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**ORIGINAL ARTICLE**

# Preliminary Effects of MBCT on Coping, Self-Compassion, and Empowerment in Early-Stage Breast Cancer

## *MTKT'nin Erken Evre Meme Kanserinde Başa Çıkma, Öz-Anlayış ve Güçlenmeye Etkileri: Ön Bulgular*

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**ABSTRACT**

**Aim:** The objective of the study was to evaluate the effects of a Mindfulness-Based Cognitive Therapy (MBCT) program on coping attitudes, self-compassion, and cancer-related empowerment among women diagnosed with early-stage breast cancer.
**Materials and Methods:** Eighty women with stage 0–II breast cancer were assigned to either an intervention group (n = 40) or a control group (n = 40). The intervention group completed an eight-week group-based MBCT program, while the control group received a single three-hour informational seminar after the completion of the intervention group program. All participants completed the Coping Attitudes Scale, the Self-Compassion Scale–Short Form, and the Cancer Empowerment Scale from pre-to-post. Due to violations of normality assumptions, data were analyzed using Wilcoxon signed-rank tests and Mann–Whitney U tests. False discovery rate correction was applied to control for multiple comparisons.
**Results:** Significant improvements were observed in coping attitudes, self-compassion, and empowerment levels within the intervention group ($p < .05$). Notably, the increase in self-compassion may be attributed to the gender- and culturally sensitive structure of the intervention delivered in the Turkish context. Compared with the control group, the intervention group showed sizable pre to post gains (CAS: 83.9→115.4; SCS SF: 19.9→39.8; CES: 154.4→160.8), while controls showed minimal change or decline (CAS: 84.3→80.9; SCS SF: 24.0→25.2; CES: 151.0→140.2); group differences favored MBCT at post test (FDR adjusted p's ≤ .005).
**Conclusion:** These findings suggest that mindfulness-based group interventions may serve as an effective psychosocial approach for supporting psychological well-being in female cancer patients. In addition to reducing psychological symptoms, the MBCT program enhanced coping flexibility and internal empowerment. These preliminary findings warrant consideration of culturally sensitive MBIs within oncology services; however, time matched randomized trials are required before making firm recommendations.

**Keywords:** Breast neoplasms, cognitive therapy, coping behavior, mindfulness, self-compassion, psychological empowerment, women's health.

**ÖZ**

**Amaç:** Bu çalışmanın amacı, erken evre meme kanseri tanısı almış kadınlarda Farkındalık Temelli Kognitif Terapi (FTKT) programının başa çıkma tutumları, öz-anlayış ve kanserle ilişkili güçlenme üzerindeki etkilerini değerlendirmektir.
**Gereç ve Yöntem:** Evre 0–II meme kanseri tanısı almış toplam seksen kadın dahil edilmiştir. Katılımcılar müdahale (n = 40) ve kontrol (n = 40) gruplarına atanmıştır. Müdahale grubuna sekiz haftalık grup temelli FTKT programı uygulanmış, kontrol grubuna ise uygulama grubu bittikten sonra tek seferlik üç saatlik bilgilendirme semineri verilmiştir. Katılımcılar müdahale öncesi ve sonrası Başa Çıkma Tutumları Ölçeği, Öz-Anlayış Ölçeği–Kısa Form ve Kanser Güçlenme Ölçeği ile değerlendirilmiştir. Normal dağılım varsayımları sağlanmadığından analizlerde Wilcoxon işaretli sıralar testi ve Mann–Whitney U testi kullanılmıştır.
**Bulgular:** Müdahale grubunda başa çıkma tutumları, öz-anlayış ve güçlenme düzeylerinde istatistiksel olarak anlamlı artışlar gözlenmiştir ($p < .05$). Özellikle öz-anlayıştaki artışın, müdahalenin toplumsal cinsiyet ve kültürel bağlama duyarlı yapısından kaynaklanabileceği düşünülmektedir. Müdahale grubunda pre→post belirgin artışlar gözlendi (CAS: 83.9→115.4; SCS SF: 19.9→39.8; CES: 154.4→160.8), kontrol grubunda ise değişim sınırlı/olumsuzdu (CAS: 84.3→80.9; SCS SF: 24.0→25.2; CES: 151.0→140.2); post test karşılaştırmaları MBCT lehine anlamlıydı (FDR düzeltilmiş p'ler ≤ .005).
**Sonuç:** Bulgular, farkındalık temelli grup müdahalelerinin kadın kanser hastalarının psikolojik iyi oluşunu desteklemede etkili bir psikososyal yaklaşım olabileceğini göstermektedir. FTKT programı psikolojik semptomların azalmasına ek olarak başa çıkma esnekliği ve içsel güçlenmeyi de artırmıştır. Bununla birlikte, bu ön bulguların daha güçlü kanıtlarla desteklenebilmesi için zaman açısından eşleştirilmiş randomize kontrollü çalışmalara ihtiyaç vardır.

**Anahtar Kelimeler:** Başa çıkma, farkındalık, kadın sağlığı, kognitif terapi, meme kanseri, öz-anlayış, psikolojik güçlenme

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## Introduction

Women may exhibit distinct needs in both accessing healthcare services and engaging in psychological coping due to gender roles [1, 2]. In this context, the unique experiences of women diagnosed with breast cancer should be specifically addressed within psychosocial intervention programs. Globally, approximately 20 million new cancer cases are reported each year, and this number is expected to rise to 35 million by 2050 [3]. Breast cancer is the most frequently diagnosed cancer among women worldwide (2.3 million new cases in 2022) and likewise the leading cancer type in Türkiye, with an incidence of 47.7 per 100,000 women [4, 5]. Approximately 48% of breast cancer cases in Türkiye are diagnosed at an early stage, which presents a significant opportunity for early intervention and the implementation of psychosocial support strategies [6].

