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Effectiveness of the WomenCan CBT Program on Depression, Anxiety, and Hope: A Pilot Study

KadınYapar BDT Programının Depresyon, Anksiyete ve Umut Üzerindeki Etkinliği: Bir Pilot Çalışma

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Abstract

This pilot study evaluated the effectiveness of the WomenCan Cognitive Behavioral Therapy (CBT) program on depression, anxiety, and hope among Turkish women diagnosed with cancer. Cancer, particularly breast cancer, is a prevalent condition that significantly impacts psychological well-being of patients. The WomenCan CBT program was created to specifically address the unique psychosocial stressors women face, aiming to reduce symptoms of depression and anxiety while boosting levels of hope. The study used a quasi-experimental design with a pretest-posttest method, involving 12 participants who completed the program. Results indicated significant reductions in depression and anxiety levels, alongside notable increases in hope, particularly in the "Positive Readiness/Expectancy" dimension. The findings highlight the potential of culturally adapted CBT programs to enhance mental health and quality of life for women with cancer. This research provides valuable insights into the applicability of CBT interventions in non-Western contexts and highlights the importance of culturally sensitive approaches to psychosocial care for patients with cancer.

Keywords: Women with cancer, Cognitive therapy, Group therapy, Depressive symptoms, Anxiety, Hope.

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Öz

Bu pilot çalışma, Kadın Yapar Bilişsel Davranışçı Terapi (BDT) programının kanser tanısı almış Türk kadınları arasında depresyon, anksiyete ve umut üzerindeki etkinliğini değerlendirmektedir. Kanser, özellikle de meme kanseri, hastaların psikolojik refahını önemli ölçüde etkileyen yaygın bir durumdur. WomenCan BDT programı, bu kadınların karşılaştığı benzersiz psikososyal stres faktörlerini ele almak üzere özel olarak tasarlanmış olup depresyon ve anksiyete semptomlarını azaltmaya ve umut düzeylerini artırmaya odaklanmaktadır. Çalışma, programı tamamlayan 12 katılımcıyı içeren ön test-son test yaklaşımıyla yarı deneysel bir tasarım kullanmıştır. Sonuçlar, depresyon ve anksiyete düzeylerinde önemli düşüşlerin yanı sıra, özellikle "Olumlu Hazırlık/ Beklenti" boyutunda olmak üzere umutta kayda değer artışlar olduğunu göstermiştir. Bulgular, kültürel olarak uyarlanmış BDT programlarının kanserli kadınların ruh sağlığını ve yaşam kalitesini iyileştirme potansiyelinin altını çizmektedir. Bu araştırma, BDT müdahalelerinin Batılı olmayan bağlamlarda uygulanabilirliğine ilişkin değerli bilgiler sunmakta ve kanser hastalarına yönelik psikososyal bakımda kültüre duyarlı yaklaşımların önemini vurgulamaktadır.

Anahtar Kelimeler: Kadın kanser, Bilişsel terapi, Grup terapisi, Depresif semptomlar, Anksiyete, Umut.

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Extended Abstract

Cancer continues to be one of the most common diagnoses among women worldwide, resulting in substantial psychological distress. The psychosocial challenges faced by women during cancer treatment can include increased levels of depression, anxiety, and disruptions to their overall quality of life. Cognitive Behavioral Therapy (CBT) is widely acknowledged as an effective approach for addressing these psychological challenges. The WomenCan CBT program is specifically developed to address the unique psychosocial stressors experienced by Turkish women diagnosed with cancer.

This pilot study sought to evaluate the effectiveness of the WomenCan CBT program in reducing depression and anxiety levels while increasing hope among Turkish women with different types and stages of cancer. The study also explored the potential of culturally adapted CBT interventions to improve the psychological well-being of non-Western populations.

A quasi-experimental design with a pretest-posttest approach was employed in this study. The participants consisted of 12 Turkish women aged 35-54, diagnosed with breast, cervical, ovarian, or endometrial cancer. The WomenCan CBT program was conducted over eight weekly sessions, each lasting 90 minutes, and included CBT-based psychoeducation, group discussions, and homework assignments. Depression, anxiety, and hope levels were assessed using the Beck Depression Inventory-II (BDI-II), the State-Trait Anxiety Inventory (STAI), and the Herth Hope Scale (HHS), respectively, both before and after the intervention. The findings of this study indicated significant improvements in the psychological health of the participants. There was a significant reduction in depression levels, as the mean BDI-II scores dropped from 20.83 to 15.58 after the intervention ($p = 0.022$). Both state and trait anxiety levels also showed significant reductions, with STAI scores decreasing from 92.91 to 81.16 overall ($p = 0.035$). Additionally, hope levels, particularly in the “Positive Readiness/Expectancy” dimension, significantly increased, indicating a more optimistic outlook among the participants ($p = 0.007$).

The results of this pilot study demonstrated that the WomenCan CBT program is an effective intervention for alleviating the psychological distress experienced by women undergoing cancer treatment. The culturally tailored approach of the program likely contributed to its success, as it resonated well with the participants’ cultural and social contexts. Group therapy, a key component of the program, provided not only psychoeducation but also a supportive environment where participants could share their experiences and receive mutual support, further enhancing the therapeutic outcomes.

The WomenCan CBT program has promising results in improving the psychological well-being of Turkish women with cancer. The significant reductions in depression and anxiety, along with the enhancement of hope, underscore the potential of this culturally adapted CBT program as a valuable tool in psycho-oncological care. Future research with larger sample sizes and extended follow-up periods is recommended to validate these findings and investigate the program's effectiveness across various populations and cancer types.

Keywords: Women with cancer, Cognitive therapy, Group therapy, Tepressive symptoms, Anxiety, Hope.

Introduction

Advancements in cancer diagnostics and treatment have increased the number of diagnosed cases and patient survival rates. The World Health Organization (2022) reports that breast cancer is the most common cancer globally, especially among women. In Turkiye, breast, thyroid, and colorectal cancers are most common among women, with new cancer cases of 240.013 and cancer-related deaths of 129.672 (WHO, 2022).

