

Article

The effects of training program on distress levels among women breast cancer patients

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CITATION

Solak M. Özbayır T. The effects of training program on distress levels among women breast-cancer patients. *Psycho-Oncologie*. 2025; 19(3): 4250.
<https://doi.org/10.18282/po4250>

ARTICLE INFO

Received: 11 March 2025
Revised: 20 July 2025
Accepted: 21 July 2025
Available online: 18 September 2025

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Abstract: Objective: Women with breast cancer experience significant distress during the diagnosis and treatment process. This study was conducted quasi-experimentally to evaluate the effects of an individual training program given to women with breast cancer on distress. **Methods:** It was carried out in a university hospital with patients who were diagnosed with breast cancer and admitted to the General Surgery Clinic to be operated on. The study was completed with a total of 73 patients (the experimental group with 37 patients and the control group with 36 patients). Data for the study were collected through a personal information form and a distress thermometer. **Results:** It was found that both groups continued to experience more than four severe distress episodes on the tenth day, first month, and third month with a cancer diagnosis, after surgery. **Conclusion:** Nurses can provide individual training and counseling to women with breast cancer according to their individual needs, so that they can better manage the distress experienced during the treatment process.

Keywords: breast cancer; distress; patient education

1. Introduction

Distress is the aggregate of psychological, social, and spiritual factors. Distress is a continuation of the feelings of grief and anxiety resulting from depression, anxiety, panic, social isolation, and fragility that occur due to an existential and psychological crisis [1,2]. Undiagnosed and untreated distress can result in difficulty in coping with the disease and physical symptoms, non-compliance with treatment, longer duration of hospital stay, decrease in quality of life, and severe psychological burden on families [1–5]. Timely detection and treatment of distress in cancer patients is beneficial in reducing its adverse consequences [6].

Women with breast cancer experience significant distress during the diagnosis and treatment process [7,8]. Distress is considered the sixth vital sign in cancer patients [6,9]. The incidence of distress in cancer patients ranges from 22.1% to 89.1% worldwide [6]. Distress is a very common issue in breast cancer. It is often unnoticed. Therefore, it is important to follow the patients well in terms of distress. Distress can be associated with persistent anxiety and lack of support systems [9]. Being young, pre-existing psychological discomforts, conditions associated with the disease, and social support are some of the risk factors associated with distress. Distress can range from cancer-specific concerns, such as fear of recurrence, to more general symptoms such as anxiety, sleep disorders, fatigue, and anxiety about visiting a doctor. Most women can manage their psychosocial distress relatively well by using existing support systems (spouse, family, friends, etc.) and using some professional resources available in many clinical settings (nurses, social workers,

community resources, and support groups) [4,10]. Some studies have reported that patients with breast cancer are at greater risk of developing psychological distress, which usually leads to anxiety and depression [11,12].

It is important to design effective programs to reduce psychological distress and address physical problems in patients with breast cancer [13]. It is also significant for nurses to be aware of the mood disorder symptoms and the potential impact on the quality of life of patients and direct patients to appropriate support services [14,15].

Distress is often unnoticed or neglected in patients with cancer. In our country, patients with breast cancer do not receive support for their psychological, social, and spiritual needs other than routine treatment for their disease. Also, due to the limitation in access to psychosocial care services, screening or interventions are not routinely performed to reduce distress. It is important to manage distress well to improve the patient's health and quality of life. Nurses should identify distress and provide holistic care to assist patients with their individual needs. This is an issue of current importance in Turkey because specialist breast nursing services are being developed in many cancer centers and units.

This study aimed to investigate the effect of a training program on distress levels in women with breast cancer during the treatment process.

2. Methods

2.1. Design and sample

This study was conducted quasi-experimentally to evaluate the effects of an individual training program given to women with breast cancer on distress. We planned this study due to the lack of specialist breast nurses in our country and in the clinic where we work.