Although a diagnosis of early-stage breast cancer is generally considered a positive development due to its association with higher survival rates and treatment success, the psychological trajectory may not follow the same linear progression. Early diagnosis often results in individuals being labeled as "ill" before experiencing any physical symptoms, which can cause a shock response in many patients. The statement, "I felt fine—how can I be sick?" is a clear example of this reaction. Such contradictory experiences may trigger a range of psychological responses in patients.

These include denial of reality and delays in cognitively processing and accepting the diagnosis; disorganized coping attitudes accompanied by a sense of injustice such as "I don't deserve this illness"; a diminished trust in one's body due to the collapse of the illusion of control; the perception, especially among younger individuals, that future life plans are under threat; and a fear of death triggered by the burden carried by the word "cancer," despite the diagnosis being at an early stage.

These psychological responses highlight a profound need for cognitive and emotional restructuring in the post-diagnosis period. Indeed, the literature indicates that even after treatment, women diagnosed at an early stage continue to experience significant levels of anxiety, emotional uncertainty, and fear of cancer recurrence [7, 8, 9].

Such cognitive and emotional challenges require individuals not only to confront the illness itself, but also to re-engage with their self-perception, systems of meaning, and their overall relationship with life. At this point, the coping attitudes developed by the individual become one of the key determinants in their psychological struggle with the illness [10]. Adaptive coping strategies play a protective role by enabling effective stress management, restoring a sense of control, and preserving emotional integrity. In contrast, avoidant or helplessness-based strategies are associated with increased psychological distress and deterioration [11].

In addition, the perceptions that individuals form about themselves and their lives in relation to the illness play a central role in making sense of the experience. In this context, the concept of self-compassion can be defined as a process of insight through which individuals recognize their emotional experiences, become aware of disruptions in their sense of self, and strive to restore internal coherence. Studies have shown that individuals with high levels of self-compassion cope more effectively with uncertainty and evaluate themselves in a more realistic and compassionate manner [12, 13].

Amid this broader process of psychological reconstruction, some individuals may experience personal growth, a reordering of life priorities, and the emergence of a deeper sense of meaning—despite having undergone a traumatic experience. This phenomenon is referred to in the literature as cancer-related empowerment, or more generally, post-traumatic growth (PTG), and is regarded as an indicator of psychological growth following trauma [14]. Studies conducted with individuals diagnosed with breast cancer have shown that meaningful social support, mindfulness-based interventions, and self-compassion approaches positively influence levels of PTG [15, 16].

In recent years, mindfulness-based interventions—particularly programs such as Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT)—have demonstrated significant reductions in symptoms such as stress, anxiety, depression, and sleep disturbances among breast cancer patients. In addition to symptom relief, improvements have also been observed in quality of life, self-compassion, and psychological resilience [17, 18]. Furthermore, randomized controlled trials have shown that these interventions not only aid in symptom management but also foster improvements in deeper psychological domains such as post-traumatic growth, sense of self-worth, and life purpose [15, 19, 20].

While the effects of mindfulness-based therapies on outcome variables such as stress, anxiety, depression, and quality of life in breast cancer patients have been widely studied, their impact on deeper psychological processes—such as coping attitudes, self-compassion, and cancer-related empowerment—remains underexplored. Particularly, structured intervention studies that examine these three constructs in combination are rare in the literature.

In this study, the effects of an MBCT program administered to women diagnosed with early-stage breast cancer were evaluated in terms of coping attitudes, self-compassion, and cancer-related empowerment. The central hypothesis of the study was that the MBCT intervention would lead to significant improvements in all three domains.

## Methods and Methods

### Study Design and Setting

This pilot study employed a quasi-experimental, pre-test – post-test control group design to evaluate the effectiveness of an eight-week MBCT program for women diagnosed with breast cancer. The control group received only a single three-hour seminar,

without matched time of contact with healthcare providers compared to the MBCT group. This imbalance may represent a potential confounding factor, as differential provider contact time could have influenced outcomes; therefore, this constitutes an attention control limitation.

The study was conducted between May and July 2025 at the Psychosocial Wellbeing Institute.

This study was approved by an Institutional Ethics Committee (Approval No: 2025/08-01). The study was conducted in accordance with the Declaration of Helsinki, and written informed consent was obtained from all participants prior to participation.

**Participants**

Participants were recruited via public announcements on social media and through professional psycho-oncology networks. A total of 138 women expressed interest. Following eligibility screening, 84 were allocated to either the intervention (n=43) or control (n=41) group. Three participants in the intervention group withdrew before completing the program, and one participant in the control group did not complete the post-test, resulting in a final sample of 80 women (intervention group n=40, control group n=40).

Inclusion criteria were: (a) diagnosis of stage 0–II breast cancer, (b) female gender, (c) age between 18 and 60 years, and (d) providing informed consent and having the ability to attend all sessions. Exclusion criteria were: (a) psychotic disorder, (b) alcohol or substance dependence, and (c) physical, visual, or hearing impairment preventing participation in group-based cognitive therapy.

All participants provided written informed consent. The intervention was delivered at the Psychosocial Wellbeing Institute by a psychologist and psycho-oncologist with expertise in MBCT.

Sociodemographic and Clinical Characteristics

Sociodemographic (age, education, marital status, employment) and clinical characteristics (cancer stage, time since diagnosis) were recorded using a structured questionnaire. Group differences at baseline were examined using chi-square tests or Fisher's exact test, depending on expected cell counts.