A cancer diagnosis often results in significant psychological stress and psychiatric disorders, which are exacerbated by the disease progression, side effects of treatment, and cancer's physical impact. The incidence of psychiatric disorders is higher among women and the elderly, with patients with cancer being twice as likely to receive a psychiatric diagnosis than individuals without cancer (Vehling et al., 2022). Common psychiatric disorders include stress and adjustment disorders, mood disorders, anxiety, post-traumatic stress disorder (PTSD), sleep disorders, and fear of cancer recurrence (Zhang et al., 2022b). In Turkiye, nearly 97.5% of patients with cancer experience psychiatric disorders (Anuk et al., 2019).

Similar to many other countries, Turkiye has seen a growing prevalence of cancer in recent years. Although the physical impact of cancer is well-established, patients with cancer also commonly face a range of psychosocial difficulties, such as emotional distress, anxiety, depression, and disruptions to their daily routines and interpersonal relationships (Asante et al., 2023; Bultz & Carlson 2003; Grassi et al., 2015). Addressing these psychosocial needs is crucial for improving the overall well-being and quality of life of patients with cancer in Turkiye.

Various theoretical models have been proposed to comprehend the psychosocial experiences of cancer patients. The Stress and Coping Model, for example, highlights how individuals' appraisals of their cancer diagnosis and coping strategies can significantly impact their psychological adjustment. Meanwhile, the Biopsychosocial Model emphasizes the interplay of biological, psychological, and social factors in shaping the cancer experience. The Psychosocial Screening and Assessment framework outlines the importance of systematically

identifying and addressing various psychosocial issues, such as emotional distress, anxiety, and depression that may arise during the cancer journey. The model for managing patients with cancer' psychosocial problems stems from four main sources: the individual, health personnel, the disease itself, and the surrounding environment (Ozmen & Savaş, 2024). These issues negatively affect individuals, their relatives, and their work lives. Cancer is perceived as a significant turning point in their lives. Seven key groups were identified as crucial in addressing these psychosocial problems: self, co-workers, family, medical staff, relatives, other patients with cancer, and friends. The study concludes that despite differences in the characteristics of the participants, their experiences were consistent, emphasizing the necessity of including psychological and dietary support in cancer treatment to effectively address these psychosocial challenges (Ozmen & Savaş, 2024).

This article is based on the psychosocial problem model and Cognitive Behavioral Therapy (CBT) theory. This therapeutic approach, pioneered by Dr. Aaron Beck, emphasizes changing dysfunctional thoughts and behaviors to enhance emotional regulation and develop effective coping strategies. This study examines the effectiveness of a CBT-based group therapy program specifically designed for Turkish women with cancer, to target their depression, anxiety, and hope levels. The theoretical foundation of the intervention emphasizes the modification of cognitive processes to enhance psychological well-being, making CBT the underlying theoretical framework for managing the psychosocial problems of patients with cancer as discussed in this article.

Cognitive Behavioral Therapy (CBT) is widely acknowledged as an effective intervention for managing these psychological conditions, demonstrating significant efficacy in reducing symptoms of anxiety and depression and enhancing overall psychological health in cancer patients (Bai et al., 2023; Chidi, 2024; Lieshout et al., 2019; Shafierizi, 2023; Zhang, 2022). Building on the foundation of previous research that highlighted the efficacy of CBT in managing mental health disorders, this study explored its application in a structured, women-centered program. Similarly, a study on Nigerian patients with breast cancer found out that group CBT significantly reduced anxiety and depression, with these

effects being sustained at a two-month follow-up (Chidi, 2024). Meta-analytic studies have shown that cognitive-behavioral interventions are effective in treating anxiety, depression (Ga, et al., 2015; Ren, et al., 2019), and hope (Zhang, et al., 2022c) in patients with cancer. CBT is effective in various delivery methods, including traditional face-to-face sessions and internet-based platforms (iCBT), which enhance accessibility and reduce costs (Bai, 2023). Internet-based CBT has also demonstrated significant improvements in sleep quality and reductions in insomnia severity among patients with cancer (Amidi, 2022). Despite its established efficacy, many patients with cancer do not access CBT due to barriers such as lack of early identification, limited availability of specialized services, and high costs associated with individual sessions (Diggens, 2023). A stepped-care approach, which starts with low-intensity interventions and progresses to more intensive treatments based on symptom severity, may help address these barriers and increase accessibility (Diggens, 2023).

However, there is a continual need to refine and adapt these interventions to specific populations to enhance their efficacy and accessibility with the integration of hope. Enhancing hope may not only contribute to the reduction of depressive and anxiety symptoms but also improve overall well-being and resilience (Schmitt, 2022).

While the literature generally supports CBT's effectiveness in treating depression and anxiety (Zhang et al., 2019), more detailed research is needed to examine its impact on specific populations and outcomes. The WomenCan CBT program is designed to offer a tailored approach, to address the unique psychosocial stressors experienced by women. Given the promising results of CBT and iCBT in managing psychological distress in patients with cancer, the WomenCan CBT program is developed to specifically address depression, anxiety, and hope in women who have cancer. This pilot study aims to evaluate the effectiveness of the WomenCan CBT program in reducing depression and anxiety symptoms and enhancing hope among participants.

The primary goal of this study is to offer a structured and accessible intervention, with the WomenCan CBT program aiming to enhance the psychological well-being and quality of life of women cancer survivors.

The findings of this research provide insights into the potential benefits of implementing women-specific CBT programs on a larger scale. In Turkiye, the psychosocial challenges faced by women during cancer treatment can significantly impact their emotional and mental well-being. In chronic illnesses like cancer, the lack of adequate psychosocial support can make the disease process more difficult and stressful (Grassi et al., 2015; Vehling et al., 2022). This study evaluates the effectiveness of a Cognitive Behavioral Group Therapy (CBGT) program specifically designed for Turkish women, highlighting it as a vital intervention to meet these unmet needs.