This study was conducted at a university hospital between 3 January and 15 November 2017. It included patients who were newly diagnosed with breast cancer and hospitalized in the General Surgery Clinic for surgical treatment. The inclusion criteria for the study were as follows: being newly diagnosed with breast cancer, being 18 years of age or older, being literate, and voluntarily providing informed consent to participate. Exclusion criteria included: a previous history of cancer, the presence of physical or psychological conditions that could hinder participation in the interviews, and an inability to read or comprehend the Turkish language. Power analysis was applied to determine the sample size. Written informed consent was obtained from all participants prior to their inclusion in the study.

In order to ensure homogeneity between the groups, experimental and control groups were determined by taking into account the independent variables (age, marital status, education level, etc.). The study was completed with a total of 73 patients, 37 patients from the intervention group and 36 patients from the control group. During the study period, seven participants were withdrawn from the study as they were discharged from the hospital to receive preoperative chemotherapy and did not attend the interviews due to major depression.

This study's design contains some outcome measures in order to take the effect of intervention into account in participants with breast cancer. In the study, attention

was paid so that there was no interaction between the intervention and control group patients. Each measure of each data collection time period is presented in **Figure 1**.

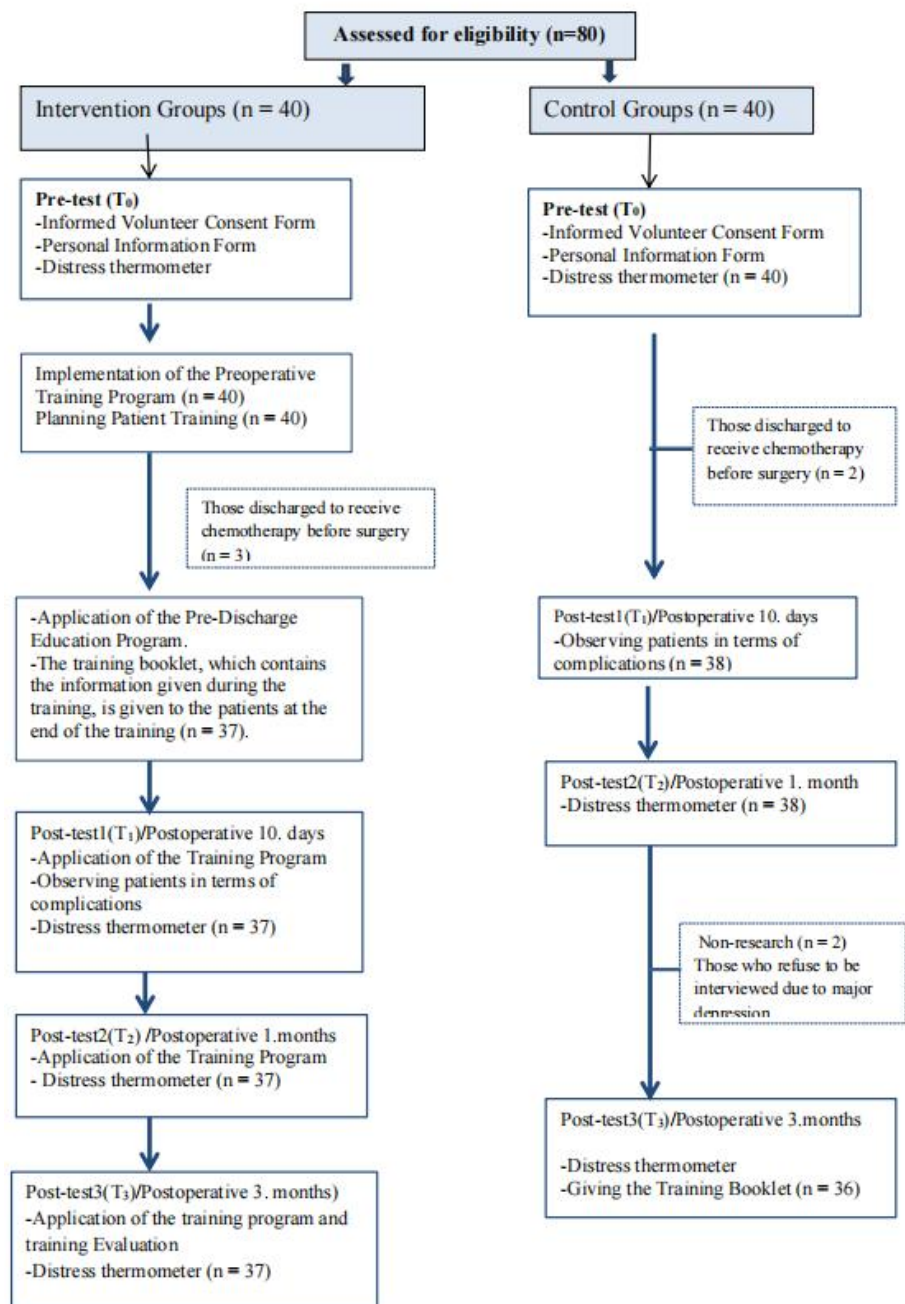


Figure 1. Research process flow chart.

The intervention group was given an individual training program consisting of seven sessions (first interview, pre-operative, after the operation, before discharge, one week after the operation, first and third months after the operation). The researcher provided training to the patients who met the research criteria and accepted to participate in the study within a week after the diagnosis. All patients participating in the study were followed up for three months because they were more likely in the time frame of three months of diagnosis when women needed support and information from a specialist nurse the most.

First interview: First, the researcher met the patients, the purpose of the study was explained, and the personal information form and the distress thermometer were completed by the researcher after obtaining the consent of the participants. The intervention group patients were listened to in order to determine their needs. No intervention was made to the control group. In order for the patients to be able to be in contact with the researcher during this whole process, the researcher's phone number was provided to them.

Second interview: A safe therapeutic communication was established with the patient. They were given the opportunity to express their feelings. The training was provided on the patient's diagnosis, course of the disease, general information about the disease, treatment options, possible complications, and preoperative preparation. Active participation of the patients in the treatment process has been achieved.

