using the C-B-A sequence.

Session 2: Discussion of cognitive theories of depression, anxiety, and anger. Participants learn about automatic thoughts, cognitive distortions, and strategies for identifying them in their thinking. The session addresses resistance to therapy and introduces strategies to overcome it.

Session 3: Introduction to behavioral outcomes and cognitive schemas. Participants learn about core beliefs, schemas, and their connection to automatic thoughts. They practice identifying schemas using the "Vertical Arrow" technique.

Session 4: Continued practice with the "Vertical Arrow" technique to identify negative schemas. Participants address challenges encountered during this process.

Session 5: Development of a clearer understanding of the interconnections among negative beliefs. Participants create a list of negative beliefs, construct cognitive maps, and rank their beliefs based on relevance and impact.

Session 6: Emphasis on the modifiability of beliefs. Participants explore the possibility of revising and transforming their beliefs.

Session 7: Evaluation of beliefs based on their utility. Participants learn to assess beliefs using specific criteria and understand their functional differences.

Session 8: Introduction to logical analysis for evaluating personal beliefs. Participants learn about opposing beliefs and how to apply them. The session concludes with the posttest and the termination of the intervention.

2.4. Data Analysis

Data were analyzed using SPSS statistical software. Independent t-tests were used to compare the mean scores of

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the experimental and control groups in the pretest and posttest stages. Additionally, analysis of covariance (ANCOVA) was conducted to control for potential confounding variables and determine the intervention's actual impact on alexithymia symptoms. Mixed-design ANOVA was employed to examine within-group and between-group differences over time, allowing the researchers to assess changes in emotional intelligence and alexithymia levels attributable to the training. Statistical significance was set at $p < 0.05$ for all analyses.

3. Findings and Results

The total sample in this study comprised 45 female patients divided equally into two experimental groups (Acceptance and Commitment Therapy [ACT] and Cognitive-Behavioral Therapy [CBT]) and one control group, with each group consisting of 15 participants. The groups were assessed in two phases: pretest and posttest. All participants had undergone treatment for less than six months. The mean and standard deviation of participants' ages were as follows: ACT group: 50.4 ± 9.37 years, CBT group: 48.8 ± 13.44 years, and control group: 44.07 ± 10.66 years. Results of the ANOVA test showed no significant differences in the mean ages between groups ($F = 1.65$, $p = 0.195$). Table 1 presents the means and standard deviations of resilience across the experimental and control groups in the pretest and posttest phases.

Table 1

Mean and Standard Deviation of Resilience Scores by Group in Pretest and Posttest

Group	Variable	Phase	Mean	Standard Deviation
ACT	Resilience	Pretest	97.53	12.85
		Posttest	105.13	10.19
CBT	Resilience	Pretest	100.87	12.97
		Posttest	109.93	11.00
Control	Resilience	Pretest	100.33	11.47
		Posttest	98.93	11.53

As shown in Table 1, the mean resilience scores in the pretest were nearly equivalent across the ACT group (M = 97.53), CBT group (M = 100.87), and control group (M = 100.33). However, in the posttest, the mean resilience scores increased in the ACT group (M = 105.13) and CBT group (M = 109.93) but showed a slight decrease in the control group (M = 98.93).

The Shapiro-Wilk test was used to assess the normality of data distribution, as the group sizes were fewer than 50 participants. The Shapiro-Wilk results for resilience in both pretest and posttest phases were non-significant at the 0.05 level, indicating that the data distribution was normal in all phases.

A one-way ANCOVA was conducted to compare the effectiveness of ACT and CBT on resilience. The assumption of homogeneity of regression slopes was confirmed using the interaction term (Group × Pretest) in the ANCOVA model ($F = 0.648$, $p = 0.528$). Levene's test showed homogeneity of variance across groups ($F = 0.305$, $p = 0.058$). Table 2 reports the results of the one-way ANCOVA.

Table 2

Results of One-Way ANCOVA for Comparing the Effectiveness of Therapeutic Methods on Resilience

Source	Sum of Squares	df	Mean Square	F	p-value	Partial η^2
Pretest	3471.036	1	3471.036	92.257	< 0.001	0.692
Group	930.435	2	465.218	12.365	< 0.001	0.376
Error	1542.564	41	37.624			

The results indicate a significant effect of the group variable, showing a statistically significant difference in posttest resilience scores across the three groups ($F = 12.365$, $p < 0.001$). To identify which groups significantly differed, Bonferroni post hoc tests were performed, as shown in Table 3.