“In Turkiye, the psychosocial challenges faced by women during cancer treatment can significantly impact their emotional and mental well-being. In chronic illnesses like cancer, the lack of adequate psychosocial support can make the disease process more difficult and stressful (Grassi et al., 2015; Vehling et al., 2022). Cognitive Behavioral Therapy (CBT) is recognized as an effective approach for managing psychosocial challenges. It helps individuals identify and challenge negative thought patterns, replacing them with more functional and positive ones (Craske, 2010). This therapeutic approach can strengthen the coping abilities of women diagnosed with cancer, improve their mental health, and ultimately enhance their overall quality of life (Zhang et al., 2022a). When tailored specifically for women diagnosed with cancer, CBT can help them regain self-confidence, develop effective stress management strategies, and adopt a more positive outlook on their disease and treatment process (Fitriyanti et al., 2019). Given the recognized effectiveness of CBT in managing psychological distress among patients with cancer, this pilot study aims to assess its tailored application for Turkish women, thereby addressing a gap in culturally specific research.

The research problem addressed in this article is how to effectively manage the psychosocial issues, such as depression, anxiety, and hope, faced by Turkish women diagnosed with various types and stages of cancer. Specifically, this study investigates whether these issues can be effectively addressed through the WomenCan CBT (CBT) program.

This research has three research questions: (i) Can the WomenCan CBT program significantly reduce depression levels in Turkish women with cancer? (ii) Can the WomenCan CBT program significantly reduce anxiety levels in Turkish women with cancer?, (iii) Can the WomenCan CBT program significantly increase hope levels in Turkish women with cancer?

Methods

Participants

When the study was announced, out of 50 applicants, 22 were invited to participate in the PIE after being screened for inclusion and exclusion criteria. During the interview, 7 people were excluded from the group because they stated that they could not meet the day, time and attendance rules of the program for at least 6 sessions. The program started with 15 participants who agreed to the conditions and signed the consent form. However, during the session, 3 people could not complete the study and left the program. The statistical analysis was conducted with 12 participants who completed the pretest and posttest of the program. All participants were women aged 35-54. Most had a bachelor's/master's degree (91.7%). Most participants were married (58.3%). Most participants (58.3%) lived with their spouses or children. Most participants (66.7%) were not employed. Regarding diagnosis, 7 women had breast cancer, 3 cervical cancer, 1 endometrial cancer, and 1 ovarian cancer. Among the women with breast cancer, 3 were diagnosed with stage II, 3 with stage III, and 1 with stage IV. All gynecological cancers were classified as stage II. The socio-demographic and clinical characteristics of the participants are detailed in Table 1.

Tablo 1. *Socio-demographic and clinical characteristics of the participants*

		n	%
Gender	Female	12	100.0
Age	35-45	11	91.7
	50	1	8.3
Education	Literate	-	-
	Elementary	1	8.3
	High school	-	-
	University+	11	91.7
Marital status	Married	7	58.3
	Single	4	33.3
	Widow	-	-
	Divorced	1	8.3
Living with	Alone	-	-
	Parents	5	41.7
	Spouse/Kids	7	58.3
	Relative/Friend	-	-
Occupational status	Unemployed	8	66.7
	Employed	4	33.3
		12	100.0
Clinical characteristics			
Cancer types	Breast	7	
	Cervical	3	
	Ovarian	1	
	Endometrium	1	
Cancer stages	Stage I		
	Stage II	8	
	Stage III	3	
	Stage IV	1	

The inclusion criteria were being female, having been diagnosed with cancer, knowing the diagnosis, being between the ages of 18 and 64, being able to read, write, speak, and understand Turkish, willing to participate in the sessions, not being in the terminal stage, not having any physical and/or mental health problems that could prevent them from responding effectively, and being able to read, understand, and accept informed consent.

The exclusion criteria were physical limitations that prevented participation in the outpatient group setting, serious physical or psychiatric symptoms that prevented participation in the study (psychotic, drug and alcohol dependence, alcoholic, physical, hearing, or visual impairment), experience with any group therapy (cognitive behavioral stress management, mindfulness-based art therapy, or meaning-based group therapy) conducted by the researcher, and unwilling to participate in all sessions. The study received approval from the Ethics Committee of Yeditepe University.

Design

The article utilized a quasi-experimental research method to evaluate the effects of the WomenCan CBT group program on depression, anxiety, and hope among Turkish women with cancer. The study utilized a quasi-experimental design with a pretest-posttest approach, omitting a control group due to the practical difficulties of establishing a comparable control group in this context. This decision aligns with the pilot nature of the study, with a focus on initial outcomes. The eight-week intervention was a group-structured psycho-educational program based on CBSM in Turkiye (Savaş, 2010; Savaş, 2022; Savaş et al., 2024) and redesigned for women-specific and sensible topics by the researcher.

Recruitment and procedures

Participants were recruited at the Psychosocial Wellbeing Institute, a psychotherapy and counseling clinic in Istanbul, Turkiye, using the snowball method from October 2023 to January 2024. Recruitment methods included flyers, social media, and referrals from medical professionals. Eligible participants provided informed consent before joining the program. Participants meeting the inclusion criteria were invited to the PIE, informed about the program details, and given a consent form to sign if they chose to participate.

Intervention: *WomenCan CBT program*

The Women*Can* CBT program was adapted for women with cancer, from the original face-to-face CBSM manual (Savaş, 2022). The therapist followed the intervention protocol during sessions to ensure treatment integrity. A research assistant accompanied and observed the therapist during each session and assisted participants who needed support, particularly during the implementation phases.

The program was delivered in eight weekly 90-minute sessions and was interactive with CBT-based psycho-education, written practice, and audio sharing. The therapist provided participants with pre-prepared PowerPoint presentations at the end of each session. Homework was assigned for each session, with an expected completion time of 20 to 45 minutes per week. After each session, the participants were given a relaxation practice guide recorded by the researcher's voice (Table 2).