**Data Collection Instruments**

**Coping Attitudes Scale (CAS)**

The CAS was originally developed by Carver et al. and adapted into Turkish by Dicle et al. [21]. It assesses individuals' strategies for coping with stress. In this study, both the total CAS score and its five subscales were analyzed. The subscales are self-help, approach, adaptation, avoidance, and self-punishment. Higher scores indicate greater endorsement of the corresponding coping strategy. Adaptive coping was represented by higher scores in Self-Help, Approach, and Adaptation, whereas Avoidance and Self-Punishment were considered maladaptive strategies. For interpretability, Avoidance and Self Punishment subscales were reverse coded (1–5 Likert; $x' = 6 - x$) so that higher values consistently indicate more adaptive coping; the CAS total was computed in the same direction. The internal consistency of the Turkish version of the CAS is high (Cronbach's ◘ = .97) [21]. In the present sample, Cronbach's alpha for the total CAS was $\alpha = .88$, indicating satisfactory reliability.

**Self-Compassion Scale – Short Form (SCS-SF)**

Developed by Neff [12] and adapted into Turkish by Deniz et al. [22], this 12-item short form evaluates individuals' compassionate and accepting attitudes toward themselves. It includes subdimensions such as self-kindness, common humanity, and mindfulness. Although the scale includes multiple subdimensions, in the present study the total score was used, as it provides a reliable and parsimonious index of overall self-compassion, consistent with prior research [12]. The internal consistency of the Turkish version is $\alpha = .86$. In the present study, internal consistency was acceptable ($\alpha = .84$).

**Cancer Empowerment Scale (CES)**

This scale was developed by Van den Berg et al. [23] and adapted into Turkish by Yılmaz-Karabulutlu et al. [24] to assess the process of empowerment in the context of cancer. It consists of 40 items and includes subscales as personal strength, social support, healthcare services, and community support. In line with previous validation studies, the total CES score was analyzed rather than individual subscales, since the primary aim of this study was to assess the overall sense of empowerment [23, 24]. The reliability coefficients of the subscales range between .87 and .95. In the present study, internal consistency was acceptable ($\alpha = .91$).

Intervention Program: Mindfulness-Based Cognitive Therapy (MBCT)

The group-based intervention program used in this study was based on the Mindfulness-Based Cognitive Therapy model developed by Segal, Williams, and Teasdale [25]. The structure of the program was informed by the original MBCT protocol as well as current literature on the effectiveness of mindfulness-based interventions in cancer patients [26, 27]. This approach aims to help individuals become aware of their automatic thought patterns, shift their relationship with these thoughts, and regulate their emotional responses more effectively.

The primary goals of the program are to train participants to focus their attention on the present moment, to develop nonjudgmental awareness, to approach distressing thoughts and emotions with acceptance and openness, and to build functional coping strategies through mindfulness.

The MBCT program consisted of eight weekly sessions, each lasting 180 minutes. The sessions were conducted in a quiet and safe room with a sea view at a psychosocial wellbeing institute in Istanbul. Each session was structured into three phases: opening, practice, and closing. In the opening phase, participants shared their weekly experiences and current emotional states, followed by the introduction of the session's mindfulness theme. The practice phase included guided mindfulness exercises such as breath awareness, body scan, and thought observation, along with cognitive restructuring exercises and group discussions. In the

closing phase, participants reflected on the session, reviewed mental patterns they had noticed, and received practice suggestions for the following week.

The program was delivered by a clinical psychologist experienced in MBCT principles and cancer psychology. The therapist held a doctoral degree in clinical psychology and had over 15 years of clinical and academic experience in psycho-oncology and group therapy. To ensure participant adherence, various strategies were implemented. Sessions were scheduled for the evening hours, and participants received reminders via SMS, email, or phone according to their preferences. In cases of unavoidable absence, individual support or summary meetings were provided.

### Session Content

Each session in the program was structured around thematic components derived from the standard MBCT protocol. The sessions were designed to help individuals recognize their automatic reactions, establish a healthier relationship with their thoughts, explore the connection between mind, body, and emotions, and cope with life challenges in a more conscious and acceptance-based manner.

In addition, the program incorporated themes specific to the lived experiences of women with a history of breast cancer, such as developing awareness around bodily changes and compassionately confronting cultural roles associated with being a woman in Türkiye. Within this context, themes such as "femininity identity," "gender roles," "body image," and "self-compassion" were explored with cultural sensitivity.

Each session was structured to include guided mindfulness exercises, written reflections, group sharing, and practical activities recommended for home practice. Thematic content, sample exercises, and intended outcomes of the sessions are presented in detail in Table 1.

**Table 1.** Intervention protocol

| Session | Thematic Title | Main Exercises | Home Exercise Suggestions |
|---|---|---|---|
| **Session 1** | Waking Up from Autopilot | Automatic pilot practice, raisin exercise | Doing a daily activity consciously |
| **Session 2** | Being in the Moment: Senses and Breath | Breath awareness, body scan | Practice with body scan recording |
| **Session 3** | Making Friends with the Mind: Observing Thoughts | Thought bubble exercise, mind observation | Keeping a thought journal |
| **Session 4** | Challenging Emotions and Reconnecting with the Body (Living as a Woman in Türkiye) | Acceptance of the surgical body part, writing a letter to my body, sharing about the body reflections of cultural role pressures | Body journal, + a note of awareness on the effects of cultural roles on the body |
| **Session 5** | Learning to Respond Instead of Reacting | 3-Minute Breathing Space, Working with Triggering Patterns | Practicing 3-Minute breathing space exercise twice a day. |
| **Session 6** | Being a Woman: Roles, Society, and Self-Compassion (in the Context of Turkey) | Mapping gender roles, Guided Writing, Compassion Meditation, Voluntary Sharing | Writing a Self-Compassion Letter +A Letter of Gratitude to Gender Roles |
| **Session 7** | Preventing Relapse: Identifying Early Warning Signals | Mapping the Relapse Cycle, Thought-Emotion-Behavior Chain | Writing down relapse moments and observing consciously |
| **Session 8** | Sustaining Gains and Carrying It Forward | Reviewing the gains, daily life integration | Designing a personal mindfulness plan |

### Statistical Analysis

Data were analyzed using SPSS version 25.0. Primary analyses used Wilcoxon signed-rank (within-group) and Mann–Whitney U (between-group) tests due to non-normal distributions (Shapiro–Wilk $p < .05$ for all outcomes). Given the pilot nature and sample size of the study, we did not apply parametric ANOVA models, as their assumptions were violated and statistical power was limited. Non-parametric approaches are recommended in such cases to ensure robustness [28]. Future studies with larger samples may benefit from repeated-measures ANOVA or ANCOVA approaches to test time × group interactions more directly.