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Table 3

Pairwise Comparisons of Adjusted Mean Resilience Scores Across Groups

Comparison (Group I vs. Group J)	Mean Difference	Standard Error	p-value
ACT (106.62) vs. CBT (108.99)	-2.366	2.254	0.900
ACT (106.62) vs. Control (98.38)	8.245	2.250	0.002
CBT (108.99) vs. Control (98.38)	10.611	2.240	0.001

The results in Table 3 reveal significant differences between both experimental groups (ACT and CBT) and the control group at the 0.01 level. However, no significant difference was observed between the ACT and CBT groups ($p = 0.900$). This indicates that both therapeutic methods were statistically equivalent in their effectiveness for enhancing resilience.

4. Discussion and Conclusion

This study aimed to compare the effectiveness of Acceptance and Commitment Therapy (ACT) and Cognitive-Behavioral Therapy (CBT) on resilience in patients with breast cancer. The findings revealed that both ACT and CBT significantly improved resilience in patients with breast cancer compared to the control group. However, no significant difference was observed between the two therapeutic approaches regarding their effectiveness in enhancing resilience.

These findings align with previous research (Ahmadi et al., 2018; Ali Akbar Dehkordi et al., 2020; Arab Sheibani, 2021; Arch et al., 2020; Daneshnia et al., 2021; Emami et al., 2017; Esfahani & Zainali, 2020; Fathi et al., 2020; Ghorbani & Farnoodi Mehr, 2021; Jafari & Kurd Tamini, 2021; Mohammadi & Soufi, 2019; Mohammadian Akordi et al., 2016; Mokri Vala & et al., 2022; Taghizadeh, 2022) which demonstrated the effectiveness of both CBT and ACT in enhancing resilience in breast cancer patients compared to control groups.

In explaining the effectiveness of CBT on resilience in breast cancer patients, it can be argued that resilience is not purely an inherent trait but results from the interaction between individual personality characteristics and the environment. Resilience can be developed through training, learning, practice, and experience. Therefore, providing a therapeutic environment focused on cognitive awareness and correcting maladaptive behaviors can help individuals maintain resilience during symptom recurrence and psychological stress. CBT does not aim to reduce, avoid, suppress, or control internal experiences but instead teaches patients to manage maladaptive thoughts and emotions through awareness and acceptance. This process enables patients to accept and modify problematic cognitions and maladaptive behaviors, ultimately reducing their negative impact (Mohammadian Akordi et al., 2016; Mokri Vala & et al., 2022).

The effectiveness of ACT on resilience in breast cancer patients can be explained by its emphasis on psychological flexibility. ACT highlights that change occurs when individuals can connect events with cognitive defusion, reducing the negative impact of thoughts and reactions while increasing psychological acceptance and resilience. Enhancing psychological defusion and awareness of thoughts and behaviors helps individuals observe the negative relationships between reactions and make deliberate decisions to adopt healthier behavior patterns. Acting in alignment with personal values enables individuals to accept adversities and accompanying thoughts and feelings. At the same time, setting goals and engaging in mindful, value-driven actions, while perceiving oneself as distinct from thoughts and emotions, enhances psychological flexibility, contributing to increased resilience (Ali Akbar Dehkordi et al., 2020; Helmreich et al., 2017).

One major limitation of this study was the lack of a follow-up assessment. Due to the specific circumstances and urgent needs of breast cancer patients, as well as ethical considerations to ensure the control group did not miss out on counseling or psychotherapy services, follow-up evaluations were not feasible. Additionally, the study population was limited to breast cancer patients in Qazvin, restricting the generalizability of the findings to other cancer types, clinical populations, or geographical locations. Caution is advised when applying these results to different cultural, economic, or familial contexts, as these uncontrolled variables might influence the outcomes.

From a practical perspective, based on the findings of this study, it is recommended that healthcare, counseling, and psychotherapy centers use ACT and CBT to address emotional distress and psychological disorders associated with breast cancer.

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Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

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

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

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

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