To increase participation and accessibility, the researchers used several strategies. One was to set a cutoff time of 9 p.m. in the evening, after the rush hour, so that people could get to the program. To facilitate recall, regular reminders were sent for each session the day before the program using the participant's preferred method of communication (phone, text, or email). If participants missed the sessions due to emergencies or other health concerns, researchers provided additional support sessions.

The program was designed to be culturally sensitive, considering the cultural values, beliefs, and social contexts of Turkish women. This cultural adaptation is crucial for enhancing the effectiveness of interventions because the success of therapeutic approaches often depends on their alignment with the cultural norms and values of the participants (Bernal et al., 2009; Sue, 1998).

An overview of the main topics of each session is provided in Table 2. To evaluate the effectiveness of the program, it was ensured that participants attended at least 6 sessions through attendance and homework assignments.

Table 2. *Overview of the WomenCan CBT Content*

S. N.	Theme	Content	Assignments
I.	Overview of the program and cognitive therapy	Meeting Sharing group rules, program purpose and objectives Sharing the participants' cancer history and expectations from the program	*
II.	Health Education-1: Medical oncology and Health	Psycho-education: cancer and living in healthier.	*
III.	Health Education-2: Psychological Effect of Cancer and Enhancing Ways	Psycho-education: psychological reactions during cancer, functional psychological tools during this process: interpersonal and intrapersonal support system	How much height are my support table's legs? What do I need to make them all equal? Write down all steps.
IV.	Being a women and cancer	The effects of a cancer diagnosis on being a woman were discussed and talked about the obstacles in daily life, romantic partner relationship, and probable body perception changes with treatments.	Follow up the most common cognitive distortions that you make.
V.	Coping systems	Psycho-education: Adaptive and non-adaptive coping strategies.	Follow up 3 situations with its automatic thoughts, feelings, and behaviors.
VI.	Coping scenarios	Practicing coping methods with vicarious stories about women with cancer.	Follow up 3 cancer related situations and analyze the coping strategy that you used? Was it active or passive coping strategy?
VII.	Stress management	Psycho-education: Stress, stress management techniques Cognitive restructuring is practiced by isolating stress awareness, reactions, and thought distortions.	Catching 3 stressors and follow up the management technique-Analyze functional and unfunctional stress management tools
VIII.	Accepting Uncertainty	Cognitive and behavioral techniques to manage uncertain issues.	*Booster assignments that you can do by your self

Measures

Participants' levels of depression, anxiety, and hope were assessed using the BDI-II, STAI, and HHS before and after the intervention. Socio-demographic and clinical data were also collected. These data collection techniques were systematically used to understand the changes in the participants' levels of depression, anxiety, and hope, in alignment with the study's objectives. The data were then statistically analyzed to support the study findings.

Screening

This study focused on measuring the effect of the Women*Can* CBT intervention program on the psychological well-being of female patients with cancer, with a particular emphasis on changes in anxiety, depression, and hope. Eligible participants were assessed for symptoms of depression, anxiety, and hope both before and after completing the WomenCan CBT program.

Socio-demographic and clinical characteristics

Socio-demographic and clinical characteristics, including information such as age, marital status, educational level, occupation, cancer type, and stage, were gathered by the researcher using a standardized form (Table 1).

Outcomes

Participants' depressive symptoms were evaluated using the 21-item Beck Depression Inventory-II (BDI-II), originally developed by Beck et al. (1961) and validated in Turkiye by Hisli (1989). The BDI-II scores each item on a 4-point Likert scale (0-3), with a total possible score range of 0-63. Scores were categorized as minimal (0-13), mild (14-19), moderate (20-28), and severe (29-63) depression, with higher scores reflecting more severe symptoms. The BDI-II has demonstrated high reliability, with Cronbach's alpha typically ranging from 0.85 to 0.93. The Turkish version had a Cronbach's alpha of 0.80.

Anxiety levels were measured using the State-Trait Anxiety Inventory Y-Form (STAI-Y), a 40-item self-report tool developed by Spielberger et al. (1971). This inventory includes two subscales: State Anxiety (20 items) and Trait Anxiety (20 items), both rated on a 4-point Likert scale (1-4). Total scores for each subscale range from 20 to 80, with higher scores indicating greater anxiety. The STAI-Y has demonstrated high reliability, with Cronbach's alpha typically ranging from 0.86 to 0.95. The Turkish adaptation by Öner and Le Compte (1985) reported Cronbach's alpha values of 0.83 for State Anxiety and 0.87 for Trait Anxiety.

Hope levels were assessed using the Herth Hope Scale (HHS), a 30-item self-report measure developed by Herth (1992). Items were rated on a 4-point Likert scale (1-4), with total scores ranging from 30 to 120. Higher scores indicated higher levels of hope. The HHS covered three dimensions: Temporality and Future, Positive Readiness and Expectancy, and Interconnectedness. The scale has shown good reliability, with Cronbach's alpha ranging from 0.87 to 0.92. The Turkish adaptation by Aslan et al. (2006) reported a Cronbach's alpha of 0.86.

Statistical methods

The analysis of the data obtained from the scales was carried out using the program SPSS 27.0 within the framework of the research purpose, with the significance level set at 0.05. In cases where the sample size is small, nonparametric analyses are recommended because the distribution will not be normal. In this study, the fact that the pre-intervention and post-intervention analyses were conducted with 12 participants without a control group made the choice of nonparametric analysis appropriate. The Wilcoxon signed-rank test is appropriate for testing the significance of the difference between scores on two sets of related measures (Wilcoxon, 1945). The Wilcoxon signed-rank test considers both the direction and the magnitude of the difference between the scores of two sets of related measures (Büyüköztürk, 2018). The Wilcoxon signed-rank test was selected for this study because of the small sample size, the paired nature of the data, and the possibility of a non-normal distribution in the differences between pre- and post-intervention scores. This nonparametric test provides a reliable and valid method for assessing whether the WomenCan CBT program led to significant changes in depression, anxiety, and hope levels among participants, even when the assumptions required for parametric tests are not satisfied.