Primary analyses were conducted on three co-primary outcomes (CAS, SCS-SF, CES). To limit type-I error, Benjamini–Hochberg false discovery rate correction (q=0.05) was applied across these three outcomes. Secondary analyses (subscales, within-group comparisons) were considered exploratory and reported unadjusted.

The Shapiro–Wilk test indicated that none of the primary outcome variables were normally distributed (CAS: p=.0037; SCS-SF: p=.0020; CES: p=.0003). Therefore, non-parametric analyses were employed for subsequent comparisons (Table 2).

**Table 2.** Assessment of normality of distributions using the Shapiro–Wilk test

| Variable | Shapiro-Wilk Stat | p-Value | Is it Normally Distributed? |
|---|---|---|---|
| **CAS** | 0.91 | 0.0037 | No |
| **SCS-SF** | 0.95 | 0.0020 | No |
| **CES** | 0.93 | 0.0003 | No |

## RESULTS

No significant group differences were observed in age (Fisher's exact p = 1.000), education ($\chi^2 = 0.37$, p = .830), marital status (Fisher's exact p = .186), employment status ($\chi^2 = 1.45$, p = .228), or cancer stage (Fisher's exact p = .858). For time since diagnosis, a marginal trend was observed ($\chi^2 = 5.76$, p = .056), although it was not statistically significant (Table 3).

**Table 3.** Sociodemographic and clinical characteristics of the participants

| Variable | Intervention Group (n) | Control Group (n) | Test Statistic | p Value |
|---|---|---|---|---|
| **Age (years)** | | | Fisher's exact | 1.000 |
| 36-45 years | 19 | 19 | | |
| 46-55 years | 17 | 17 | | |
| **Education** | | | $\chi^2 = 0.37$ | .830 |
| Middle School | 10 | 10 | | |
| High School | 24 | 22 | | |
| Bachelor's Degree | 6 | 8 | | |

| | | | | |
|---|---|---|---|---|
| **Marital Status** | | | Fisher's exact | .186 |
| Single | 3 | 5 | | |
| Married | 23 | 28 | | |
| Divorced | 14 | 7 | | |
| **Employment Status** | | | $\chi^2 = 1.45$ | .228 |
| Employed | 25 | 30 | | |
| Unemployed | 15 | 10 | | |

**Table 3 cont.** Sociodemographic and clinical characteristics of the participants

| Variable | Intervention Group (n) | Control Group (n) | Test Statistic | p Value |
|---|---|---|---|---|
| **Cancer Stage** | | | Fisher's exact | .858 |
| Stage 0 | 2 | 1 | | |
| Stage I | 25 | 24 | | |
| Stage II | 13 | 15 | | |
| **Time Since Diagnosis** | | | $\chi^2 = 5.76$ | .056 |
| ≤1 year | 20 | 12 | | |
| 1-3 years | 17 | 17 | | |
| >3 years | 3 | 10 | | |

**Note.** Values are counts. Fisher's exact test was used for Age, Marital Status, and Cancer Stage due to small expected counts; Pearson's $\chi^2$ test was used for Education, Employment Status, and Time Since Diagnosis.

A total of 80 participants—40 in the intervention group and 40 in the control group—completed both pre-test and post-test assessments. At baseline, groups were comparable on CAS and CES ($p > .05$), whereas the intervention group had lower SCS SF than controls (19.9 vs 24.0; $U = 545.5$, $p = .014$). Detailed Mann–Whitney U test results are presented in Table 4.

**Table 4.** Group comparisons of pre- and post-test scores between intervention and control groups (Mann–Whitney U test with descriptive statistics and effect sizes)

| Scale | Time | Group (n=40) | Mean ± SD | U | p | p (BH-adj) | r (Effect Size) |
|---|---|---|---|---|---|---|---|
| CAS | Pre-test | Intervention | 83.9 ± 9.2 | 790 | .927 | - | 0.00 (none) |
| | | Control | 84.3 ± 7.9 | | | | |
| | Post-test | Intervention | 115.4 ± 10.2 | 1588 | <.001 | 0.003 | 0.84 (large) |
| | | Control | 80.9 ± 8.4 | | | | |
| SCS-SF | Pre-test | Intervention | 19.9 ± 5.5 | 545.5 | .014 | - | 0.28 (small–med) |
| | | Control | 24.0 ± 7.8 | | | | |
| | Post-test | Intervention | 39.8 ± 6.9 | 1442.5 | <.001 | 0.004 | 0.70 (large) |
| | | Control | 25.2 ± 8.2 | | | | |
| CES | Pre-test | Intervention | 154.4 ± 16.9 | 884 | .421 | - | 0.09 (none) |
| | | Control | 151.0 ± 18.3 | | | | |
| | Post-test | Intervention | 160.8 ± 18.4 | 1220 | <.001 | 0.005 | 0.45 (medium) |
| | | Control | 140.2 ± 21.1 | | | | |

**Note.** CAS = Coping Attitudes Scale; SCS-SF = Self-Compassion Scale – Short Form; CES = Cancer Empowerment Scale. Effect size $r = Z/\sqrt{N}$. Benjamini–Hochberg false discovery rate correction ($q = 0.05$) was applied across the three co-primary outcomes (CAS, SCS-SF, CES).