Third interview: The patient was provided with information and support about postoperative care and activities to be considered. Psychological support was provided to the patient.

Fourth interview: The patient was interviewed before being discharged after surgery. Information was provided on the prevention, early diagnosis, and management of postoperative complications, wound and drain care, medications, arm exercises, and other issues to pay attention to.

Fifth interview: The interview was conducted on the 10th day after surgery. Pathology results and new treatment decisions, prevention from lymphedema, and methods of coping with stress were discussed. Wound care and arm exercises were demonstrated.

Sixth interview: The interview was conducted in the first month after the surgery. Nutrition and diet, methods of coping with stress, psycho-social support, and controlling psychological risk factors were discussed. Emotional support was provided and information was provided on social support resources.

Seventh interview: The interview was conducted in the third postoperative month. In this interview, training was provided on the management of possible side effects that may develop due to treatment, such as chemotherapy and radiotherapy, early recognition and management of recurrence, oncoplastic breast surgery, and prostheses. Breast self-examination was taught. Support was provided for them to maintain their care and self-management.

Each training session lasted 40–50 min. Routine clinical care was provided for the control group patients. A training booklet, a PowerPoint presentation, and a breast model were used in individual training. A training booklet was given to the intervention group after the pre-test was administered and discharged. Ethically, the control group received a training booklet after all measurements were completed.

The face-to-face interview method was used to collect the data. QoL scale, the self-support needs assessment scale, and the scale of women with breast cancer was applied to the patients 10 days after the surgery and in the first and third months (EORTC QLQ-C30 ve QLQ-BR23).

Dependent and Independent Variables:

While distress thermometer mean scores of the participants were the dependent variable of the study, the socio-demographic characteristics of the patients (age,

marital status, education level, occupation, place of residence, etc.) were the independent variables.

2.2. Ethical considerations

Ethics committee approval (number: 2016/138) was obtained to carry out the study. Written permission was obtained from the Hospital (number: 69631334-605.01) where the study was conducted. The Declaration of Helsinki was strictly followed. Written and oral consent were obtained from the patients.

2.3. Data collection tools

Personal information form: Age, educational status, marital status, etc., socio-demographic data related to the type of surgery were collected with a personal information form.