Results

The WomenCan CBT program led to significant reductions in depression and anxiety levels, and increased hope among participants. Pre-intervention mean depression scores decreased from 20.83 to 15.58 after the intervention. Both state and trait anxiety levels also decreased significantly. Hope levels, particularly in the “Positive Readiness/ Expectancy” dimension, showed significant improvement.

Outcomes of the WomenCan CBT Intervention Program

Tablo 3. *Depression, anxiety, and hope levels before and after the WomenCan CBT intervention*

Outcome Measure	Preintervention Mean (SD)	Postintervention Mean (SD)	z-value
BDI-II	20.83±13.27	15.58±13.09	2.00
STAI- Overall	92.91±29.24	81.16±23.41	1.81
STAI- Trait Anxiety	43.08±16.17	37.66±13.25	1.64
STAI- State Anxiety	49.83±13.52	43.50±10.44	1.88
HHI- Overall	56.33±23.69	66.08±21.14	1.96
HHI- Future	17.16±9.21	20.08±8.39	1.55
HHI- Positive readiness/expectancy	19.58±8.64	23.50±6.40	2.70
HHI- Interconnectedness	19.58±7.39	22.50±7.94	1.52

CBT= cognitive behavioral therapy; BDI- II= Beck Depression Inventory; STAI= State-Trait Anxiety; HHI= Herth Hope Index

The results (Table 3) show significant reductions in depression and anxiety levels, with mean BDI-II scores decreasing from 20.83 to 15.58 ($p=0.02$). The STAI scores also showed significant reductions, with overall scores decreasing from 92.91 to 81.16 ($p=0.04$), specifically in both subscales: Trait Anxiety decreased from 43.08 to 37.66 ($p = 0.05$) and State Anxiety from 49.83 to 43.50 ($p=0.03$). When examining the mean score of hope, the HHI overall score increased from 56.33 to 66.08 ($p= 0.03$). The higher z value for the HHI subscale “Positive Readiness/Expectancy” ($p=0.01$) suggests a more significant change, while the “Future” subscale increased from 17.16 to 20.08 ($p=0.06$), and the “Interconnectedness”

subscale (*p=0.13*) indicates a less pronounced change. Results align with the significant improvements reported in the WomenCan CBT program, highlighting its effectiveness in reducing depression and anxiety while increasing the hope of positive readiness among participants. The statistical significance and corresponding z-values underscore the clinical relevance of the intervention, corroborating findings from previous studies on the effectiveness of CBT in various contexts (Tregnago, 2019).

Discussions

Cognitive Behavioral Therapy (CBT) is a critical therapeutic approach, particularly in enhancing psychological well-being among patients with cancer. CBT addresses psychological issues, such as depression and anxiety, by helping patients restructure their negative thoughts and beliefs. As observed in our study, CBT interventions have proven effective in reducing depression and anxiety levels while increasing hope in participants. This effectiveness highlights CBT's potential as supportive therapy for individuals coping with the psychological impacts of cancer (Zhang et al., 2022a; Ren et al., 2019).

This study demonstrates the effectiveness of a culturally adapted CBT program specifically designed for Turkish women, making a significant contribution to the field of women's studies. The literature suggests that culturally adapted therapeutic interventions are generally more successful, both in the general population and among specific groups with distinct cultural backgrounds (Hinton & Jalal, 2014; Nagayama Hall & Zane, 1997). In the context of Turkiye, the findings of this study underscore the importance of expanding such interventions to improve women's health policies and psychosocial support services.

The core of CBT is the interaction between thoughts, emotions, and behaviors. This model is especially relevant for patients with cancer, who often experience automatic negative thoughts (e.g., "I will never cope with this illness" or "My future is bleak"). CBT helps individuals identify these unhelpful thoughts and replace them with more realistic and functional thoughts (Craske, 2010). This cognitive restructuring helps patients manage stress and anxiety, alleviate symptoms of depression,

and enhance overall psychological resilience. In cancer-specific CBT programs, patients are guided to accept their illness and better cope with uncertainty, a common source of distress (Daniels, 2015).

The application of CBT in patients with cancer is well supported by literature, demonstrating its effectiveness in improving psychological recovery. Zhang et al. (2022a) conducted a meta-analysis showing that CBT significantly reduces anxiety and depression in people who have experienced cancer. This finding aligns with the results of this study, in which the WomenCan CBT program led to substantial improvements in mental health outcomes among Turkish women with cancer. Moreover, CBT was designed to address the unique psychosocial stressors that patients with cancer encounter, such as fear of recurrence, body image issues, and the emotional burden of ongoing treatments (Guarino et al., 2020). By modifying dysfunctional thoughts and fostering adaptive coping strategies, CBT empowers patients to regain a sense of control over their lives. This empowerment is crucial to help survivors maintain hope and resilience throughout their cancer journey (Fitriyanti et al., 2019; Murphy et al., 2020).

One of the key advantages of CBT in cancer treatment is its capacity to boost hope. Hope is not merely a positive outlook but a dynamic cognitive process that involves goal-setting, problem-solving, and the belief that one can achieve desired outcomes despite challenges (Herth, 1992). CBT promotes this process by helping patients set realistic goals, challenge pessimistic thoughts, and develop a proactive approach to their treatment and future. Our study found significant improvements in the “Positive Readiness/Expectancy” dimension of hope, indicating that participants were more optimistic and prepared to face the future with a positive mindset (Emami et al., 2018; Yousefi et al., 2016).

In the context of our study, the WomenCan CBT program was culturally tailored to address the specific needs of Turkish women with cancer. Cultural sensitivity is essential in CBT because it ensures that the therapy resonates with the patient’s values, beliefs, and social context. This cultural adaptation likely contributed to the program’s success because, as it allowed participants to relate to the therapy content more deeply and apply the strategies more effectively in their daily lives (Savaş, 2022).

Group therapy, which is used in the WomenCan CBT program, provides additional benefits by fostering a sense of community among participants. The shared experiences in group setting offer emotional support and reduce feelings of isolation, which are common among patients with cancer (Osborn et al., 2006). This social interaction is particularly valuable in populations that experience significant social isolation because of the stigma and physical limitations associated with cancer. The group format also encouraged participants to learn from each other's coping strategies, further enhancing the therapeutic effects of CBT (Hulbert-Williams et al., 2021).