Pre-test and post-test scores on the Coping Attitudes Scale (CAS), Self-Compassion Scale-Short Form (SCS-SF), and Cancer Empowerment Scale (CES) were compared between the intervention and control groups using the Mann–Whitney U test, as the normality assumption was not met. At baseline, groups were comparable on CAS and CES ($p > .05$), whereas the intervention group had lower SCS SF than controls (19.9 vs 24.0; $U=545.5$, $p=.014$). These findings indicate that the intervention had a significant effect on improving coping skills, levels of self-compassion, and perceptions of empowerment. (See Table 4). In the control group, CAS scores did not change significantly from pre- to post-test (Wilcoxon $p = .219$), and in fact showed a slight decrease in mean scores.

Within-group analyses further supported these findings. In the intervention group, Wilcoxon signed-rank tests showed substantial improvements from pre- to post-test. CAS scores increased markedly ($83.9 \pm 9.2 \rightarrow 115.4 \pm 10.2$; $Z = -5.52$, $p < .001$, $r = 0.87$), and SCS-SF scores nearly doubled ($19.9 \pm 5.5 \rightarrow 39.8 \pm 6.9$; $Z = -5.52$, $p < .001$, $r = 0.87$). CES scores also improved significantly ($154.4 \pm 16.9 \rightarrow 160.8 \pm 18.4$; $Z = -2.85$, $p = .004$, $r = 0.45$), reflecting a moderate effect size. These results are summarized in Table 5.

**Table 5.** Pre- and post-test comparisons in the intervention group (Wilcoxon signed-rank test with descriptive statistics and effect sizes)

| Variable (n=40) | Mean ± SD | Median | Z | p | p (BH-adj) | r (Effect Size) |
|---|---|---|---|---|---|---|
| **CAS Pre-test** | 83.9 ± 9.2 | 85.5 | | | | |
| **CAS Post-test** | 115.4 ± 10.2 | 119.0 | -5.52 | <.001 | 0.003 | 0.87 |
| **SCS-SF Pre-test** | 19.9 ± 5.5 | 20.0 | | | | |
| **SCS-SF Post-test** | 39.8 ± 6.9 | 40.0 | -5.52 | <.001 | 0.004 | 0.87 |
| **CES Pre-test** | 154.4 ± 16.9 | 155.0 | | | | |
| **CES Post-test** | 160.8 ± 18.4 | 163.0 | -2.85 | .004 | 0.005 | 0.45 |

**Note.** CAS = Coping Attitudes Scale; SCS-SF = Self-Compassion Scale – Short Form; CES = Cancer Empowerment Scale. Effect size $r = Z/\sqrt{N}$. Benjamini–Hochberg false discovery rate correction ($q = 0.05$) was applied across the three co-primary outcomes (CAS, SCS-SF, CES).

In contrast, the control group did not show meaningful improvements. CAS scores slightly decreased ($84.3 \pm 7.9 \rightarrow 80.9 \pm 8.4$; $Z = -1.23$, $p = .219$, $r = 0.19$), and SCS-SF scores remained essentially unchanged ($24.0 \pm 7.8 \rightarrow 25.2 \pm 8.2$; $Z = -1.82$, $p = .069$, $r = 0.29$). CES scores showed a significant decline over time ($151.0 \pm 18.3 \rightarrow 140.2 \pm 21.1$; $Z = -2.69$, $p = .007$, $r = 0.43$). Full results for the control group are displayed in Table 6.

**Table 6.** Pre- and post-test comparisons in the control group (Wilcoxon signed-rank test with descriptive statistics and effect sizes)

| Variable (n=40) | Mean ± SD | Median | Z | p | r (Effect Size) |
|---|---|---|---|---|---|
| **CAS Pre-test** | 84.3 ± 7.9 | 86.5 | | | |
| **CAS Post-test** | 80.9 ± 8.4 | 77.5 | -1.23 | .219 | 0.19 |
| **SCS-SF Pre-test** | 24.0 ± 7.8 | 22.5 | | | |
| **SCS-SF Post-test** | 25.2 ± 8.2 | 23.0 | -1.82 | .069 | 0.29 |
| **CES Pre-test** | 151.0 ± 18.3 | 151.0 | | | |
| **CES Post-test** | 140.2 ± 21.1 | 128.0 | -2.69 | .007 | 0.43 |

**Note.** CAS = Coping Attitudes Scale; SCS-SF = Self-Compassion Scale – Short Form; CES = Cancer Empowerment Scale. Effect size $r = Z/\sqrt{N}$. Benjamini–Hochberg false discovery rate correction ($q = 0.05$) was applied across the three co-primary outcomes (CAS, SCS-SF, CES). Adjusted p values are shown in Tables 4–5 (between-group and intervention group analyses). Control

group within-group results (Table 6) are considered exploratory and reported unadjusted.

As presented in Table 7 (direction aligned subscales), the intervention group showed clear gains in adaptive coping (Self Help, Approach, Adaptation) and, after reverse coding, also increased on the two maladaptive subscales (higher = more adaptive). By contrast, the control group exhibited stable/declining adaptive subscales and marked decreases on the direction aligned maladaptive subscales at post test (reflecting deterioration when viewed in the raw, non reversed direction). This pattern is consistent with the between group differences on the total CAS in Table 4.