Distress Thermometer: The Distress thermometer is a scale developed by Roth et al. [16]. The reliability and validity study of the distress thermometer in Turkey was conducted by Özalp et al. [17] in 2007. The sensitivity and specificity values of the scale were 0.73 and 0.49, respectively. It is a visual analog scale consisting of only one question. On the scale, there is a thermometer with numbers from 0 to 10. The participant expresses the distress level through the numbers on this thermometer. While a score of zero points indicates that the individual has never experienced any distress, a score of ten points indicates that he/she has distress at the maximum level. The National Comprehensive Cancer Network (NCCN) determined the cut-off point as five, in which a score of five or above indicates deviation from the normal state. Patients who obtain a score above the cut-off point should be handled immediately by professionals. In 2003, the NCCN added a list of problems to the distress thermometer. The problem list consists of the most common problems in cancer patients [18]. Patients indicate which of the listed problems has caused them distress over the past week.

2.4. Data analyses

The SPSS (Statistical Package for the Social Sciences, version 22.0) program was used for the analysis of the study data. Data were analyzed by using the Shapiro-Wilk test, Pearson chi-square test, Fisher's Exact test, *t*-test, Mann-Whitney *U* test, Friedman test, and Wilcoxon signed-rank test, Cochran's *Q* test, and McNemar's analysis. For all the analyses, the significance level of the results was accepted at $p < 0.05$.

3. Results

The socio-demographic characteristics of the patients participating in the study are shown in **Table 1**. There were no statistically significant differences between the intervention and control groups in terms of age, marital status, education level, social security, place of residence, number of children, smoking and alcohol use, family history of breast cancer, cohabitants, type of breast surgery, and axillary surgery ($p > 0.05$) (**Table 1**).

Table 1. Descriptive characteristics of the patients ($n = 73$).

Characteristics	Intervention		Control		Total		<i>Statistic</i> <i>p</i> values
	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)	
Participant							
Age							
≤50	24	64.9	21	58.3	45	61.6	0.634 ^b
≥51	13	35.1	15	41.7	24	38.4	
Marital status							
Married	32	86.5	30	83.3	62	84.9	0.643 ^a
Single	2	5.4	1	2.8	3	4.1	
Divorced/widowed	3	8.1	5	13.9	8	11.0	
Education							
Primary school degree	10	27.0	13	36.1	23	31.5	0.765 ^a
Middle school degree	6	16.2	7	19.4	13	17.8	
High school degree	7	18.9	5	13.9	12	16.4	
University	14	37.9	11	30.6	25	34.3	
Social Security Status							
Yes	35	94.6	34	94.4	69	94.5	1.000 ^b
No	2	5.4	2	5.6	21	5.5	
Place of residence							
City Center	15	40.5	15	41.7	30	41.1	0.864 ^a
Distict	20	54.1	18	50.0	38	52.1	
Village	2	5.4	3	8.3	5	6.8	
Child Status							
None	7	18.9	3	8.3	10	13.7	0.304 ^a
One	11	29.8	10	27.8	21	28.7	
Two	17	45.9	17	47.2	34	46.6	
Three	2	5.4	6	16.7	8	11.0	
Smoking Status							
Yes	5	13.5	8	22.2	13	17.8	0.324 ^a
No	24	64.9	25	69.4	49	67.1	
Rarely	1	2.7	1	2.8	2	2.7	
Gave	7	18.9	2	5.6	9	12.3	
Alcohol Status							
Yes	3	8.1	4	11.1	7	9.6	0.345 ^a
No	32	86.5	32	88.9	64	87.7	
Rarely	2	5.4	-	0	2	2.7	
Breast cancer in the family							
Yes	11	29.7	12	33.3	23	31.5	0.804 ^b
No	26	70.3	24	66.7	50	68.5	
People living together							
Alone	2	5.4	3	8.3	5	6.8	0.988 ^a
Spouse	8	21.6	7	19.4	15	20.5	
Spouse and children	17	45.9	18	50.0	35	47.9	
Children	3	8.1	2	5.6	5	6.8	
Spouse-Children- a Relatives	5	13.5	4	11.1	9	12.3	
Mother and daughter	2	5.4	2	5.6	4	5.5	
Breast surgery							
Partial Mastectomy	14	37.8	13	36.1	27	37.0	1.000 ^b
Total Mastectomy	23	62.2	23	63.9	46	63.0	
Axillary surgery							
Sentinel node biopsy	15	40.5	12	33.3	27	37.0	0.630 ^b
Axillary clearance	22	59.5	24	66.7	46	63.0	
Stage							
Stage 1	3	8.1	3	8.3	6	8.2	0.916 ^a
Stage 2	21	56.8	22	61.1	43	58.9	
Stage 3	13	35.1	11	30.6	24	32.9	
Total	37	100.0	36	100.0	73	100.0	