The study also employed robust data collection and analysis methods. Validated and reliable scales, including the Beck Depression Inventory II (BDI-II), State-Trait Anxiety Inventory (STAI), and Herth Hope Scale (HHS), were employed to measure psychological outcomes, enhancing the reliability of the collected data. The Wilcoxon signed-rank test, selected for statistical analysis due to the small sample size and paired nature of the data, offered a reliable method for evaluating changes in depression, anxiety, and hope levels. This ensured that the results were both valid and meaningful. Additionally, the study's emphasis on specific psychological outcomes—depression, anxiety, and hope—allowed for a focused examination of the most pertinent issues affecting patients with cancer, demonstrating the WomenCan CBT program's effectiveness in addressing these critical areas and improving participants' overall quality of life.

Finally, this study provides valuable preliminary evidence supporting the use of CBT in cancer care, particularly in non-Western populations. The findings suggest that CBT interventions can be successfully adapted and implemented in different cultural contexts, broadening the scope of CBT's impact on global health. This could encourage further research and application of CBT in diverse settings, enhancing its potential to improve the psychological well-being of patients with cancer worldwide.

Limitations

Despite its strengths, this study had several limitations that must be acknowledged. The most significant was the lack of a control group, which limited the ability to definitively attribute the observed improvements in depression, anxiety, and hope to the WomenCan CBT program. Without a control group, it was difficult to rule out the possibility that other factors, such as natural disease progression of the disease or external support systems, might have contributed to the changes observed in the participants.

Our research did not use DSM diagnoses. Instead, we relied on symptom severity ratings derived from validated self-report questionnaires rather than DSM-V diagnoses. Participants psychological symptoms were assessed by symptoms, but the fact that they were assessed by a psychiatrist according to the DSM-V might have been effective in raising patients' awareness.

Additionally, the small sample size of 12 participants limited the generalizability of the findings. A larger sample would have provided more statistical power and allowed for a more robust examination of the program's effects across different subgroups, such as cancer stages and demographic characteristics.

Another limitation was the lack of follow-up assessments to evaluate the long-term effects of the intervention. This study only measured outcomes immediately after the completion of the program, making it unclear whether the benefits of the WomenCan CBT program could be sustained over time. Conducting follow-up assessments at intervals like 3, 6, and 12 months would have offered valuable insights into the long-term effectiveness of the program. Additionally, the study's reliance on self-report measures, a common practice in psychological research, might introduce biases such as social desirability or inaccurate self-assessment. This reliance could affect the accuracy of the findings, as participants might underreport or overreport their symptoms based on perception rather than objective measures.

Finally, the study's focus on a single demographic—Turkish women with cancer—while providing valuable insights into this specific population limited the applicability of the findings to other groups. The cultural specificity of the intervention might mean that the results could not be easily generalized to women from different cultural backgrounds or to men with cancer. Future research should consider including a more diverse sample to explore whether the Women*Can* CBT program is effective across different populations and cultural contexts.

Clinical implications

Women*Can* CBT appears to be a practical and adaptable intervention for Turkish women with cancer who are experience stress, anxiety, depression, and hope.

Conclusion

This study highlights the importance of culturally adapted interventions for improving the psychosocial well-being of Turkish women with cancer. Future research should explore the applicability of such programs across different groups and health conditions in Turkiye with the aim of broader nationwide implementation. The literature indicates that culturally sensitive interventions are particularly effective among minority and culturally diverse groups (Bernal & Domenech Rodríguez, 2012; Miranda et al., 2005). Expanding this approach could significantly contribute to the overall quality of life for women in Türkiye.

The WomenCan CBT program has shown promising results in enhancing the psychological well-being of Turkish women with cancer, as evidenced by significant reductions in depression and anxiety levels and notable increases in hope. These findings emphasize the program's potential as a tailored intervention that addresses the unique psychosocial needs of women with cancer. The structured, group-based format not only provided effective cognitive-behavioral strategies but also fostered a supportive environment that was crucial for participants, many of whom may have faced social isolation and psychological distress due to their condition. The program's success in improving "Positive Readiness/ Expectancy" suggests that participants gained a more optimistic outlook

and better coping mechanisms, which are essential for resilience when facing a cancer diagnosis. However, the study's limitations, such as the absence of a control group and the small sample size, underscore the need for further research to validate these findings and assess the program's effectiveness across various populations and cancer types. Despite these challenges, the Women*Can* CBT program shows promise as a practical and adaptable approach that could greatly enhance the quality of life for women with cancer. Future studies with larger, more diverse samples and extended follow-up periods are essential to confirm the program's long-term effectiveness and broader applicability.

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References

Amidi, A., Buskbjerg, C. R., Damholdt, M. F., Dahlgaard, J., Thorndike, F. P., Ritterband, L., et al. (2022). Changes in sleep following internet-delivered cognitive-behavioral therapy for insomnia in women treated for breast cancer: A 3-year follow-up assessment. *Sleep Medicine*, *96*, 35-41.

Anuk, D., Özkan, M., Kizir, A., et al. (2019). The characteristics and risk factors for common psychiatric disorders in patients with cancer seeking help for mental health. *BMC Psychiatry, 19*, 269. https://doi.org/10.1186/s12888-019-2251-z

Aslan, Ö., Sekmen, K., Kömürcü, Ş., et al. (2007) Hope in Patients with cancer. *C.U. JOSN, 11*, 18-24.

Bai, P. (2023). Application and Mechanisms of Internet-Based Cognitive Behavioral Therapy (iCBT) in Improving Psychological State in Patients with cancer. *Journal of Cancer*, *14*(11), 1981.

Beck, A. T., Ward, C., Mendelson, M., Mock, J., & Erbaugh, J. J. (1961). Beck depression inventory (BDI). *Arch Gen Psychiatry, 4*(6), 561-571.