**Table 7.** CAS Subscale Scores (DirectionAligned; Higher = More Adaptive) (Mean ± SD)

| Subscale | Intervention Pre | Intervention Post | Control Pre | Control Post |
|---|---|---|---|---|
| **Self-Help** | 16.5 ± 3.7 | 23.5 ± 4.0 | 15.3 ± 3.2 | 17.0 ± 3.6 |
| **Approach** | 16.5 ± 3.1 | 22.2 ± 4.1 | 17.7 ± 3.7 | 16.7 ± 3.4 |
| **Adaptation** | 16.4 ± 3.1 | 22.9 ± 3.5 | 16.9 ± 3.5 | 15.8 ± 4.0 |
| **Avoidance (reversecoded)** | 19.3 ± 3.9 | 19.8 ± 3.5 | 19.2 ± 3.2 | 12.6 ± 3.3 |
| **Self-Punishment (reversecoded)** | 19.2 ± 3.3 | 20.1 ± 3.4 | 19.8 ± 3.5 | 12.2 ± 3.9 |

**Note.** CAS = Coping Attitudes Scale. Subscales: SelfHelp (items 1–6), Approach (7–13), Adaptation (14–20), Avoidance (21–26), SelfPunishment (27–32). Avoidance and SelfPunishment were reversecoded (1–5 per item; reversed subscale sum = 36 - raw sum across 6 items) so that higher scores reflect more adaptive coping. Subscale scores are descriptive and may not numerically sum to the CAS total due to reverse coding and rounding.

Taken together, these findings indicate that the MBCT intervention produced robust improvements in coping attitudes, self-compassion, and empowerment, while the control group demonstrated limited or even negative changes across the study period.

Across the eight MBCT sessions, no serious adverse events were observed or spontaneously reported by participants. However, as no structured adverse-event checklist was deployed, this observation should be interpreted with caution.

## Discussion

The findings of this study demonstrate that the MBCT program provides multidimensional support for the psychological well-being of women diagnosed with early-stage breast cancer. Given the quasi-experimental design and limited sample, findings should be interpreted as associations rather than causal effects. Improvements in coping, self-compassion, and empowerment co-occurred with MBCT participation; directional mechanisms remain hypotheses requiring time-matched randomized trials.

This study examined the effects of the MBCT program on coping attitudes, self-compassion, and cancer-related empowerment among women with early-stage breast cancer. The results revealed significant improvements in all three domains in the intervention group. These findings are consistent with previous research and confirm the positive effects of MBCT on psychological well-being [29, 30].

The MBCT intervention appears to activate not only symptom-level psychological improvements, but also broader and more integrative coping resources.

The improvement in coping attitudes observed in this study should be considered in conjunction with the increase in self-compassion. At the subscale level, the MBCT intervention appeared to strengthen adaptive coping strategies (Self-Help, Approach, Adaptation) and to produce modest reductions in maladaptive coping strategies (Avoidance, Self-Punishment). In contrast, participants in the control group demonstrated an opposite pattern, with stable or declining adaptive strategies and pronounced increases in maladaptive coping at post-test. This divergent trajectory underscores MBCT's protective role in both enhancing adaptive resources and preventing deterioration in maladaptive tendencies, whereas mere participation in the study without active intervention may have heightened maladaptive coping.

Self-compassion allows individuals to adopt a more compassionate, non-judgmental, and accepting stance toward themselves, thus facilitating healthier responses to stressful life events [12]. In other words, an increase in self-compassion supports cognitive restructuring and emotional regulation, making it easier for individuals to develop more functional coping strategies [31].

The observed improvements in coping attitudes and self-compassion enable individuals to reframe their cancer-related experiences not merely as a threat, but as an opportunity for growth. This process of reappraisal forms the foundation of cancer-related empowerment or growth [14]. This is in line with Tedeschi and Calhoun's (2004) conceptualization of post-traumatic growth, where adaptive reappraisal and meaning making are described as central mechanisms [14].

During this process, individuals may gain deeper personal insight, revise life priorities, and foster greater emotional depth in relationships. Self-compassion serves as an internal resource that facilitates this transformation. Research has shown that individuals with higher levels of self-compassion are more likely to derive meaning from stressful experiences, pursue value-based living, and build internal resilience [32, 33].

Mindfulness-based interventions have been shown in numerous studies to strengthen coping skills, reduce ruminative (repetitive and negative) thought cycles, and support emotional regulation in cancer patients [33]. These interventions encourage individuals to consciously redirect their attention to the present moment, notice their thoughts without judgment, and regulate emotions by accepting them rather than suppressing them. At the neurobiological level, mindfulness practices have been found to increase activity in the prefrontal cortex, reduce hyperactivation in the amygdala, and promote more balanced functioning of the hypothalamic-pituitary-adrenal (HPA) axis, which regulates the stress response [34, 35]. These effects are particularly critical in the context of chronic illnesses like cancer,

as they enhance emotional regulation, inner balance, and coping capacity.

The greater effectiveness of mindfulness-based interventions among female patients may be related to gender roles. These cultural and gender-specific factors may partly explain why self-compassion gains were especially pronounced in this sample. Culturally, women tend to be more open to recognizing, expressing, and sharing emotions, which may allow them to benefit more from such therapeutic approaches [36]. This aligns with prior research in Türkiye showing that women rely more on social support and meaning-making strategies during illness [37]. This pattern may enhance women's potential to develop deeper insights, experience emotional relief through sharing, and transform their sense of self during mindfulness-based group therapy.

One of the most noteworthy findings of the current study was the significant increase in self-compassion. Self-compassion refers to adopting a kind, accepting, and supportive attitude toward oneself in the face of suffering, rather than engaging in self-judgment [12]. Increases in self-compassion contribute to perceiving stressful life events as less threatening, reducing internal criticism, and enhancing emotional resilience [31]. This process may facilitate more flexible coping strategies at the cognitive level, while supporting a sense of empowerment at the social level.

The study by Labelle et al. [30] also demonstrated that MBCT significantly improved coping attitudes. However, the level of self-compassion increase observed in the current study appears to be even higher than in comparable research. This difference may be attributed to the group format of the intervention and to the greater openness of women in the Turkish cultural context to emotional sharing and the search for meaning. MBCT programs that are culturally sensitive may more effectively address the unique psychosocial needs of women.