^a Pearson Ki Kare Test

^b Fisher's Exact Test

Table 2 shows the comparison of mean distress scores of patients in the intervention and control groups over time. Mean scores on the distress thermometer were above the cutoff point of four for the majority of patients in both groups. A statistically significant difference was found in the intervention group. No statistically significant difference was found between the intervention and control groups in terms of mean distress scores for pretest, post-test1, and post-test2; however, a statistically significant difference was found between the two groups for the post-test3 measurement (**Table 2**).

Table 2. Distribution of distress score means of patients with breast cancer before and after training.

	Groups	Pre-test (T_0)		Post-test1(T_1) (10. day)		Post-test2(T_2) (1. months)		Post-test3(T_3) (3. months)		Test	
		Mean $\pm$ SD	Min–Max	Mean $\pm$ SD	Min–Max	Mean $\pm$ SD	Min–Max	Mean $\pm$ SD	Min–Max	χ^2, p	Wilcoxon signed ranks test**
Distress scales	Intervention	6.35 $\pm$ 2.15	3–10	6.05 $\pm$ 2.58	2–10	5.91 $\pm$ 2.52	1–10	5.00 $\pm$ 2.47	1–10	8.791* $p = 0.032$	$T_0 > T_1 > T_2 > T_3$
	Control	6.58 $\pm$ 2.78	1–10	6.36 $\pm$ 2.43	1–10	5.44 $\pm$ 2.50	1–10	6.19 $\pm$ 2.27	1–10	8.192* $p = 0.042$	$T_0 > T_2$
	Z/p	0.623/0.533		0.501/0.616		0.850/0.395		2.213/0.027			

*Friedman test SD:Standard Deviation T = time

Table 3 displays the distribution of distress-related life areas.

In the belief-related problems domain, a significant decrease was found in the intervention group from pre-test to all post-tests ($Q = 13.785, p = 0.003$), while a significant change was also observed in the control group ($Q = 16.043, p = 0.001$). Detailed analysis in the intervention group revealed that the reduction occurred mainly between the pre-test and the post-tests ($T_0 > T_1 = T_2 = T_3$).

In the physical problems domain, both groups showed statistically significant differences across time (intervention: $Q = 18.310, p = 0.000$; control: $Q = 18.646, p = 0.000$). In the intervention group, significant changes were seen between pre-test and post-test1/post-test2, while in the control group, differences were found between pre-test and all post-tests.

No statistically significant differences were found between or within the groups in terms of daily life issues and family problems ($p > 0.05$). Although a decrease in emotional problems was observed in the intervention group by the third month, the change did not reach statistical significance ($p = 0.075$) (**Table 3**).

Table 3. Distress living areas of patients with breast cancer before and after training.

Distress Areas	Groups	Times								Test	
		Pre-test (T_0)		Post-test1(T_1) (10. day)		Post-test2(T_2) (1. months)		Post-test3(T_3) (3. months)		Q, p	McNemar Test
		N	%	N	%	N	%	N	%		
Daily life issues	Intervention	2	5.4	3	8.1	6	16.2	3	8.1	3.600 $p = 0.308$	-
	Control	6	16.7	3	8.3	4	11.1	8	22.2	5.364 $p = 0.147$	-
		$p = 0.122^b$		$p = 1.000$		$p = 0.726$		$p = 0.112$			

Table 3. (Continued).