Bernal, G., Jiménez-Chafey, M. I., & Domenech Rodríguez, M. M. (2009). Cultural adaptation of treatments: A resource for considering culture in evidence-based practice. *Professional Psychology: Research and Practice*, *40*(4), 361.

Bernal, G., & Domenech Rodríguez, M. M. (2012). *Cultural adaptations: Tools for evidence-based practice with diverse populations.* American Psychological Association.

Betiar, A., Khorrami, N. S., & Makvandi, B. (2023). Effectiveness of cognitive-behavioral therapy and mental imagery on hope and self-efficacy of patients with leukemia and lymphoma. *International Journal of Health Studies, 9*(1), 7-11.

Büyüköztürk, S. (2018). *Sosyal bilimler için veri analizi el kitabı.* Pegem Akademi.

Chidi, R., Adeniyi, A. O., Okolo, C. A., Babawarun, O., & Arowoogun, J. O. (2024). Psychological resilience in healthcare workers: A review of strategies and intervention. *World Journal of Biology Pharmacy and Health Sciences*, *17*(2), 387-395.

Craske, M. G. (2010). *Theories of psychotherapy. Cognitive–behavioral therapy*. American Psychological Association.

Daniels, S. (2015). Cognitive behavior therapy for patients with cancer. *Journal of the Advanced Practitioner in Oncology, 6*(1), 54-56. doi:10.6004/jadpro.2015.6.1.5

De, R., Zabih, V., Kurdyak, P., Sutradhar, R., Nathan, P. C., McBride, M. L., & Gupta, S. (2020). Psychiatric disorders in adolescent and young adult-onset cancer survivors: a systematic review and meta-analysis. *Journal of adolescent and young adult oncology, 9*(1), 12-22.

Derav, B. A., Narimani, M., Abolghasemi, A., Delfan, S. E., Akbari, R., Ghaemi, M., et al. (2023). Effectiveness of Group Cognitive-Behavioral Therapy for Managing Anxiety and Depression in Women Following Hysterectomy for Uterine Cancer. *Asian Pacific Journal of Cancer Prevention: APJCP, 24*(12), 4237.

Diggens, J., Bullen, D., Maccora, J., Wiley, J. F., Ellen, S., Goldin, J., et al. (2023). Feasibility and efficacy of 'Can-Sleep': effects of a stepped-care approach to cognitive-behavioral therapy for insomnia in cancer. *Journal of Cancer Survivorship*, 1-9.

Emami, M., Askarizade, G., & Faziltpour, M. (2018). Effectiveness of cognitive–behavioral stress management group therapy on resilience and hope in women with breast cancer. *Positive Psychology Research, 3*(4), 1-14.

Fitriyanti, D., Mardiyono, M., & Bakhtiar, Y. (2019). The Effectiveness of Cognitive Behavioral Therapy (CBT) To Decreased Depression in Woman Patients with Cancer included cervical cancer and breast cancer. *J Ners dan Kebidanan Indones, 6*(3), 27.

Ga, J., Dl, W., Hickey, A., & Carter, B. (2015). Psychological interventions for women with non-metastatic breast cancer (Review). *Cochrane Database of Systematic Reviews, 5*, CD008729.

Grassi, L., Caruso, R., Hammelef, K., Nanni, M. G., & Riba, M. (2015). Efficacy and safety of psychosocial interventions in cancer care: A systematic review. *Psycho-Oncology*, *24*(5), 467-478.

Guarino, A., Polini, C., Forte, G., Favieri, F., Boncompagni, I., & Casagrande, M. (2020). The effectiveness of psychological treatments in women with breast cancer: A systematic review and meta-analysis. *Journal of clinical medicine, 9*(1), 209.

Ham, K., et al. (2019). Preliminary results from a randomized controlled study for an app-based cognitive behavioral therapy program for depression and anxiety in patients with cancer. *Frontiers in Psychology, 10*, 1592.

Herth, K. (1992). Abreviated instrument to measure hope: development and psychometric evaluation. *J Adv Nurs, 17*, 1251-1259.

Hinton, D. E., & Jalal, B. (2014). Guidelines for the implementation of culturally sensitive cognitive behavioural therapy among refugees and in global contexts. *Interventions*, *12*(S1), 32-42.

Hisli, N. (1989). Beck Depresyon Envanterinin Geçerliği Üzerine Bir Çalışma. *Psikoloji Dergisi, 22*, 118-126.

Hulbert-Williams, N. J., Hulbert-Williams, L., Flynn, R. J., Pendrous, R., MacDonald-Smith, C., et al. (2021). Evaluating process and effectiveness of a low-intensity CBT intervention for women with gynaecological cancer (the EPELIT Trial). *AMRC Open Research, 3*, 12.

Lieshout, R. V. V., Layton, H., Feller, A., Ferro, M., Biscaro, A., & Bieling, P. (2019). Public health nurse delivered group cognitive behavioral therapy (CBT) for postpartum depression: A pilot study. *Public health nursing*.

Manne, S. L., Virtue, S. M., Ozga, M., Kashy, D., Heckman, C., Kissane, D., et al. (2017). A comparison of two psychological interventions for newly-diagnosed gynecological patients with cancer. *Gynecologic Oncology, 144*(2), 354-362.

Miranda, J., Bernal, G., Lau, A., Kohn, L., Hwang, W. C., & LaFromboise, T. (2005). State of the science on psychosocial interventions for ethnic minorities. *Annual Review of Clinical Psychology*, *1*, 113-142.

Murphy, M. J., et al. (2020). Randomised controlled trial of internet-delivered cognitive behaviour therapy for clinical depression and/or anxiety in cancer survivors (iCanADAPT Early). *Psycho-Oncology, 29*, 76–85. https://doi.org/10.1002/pon.5267

Osborn, R. L., Demoncada, A. C., & Feuerstein, M. (2006). Psychosocial interventions for depression, anxiety, and quality of life in cancer survivors: Meta-analyses. *International Journal of Psychiatry in Medicine, 36*, 13–34.