Self-compassion has been shown to strengthen not only an individual's attitude toward themselves but also their capacity for empathy, relational bonding, and help-seeking behaviors in interpersonal contexts [38]. Group therapy studies conducted with women in Türkiye are consistent with these findings. In a group intervention led by Savaş [39] with female cancer patients, significant increases were observed in levels of self-compassion, hope, and perceived interpersonal support. These results suggest that women's needs for meaning-making, empowerment, and social connection within their cultural and societal contexts can be effectively addressed through structured group therapy formats. When such interventions are designed with attention to gender-specific psychosocial needs, they have the potential to support both individual and community-level healing processes.

MBCT appears to be a feasible and promising group based option among psychosocial interventions for women with early stage breast cancer. Larger, time matched randomized comparisons are needed before recommending prioritization over other supportive approaches.

The present findings also highlight the need for the development of systematic psychosocial support models, not only to enhance individual psychological resilience but also to address broader health system needs. In cultural contexts such as Türkiye, where caregiving roles disproportionately fall on women, it is recommended that group therapy programs specifically tailored to women be integrated into healthcare systems as a standard component of psycho-oncological care.

Several limitations of this study must be considered. The sample was limited to women diagnosed with early-stage breast cancer, which restricts the generalizability of the findings. As no long-term follow-up data were collected, the sustainability of the intervention's effects remains unclear. Future studies involving individuals diagnosed with different cancer types and including male participants in comparative research designs may help broaden the understanding of the scope and applicability of mindfulness-based interventions. Although CAS subscale scores were analyzed, future research should replicate these findings with larger samples to confirm the stability of subscale-level effects. Although major psychiatric disorders were part of the exclusion criteria, we did not systematically screen for comorbid psychiatric conditions or concurrent psychotherapy/medication, which may confound outcomes; future trials will include standardized screening and covariate adjustment. Adverse events were monitored informally via open ended check ins; lack of a structured safety instrument is a limitation we aim to remedy in subsequent work. Differential contact time (8×180 min MBCT vs. a single three-hour seminar) may inflate between group differences; future studies will employ an attention matched control.

Expanding short-term, certificate-based MBCT trainings for psychologists, psychiatrists, and healthcare professionals working in oncology settings may strengthen practitioner capacity in clinical contexts. Future studies involving individuals with different types of cancer and incorporating long-term follow-up assessments could provide more comprehensive evidence regarding the sustainability and generalizability of these interventions.

**Highlights / Key Findings**

• An eight-week mindfulness-based cognitive therapy program significantly improved coping attitudes and self-compassion in women with early-stage breast cancer.

• Participants receiving MBCT demonstrated greater psychological empowerment compared with those receiving an informational seminar only.

• The intervention strengthened adaptive coping strategies while preventing deterioration in maladaptive coping patterns.

• Self-compassion emerged as a central mechanism linking mindfulness practice to improved coping

flexibility and empowerment.

• Culturally sensitive, group-based MBCT interventions may be a feasible psychosocial support model in psycho-oncology settings.

### Authors' Contributions

The author was responsible for the conception and design of the study, development and delivery of the intervention program, data collection, statistical analysis, interpretation of findings, and drafting and final approval of the manuscript.

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## References

1. UN Women. The impact of COVID-19 on women's and men's lives and livelihoods in Europe and Central Asia: Preliminary results from a Rapid Gender Assessment. Istanbul: UN Women Regional Office for Europe and Central Asia; 2020.

2. World Health Organization. Gender and health report. Geneva: World Health Organization; 2023.

3. World Health Organization. Cancer tomorrow: Estimated number of new cases from 2020 to 2050. Geneva: World Health Organization; 2024.

4. International Agency for Research on Cancer. Global cancer observatory: Cancer today – Breast cancer fact sheet [Internet]. Lyon: IARC; 2023 [cited 2025 Jul 23].

5. Türkiye Halk Sağlığı Kurumu. Türkiye'de kanser istatistikleri 2022 [İnternet]. Ankara: Sağlık Bakanlığı; 2023 [erişim 23 Temmuz 2025].

6. Halk Sağlığı Uzmanları Derneği (HASUDER). Türkiye'de kadın sağlığı ve kanser: Tarama ve erken tanı rehberi [İnternet]. Ankara: HASUDER; 2023 [erişim 23 Temmuz 2025].

7. Henselmans I, Helgeson VS, Seltman H, et al. Health Psychol. 2010;29(2):160–168. doi:10.1037/a0017806

8. Lebel S, Maheu C, Lefebvre M, Secord S, Courbasson C, Singh M, et al. Addressing fear of cancer recurrence among women with cancer: A feasibility and preliminary outcome study. J Cancer Surviv. 2016;10(3):558–67. doi:10.1007/s11764-015-0502-2

9. Mehnert A, Koch U. Predictors of posttraumatic growth in patients with cancer. Psychooncology. 2008;17(1):21–9. doi:10.1002/pon.1190

10. Carver CS, Scheier MF, Weintraub JK. Assessing coping strategies: A theoretically based approach. J Pers Soc Psychol. 1989;56(2):267–83. doi:10.1037/0022-3514.56.2.267

11. Compas BE, Connor-Smith JK, Saltzman H, Thomsen AH, Wadsworth ME. Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. Psychol Bull. 2001;127(1):87–127. doi:10.1037/0033-2909.127.1.87

12. Neff KD. The development and validation of a scale to measure self-compassion. Self Identity. 2003;2(3):223–50. doi:10.1080/15298860309027

13. Brion J, Leary MR, Drabkin AS. Self-compassion and reactions to serious illness: The case of HIV. J Health Psychol. 2020;25(6):739–49. doi:10.1177/1359105317739102

14. Tedeschi RG, Calhoun LG. Posttraumatic growth: Conceptual foundations and empirical evidence. Psychol Inq. 2004;15(1):1–18. doi:10.1207/s15327965pli1501_01

15. Casellas-Grau A, Font A, Vives J. Positive psychological functioning in breast cancer: A systematic review. Psychooncology. 2017;26(11):1753–64. doi:10.1002/pon.4288