Distress Areas	Groups	Times									
		Pre-test (T_0)		Post-test1(T_1) (10. day)		Post-test2(T_2) (1. months)		Post-test3(T_3) (3. months)		Test	
		N	%	N	%	N	%	N	%	Q, p	McNemar Test
Family Problems	Intervention	9	24.3	11	29.7	11	29.7	13	35.1	1.655 $p = 0.647$	-
	Control	8	22.2	6	16.7	8	22.2	9	25.0	0.934 $p = 0.817$	-
		$p = 1.000$		$p = 0.269$		$p = 0.595$		$p = 0.446$			
Emotional Problems	Intervention	33	89.2	33	89.2	36	97.3	29	78.4	6.907 $p = 0.075$	-
	Control	29	80.6	29	80.6	27	75.0	33	91.7	4.560 $p = 0.207$	-
		$p = 0.345$		$p = 0.345$		$p = 0.007$		$p = 0.190$			
Belief Related Problems	Intervention	17	45.9	6	16.2	6	16.2	6	16.2	13.785 $p = 0.003$	$T_0 > T_1 = T_2 = T_3$
	Control	16	44.4	16	44.4	4	11.1	6	16.7	16.043 $p = 0.001$	$T_0 > T_3 > T_2 = T_3$
		$p = 1.000$		$p = 0.001$		$p = 0.736$		$p = 1.000$			
Physical Problems	Intervention	14	37.8	29	78.4	27	50.0	23	62.2	18.310 $p = 0.000$	$T_0 > T_1 > T_2$
	Control	14	38.9	28	77.8	27	50.0	24	66.7	18.646 $p = 0.000$	$T_3 > T_1 > T_2 > T_0$
		$p = 1.000$		$p = 1.000$		$p = 1.000$		$p = 0.808$			

^b Fisher Exact test; *Q* = Cochran test; *T* = time

4. Discussion

The results of this study indicated no statistically significant differences in demographic characteristics or clinical information between the intervention and control groups prior to the intervention, suggesting a comparable baseline between the groups.

In the literature, the physical and daily life needs of women with breast cancer have been stated to increase during the first three months after diagnosis [19]. The findings indicated that the mean score of distress significantly decreased in the intervention group after the intervention compared to the control group, suggesting that the intervention can reduce the distress of women with breast cancer.

Studies have found that women experience higher distress shortly after the diagnosis of breast cancer [9,20,21]. In a study conducted on different cancer patients, including breast cancer patients, 46.5% of the patients were found to experience distress [6]. Similarly, our findings revealed that a majority of patients in both groups reported distress prior to the intervention. In this study, the fact that patients who were admitted to the hospital for surgery were newly diagnosed and that they were still in the shock of the diagnosis, had anxiety about their future, and the uncertainty was thought to be effective in this result. Similarly, our results revealed that a majority of patients in both groups reported distress prior to the intervention. This may be attributed to the patients' recent diagnosis, their

psychological shock, anxiety regarding the future, and feelings of uncertainty. It is thought that the training program provided to the intervention group increases women's use of coping and support systems. In the literature, psychological distress has been stated to affect not only the quality of life but also the overall survival rate of breast cancer patients, and that counseling, supportive care, and exercise improve these patients' quality of life [22]. In the study conducted by Golant et al. [23], a nursing education program used to cope with cancer and its treatment was determined to be effective in reducing depressive symptoms and problems related to work and other daily activities caused by psychological distress. Costa-Requena et al. [24] reported in their study that psychological distress experienced during breast cancer treatment caused significant changes in the quality of life and subscales. A meta-analysis by Adams et al. [25] emphasized that younger women, especially those who are premenopausal, tend to experience greater psychological distress and face age-related challenges such as concerns about fertility and motherhood, resulting in lower quality of life compared to older women. In Turkey, Özalp et al. [17] identified a distress thermometer cut-off point of four. Most patients in both groups scored above this threshold. Similarly, İnan [26] found that 91% of breast cancer survivors had distress thermometer scores above 4 prior to receiving psychoeducation.