Öner, N., & Le Compte, A. (1985). *Hand Book of State-Trait Anxiety Inventory.* Bogaziçi University Press.

Ren, W., Qiu, H., Yang, Y., Zhu, X., Zhu, C., Mao, G., & Xie, X. (2019). Randomized controlled trial of cognitive behavioural therapy for depressive and anxiety symptoms in Chinese women with breast cancer. *Psychiatry Research, 271*, 52–59.

Savaş, E. (2010). *Structured Psychoeducation Intervention for Patients with cancer.* Istanbul University Çapa Medical Faculty Master Thesis.

Savaş, E. (2022). *Cognitive Behavioral Therapy Based Stress Management Program During Cancer Process*. Nobel Publishers.

Savaş, E., Keleş, M., & Tin, O. (2024) Online Cognitive Behavioral Stress Management Program for Breast Patients with cancer*. Nobelmedicus, 20*(2).

Schmitt, J. C., Valiente, R. M., García-Escalera, J., Arnáez, S., Espinosa, V., Sandín, B., et al. (2022). Prevention of depression and anxiety in subclinical adolescents: effects of a transdiagnostic internet-delivered CBT program. *International journal of environmental research and public health*, *19*(9), 5365.

Serfaty, M., et al. (2019). Manualised cognitive-behavioural therapy in treating depression in advanced cancer: The CanTalk RCT. *Health Technology Assessment, 23*(1), 1–106.

Shafierizi, S., Faramarzi, M., Nasiri-Amiri, F., Chehrazi, M., Basirat, Z., Kheirkhah, F., et al. (2023). Therapist-guided internet-based cognitive behavioral therapy versus face-to-face CBT for depression/anxiety symptoms in infertile women with adjustment disorders: A randomized controlled trial. *Psychotherapy Research, 33,* 803 - 819.

Sharifpour, E., Amarghan, H. A., Nejat, H., & Iranmanesh, A. (2023). Comparing the effectiveness of compassion-based therapy with cognitive-behavioral therapy on social well-being and hope for life in patients with cancer. *Journal of Assessment and Research in Applied Counseling (JARAC), 5*(5), 62-68.

Sheikhzadeh, M., Zanjani, Z., & Baari, A. (2021). Efficacy of mindfulness-based cognitive therapy and cognitive behavioral therapy for anxiety, depression, and fatigue in patients with cancer: A randomized clinical trial. *Iranian Journal of Psychiatry, 16*, 271-280. https://doi.org/10.18502/ijps.v16i3.6252

Soetrisno, S., Sulistyowati, S., Respati, S. H., & Nasrudin, M. (2017). Effect of cognitive behavioral therapy for serotonin level, depression score and quality of life in cervical patients with cancer. *Folia Medica Indonesiana, 52*(3), 231-234. https://doi.org/10.20473/fmi.v52i3.5457

Spielberger, C. D., Gonzalez-Reigosa, F., Martinez-Urrutia, A., Natalicio, L. F., & Natalicio, D. S. (1971). The state-trait anxiety inventory. *Revista Interamericana de Psicologia/Interamerican journal of psychology, 5*(3 & 4).

Sue, S. (1998). In search of cultural competence in psychotherapy and counseling. *American Psychologist*, *53*(4), 440.

Tregnago, D., Carbognin, L., Trestini, I., Avancini, A., Sartori, G., Fiorio, E., et al. (2019). Impact of cognitive-behavioral-therapy (CBT) on levels of anxiety, depression and distress in patients with cancer (pts). *Annals of Oncology*.

van de Wal, M., Thewes, B., Gielissen, M., Speckens, A., & Prins, J. (2017). Efficacy of blended cognitive behavior therapy for high fear of recurrence in breast, prostate, and colorectal cancer survivors: The SWORD study, a randomized controlled trial. *Journal of Clinical Oncology, 35*, 2173-2183. https://doi.org/10.1200/jco.2016.70.5301

Vehling, S., Mehnert-Theuerkauf, A., Philipp, R., Härter, M., Kraywinkel, K., Kuhnert, R., & Koch, U. (2022). Prevalence of mental disorders in patients with cancer compared to matched controls–secondary analysis of two nationally representative surveys. *Acta Oncologica, 61*(1), 7-13.

Wilcoxon, F. (1945). Individual comparisons by ranking methods. *Biometrics Bulletin, 1*(6), 80-83.

World Health Organization. (2022). *Cancer.* Available from: https://www.who.int/news-room/fact-sheets/ detail/cancer

Yousefi, E., Nazemnezhad, S., Islami, M., SalarHoseini, H., & Dourandish, M. (2016). The effectiveness of hope therapy on increasing the resilience of women with cancer. *Academic Journal of Psychology Studies, 5*(3), 261-268.

Zane, N., & Nagayama Hall, G. C. (1997). The future of community mental health services to Asian Americans. *Community Mental Health Journal*, *33*(3), 273-282.

Zhang, A., Franklin, C., Jing, S., Bornheimer, L. A., Hai, A. H., Himle, J. et al. (2019). The effectiveness of four empirically supported psychotherapies for primary care depression and anxiety: a systematic review and meta-analysis. *Journal of affective disorders*, *245*, 1168-1186.

Zhang, L., Liu, X., Tong, F., et al. (2022a). Cognitive behavioral therapy for anxiety and depression in cancer survivors: A meta-analysis. *Scientific Reports, 12*, 21466. https://doi.org/10.1038/s41598-022-25068-7

Zhang, L., Liu, X., Tong, F., Zhou, R., Peng, W., Yang, H., .et al. (2022b). The prevalence of psychological disorders among patients with cancer during the COVID-19 pandemic: A meta-analysis. *Psycho-Oncology, 31*(11), 1972-1987.

Zhang, Y., Li, J., & Hu, X. (2022c). The effectiveness of dignity therapy on hope, quality of life, anxiety, and depression in patients with cancer: a meta-analysis of randomized controlled trials. *International Journal of Nursing Studies, 132*, 104273.