16. Vishnevsky T, Cann A, Calhoun LG, Tedeschi RG, Demakis GJ. Gender differences in self-reported posttraumatic growth: A meta-analysis. Psychol Women Q. 2010;34(1):110–20. doi:10.1111/j.1471-6402.2009.01546.x

17. Cillessen L, Johannsen M, Speckens AEM, Zachariae R. Mindfulness-based interventions for psychological and physical health outcomes in cancer patients and survivors: A systematic review and meta-analysis of randomized controlled trials. Psychooncology. 2019;28(12):2257–69. doi:10.1002/pon.5214

18. Lengacher CA, Reich RR, Paterson CL, Ramesar S, Park JY, Alinat CB, et al. Examination of broad symptom improvement resulting from mindfulness-based stress reduction in breast cancer survivors: A randomized controlled trial. J Clin Oncol. 2022;40(6):556–64. doi:10.1200/JCO.21.01866

19. Haller H, Winkler MM, Klose P, Dobos G, Kümmel S, Cramer H. Mindfulness-based interventions for women with breast cancer: An updated systematic review and meta-analysis. Acta Oncol. 2023;62(1):1–11. doi:10.1080/0284186X.2022.2101192

20. Yela JR, González MJ, Moral J, Romero-Mesa JC, Rodríguez M, Montesinos MJ. Effects of a mindfulness- and compassion-based program on posttraumatic growth in breast cancer patients: A randomized controlled trial. Mindfulness. 2024;15(1):12–25. doi:10.1007/s12671-023-02218-1

21. Dicle A, Karayurt Ö, Dirik G. Başa çıkma stratejileri ölçeğinin Türkçe versiyonunun geçerlik ve güvenirliği. Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi. 2015;18(2):123–30. doi:10.17049/ahsbd.2015.75224

22. Deniz ME, Kesici Ş, Sümer AS. The validity and reliability of the Turkish version of the Self-Compassion Scale. Soc Behav Pers. 2008;36(9):1151–60. doi:10.2224/sbp.2008.36.9.1151

23. Van den Berg SW, Gielissen MF, Custers JA, van der Graaf WT, Prins JB. Measuring cancer-related empowerment: Translation and psychometric testing of the construct empowerment in the Netherlands. Support Care Cancer. 2013;21(1):259–66. doi:10.1007/s00520-012-1524-0

24. Yılmaz-Karabulutlu E, Polat H, Aslan Ö. Adaptation of the Cancer Empowerment Scale into Turkish. Turkiye Klinikleri Journal of Nursing Sciences. 2021;13(1):39–48. https://doi.org/10.5336/nurses.2020-77921

25. Segal ZV, Williams JMG, Teasdale JD. Mindfulness-based cognitive therapy for depression. New York: Guilford Press; 2002.

26. Bartley T. Mindfulness-based cognitive therapy for cancer: Gently turning towards. Chichester: Wiley-Blackwell; 2012.

27. Piet J, Würtzen H, Zachariae R. The effect of mindfulness-based therapy on symptoms of anxiety and depression in adult cancer patients and survivors: A systematic review and meta-analysis. J Consult Clin Psychol. 2012;80(6):1007–20. doi:10.1037/a0028329

28. Conover WJ. Practical Nonparametric Statistics. 3rd ed. New York: Wiley; 1999.

29. Zainal NZ, Booth S, Huppert FA. The efficacy of mindfulness-based stress reduction on mental health of breast cancer patients: A meta-analysis. Psychooncology. 2013;22(7):1457–65. doi:10.1002/pon.3171

30. Labelle LE, Lawlor-Savage L, Campbell TS, Faris P, Carlson LE. Mindfulness-based stress reduction (MBSR) as an intervention for cancer patients. Psychooncology. 2015;24(8):943–50. doi:10.1002/pon.3640

31. Germer CK, Neff KD. Self-compassion in clinical practice. J Clin Psychol. 2013;69(8):856–67. doi:10.1002/jclp.22021

32. Sbarra DA, Smith HL, Mehl MR. When leaving your ex, love yourself: Observational ratings of self-compassion predict the course of emotional recovery following marital separation. Psychol Sci. 2012;23(3):261–9. doi:10.1177/0956797611429466

33. Garland EL, Hanley AW, Farb NA, Froeliger B. State mindfulness during meditation predicts enhanced cognitive reappraisal. Mindfulness. 2015;6(2):234–42. doi:10.1007/s12671-013-0250-6

34. Tang YY, Hölzel BK, Posner MI. The neuroscience of mindfulness meditation. Nat Rev Neurosci. 2015;16(4):213–25. doi:10.1038/nrn3916

35. Zeidan F, Johnson SK, Diamond BJ, David Z, Goolkasian P. Mindfulness meditation improves cognition: Evidence of brief mental training. Conscious Cogn. 2010;19(2):597–605. doi:10.1016/j.concog.2010.03.014

36. Ünver H, Öztürk M, Kaya N. The effect of mindfulness training on emotion regulation and self-compassion in female nurses. J Psychiatr Nurs. 2021;12(4):324–33. doi:10.14744/phd.2021.75692

37. Kara T, Toprak D. Coping strategies of women in chronic illness: A qualitative study. J Women's Health Nurs. 2020;6(2):45–56.

38. Trompetter HR, de Kleine E, Bohlmeijer ET. Why does positive mental health buffer against psychopathology? An exploratory study on self-compassion as a resilience mechanism and adaptive emotion regulation strategy. Cogn Ther Res. 2017;41(3):459–68. doi:10.1007/s10608-016-9774-0

39. Savaş E. Mindfulness temelli grup terapisi uygulamasının kadın kanser hastalarının psikososyal iyilik haline etkisi. KADEM Kadın Araştırmaları Dergisi. 2022;8(1):56–75. doi:10.53663/kad.2022.193