Patients in both groups experienced various distress-related issues—including emotional, familial, physical, religious, and practical problems—throughout the three-month follow-up. Physical problem scores were similar between the groups. This may be because, in terms of physical aspects, there are specialized professionals better equipped to guide the patient. It is also possible that during the health education intervention, attention was directed toward physical aspects without the use of appropriate strategies. Physical problems were determined to increase in both groups, especially on the 10th postoperative day. It is thought that physical problems increase on the 10th postoperative day since their daily life activities become restricted due to the arm and shoulder problems that they face. Also, since patients are in an active period of illness, it is thought that the distress levels of the patients are increased due to the side effects of the treatments, such as chemotherapy and radiotherapy. The religious beliefs of the patients in both groups were observed to be similar and strong. The intervention group patients were seen to be better at coping with these problems compared to the control group. Literature indicates that women often rely on cultural and religious beliefs to deal with cancer-related emotional and physical trauma. Strategies include heightened religiosity, acceptance of illness as divine fate, and a renewed focus on fundamental life values like health and family unity [27]. In Turkish society, socio-cultural norms play an important role in shaping coping behaviors, and incorporating these values into educational interventions may have contributed to the positive outcomes observed in this study.

Our results align with existing research, indicating that emotional distress was the most commonly reported issue among breast cancer patients, and that the intervention group experienced lower intensity and frequency of these issues compared to the control group. The positive effect of the training is thought to stem from improved coping and problem-solving skills in the intervention group.

İnan [26] reported that 42.99% of women's distress stemmed from emotional problems, followed by physical issues (32.71%), with a subsequent reduction in distress following psychoeducation. Özalp et al. [17] found that physical symptoms were the most prevalent source of distress among cancer patients. Another study reported that 70.4% of breast cancer patients had distress scores above 5.29, with emotional distress present in 76.7% and physical distress in 65% of patients. That study also found that married, working women under 35 experienced the highest levels of distress [28].

In the study, higher levels of distress were noted in patients under 50 years old, married, unemployed, living in rural areas, not exercising regularly, and those who had undergone mastectomy, axillary dissection, or were in stage II cancer. These patients may face additional stress due to menopause, family responsibilities, and financial constraints. In the first two years after breast cancer surgery, poor physical condition, loss of muscle strength, and increased fatigue keep distress levels high [29]. In an Australian study, it was found that 26% of women newly diagnosed with early-stage breast cancer who lived alone, were unemployed, distressed, and excluded from decision-making, experienced significant distress [30]. Similarly, Park et al. [31] in South Korea reported that a structured training program helped reduce distress, improve body image, and strengthen coping strategies. Based on our results, we believe that individualized education and support tailored to patients' biopsychosocial needs are crucial. Since patients' experiences and coping capacities vary, breast cancer care should include routine distress screening and personalized interventions delivered by specialized breast care nurses.

5. Conclusion

After the diagnosis of cancer, the intervention and control groups were found to continue experiencing more than four episodes of severe distress on the tenth day of surgery, the first month, and the third month. The distress levels of the intervention group were found to be significantly lower in the third month than the control group. The training program used for the intervention group was determined to be effective on the outcome. It is important to evaluate distress and its sources in the early treatment stages of breast cancer patients. Nurses should provide care to the patients by taking their cultural values and beliefs into account. Individual patient education and social support should be included in the care plan, together with the diagnosis of breast cancer.

6. Limitations

Small sample size, limited measurement tools, and lack of validation of the accuracy of the intervention or emotion interpretation are limitations of the study. The absence of a nurse to train the patients was a huge deficiency.

Acknowledgments: We would also like to thank all the patients who participated in the study.

Ethical approval: Ethics committee approval (number: 2016/138) was obtained to carry out the study. Written permission was obtained from the University Hospital

(number: 69631334-605.01) where the study was conducted. The Declaration of Helsinki was strictly followed.

Informed consent statement: Written and oral consent were obtained from the patients.

Data availability statement: According to the information provided to the participants in the informed consent on the use of the data, this does not allow the authors to submit the data to a public repository. In line with the ethical approval, the data are to be kept at a secure server only accessible by the authors of this study. Access to the data can be granted after ethics approval by sending a request to the corresponding author.

Conflict of interest: The authors declare no conflict of interest.

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