

## Araştırma Makalesi / Research Article

**Meme Kanseri Ameliyatı Sonrası Lenfödemin Önlenmesine Yönelik Hemşirelik Girişimleri**Fikret YILMAZ<sup>1</sup> | Arzu TUNA<sup>2</sup> |Ebru KARAASLAN KARACA<sup>3\*</sup>**Nursing Intervention on Prevention of Lymphedema After Breast Cancer Surgery****ÖZET**

Bu araştırma, mastektomi ameliyatı ve lenf diseksiyonu yapılan hastalara yönelik düzenlenen deney ve kontrol gruplarında lenfödem ve lenfanjit ile ilgili bulguları değerlendirmek, lenfödem ve lenfanjite karşı koruyucu önlemleri araştırmak amacıyla Özel Üniversite Uygulama ve Araştırma Hastanesi Cerrahi Kliniğinde yapılmıştır. Çalışmaya altmış bir hasta dahil edildi. Deney grubunda (Grup1) otuz bir hasta bulunurken, kontrol grubunda (Grup 2) otuz hasta vardı. Gruplar arasında dağılım homojendi ( $p>0.05$ ). Grup 1'deki hastaların ameliyat öncesi eğitimi kırk dakikalık bir eğitim kitapçığı aracılığıyla gerçekleştirilirken, aynı eğitim kitapçığı Grup 2'deki hastalara hastaneden taburcu olduktan on gün sonra verilmiştir. Hastaların lenfödem hakkındaki bilgi düzeyleri ve tutumlarına ilişkin bulgular üçüncü ve onuncu günlerde değerlendirilmiştir. Bulgular yüzde olarak verilmiş ve ki-kare testi ile analiz edilmiştir. Deney ve kontrol gruplarının lenfödem ve lenfanjit ve bunlara karşı alınabilecek önlemler hakkındaki bilgi düzeyleri arasında istatistiksel olarak anlamlı bir fark vardır ( $p>0.05$ ). Grup 1 bu süreç hakkında daha fazla bilgi sahibi olmuş ve tutum geliştirmiştir. Ameliyattan on gün sonra hastaneden taburcu edilen hastaların bulgularına bakıldığında, Grup 2'deki hastaların hafif ödem, hassasiyet, ağrı, gerginlik hissi, yanma hissi ve kızarıklık semptomlarının daha fazla olduğu; ancak meme bakım hemşiresinden eğitim alan deney grubundaki hastaların semptomlarının daha az olduğu belirtilebilir. Sonuç olarak, görsel-işitsel araçlarla iyi organize edilmiş ve gösteriye dayalı bir hasta eğitimi, lenfödem ve lenfanjitin önlenmesi açısından hastalar için etkili olabilir.

**Anahtar kelimeler:** Meme Bakım Hemşiresi, Lenfödem, Lenfödem Eğitimi**ABSTRACT**


This research was conducted in the Application and Research Hospital Surgery Clinic of Private University in order to evaluate findings about lymphedema and lymphangitis in the experimental and control groups organised for patients having mastectomy surgery and lymph dissection and to investigate protective measures against lymphedema and lymphangitis. Sixty-one patients were included in the study. There were thirty-one patients in the experimental group (Group1), while there were thirty patients in the control group (Group 2). The distribution was homogeneous across the groups ( $p>0.05$ ). The preoperative education of the patients in Group 1 was conducted by means of a training booklet for forty minutes, while the same training booklet was given to the patients in Group 2 ten days after the discharge from the hospital. The findings regarding the level of information and the attitudes of the patients about lymphedema were evaluated in the third and tenth days. The findings were given in percentages and analysed by means of chi square test. There is a significant statistical difference between the level of information regarding lymphedema and lymphangitis and potential measures against them in the experimental and control groups ( $p>0.05$ ). Group 1 was more informed about this process and developed attitudes. Considering the findings of the patients discharged from the hospital ten days after the surgery, it can be pointed out that the patients in Group 2 had more symptoms of mild oedema, sensitivity, pain, feeling of tightness, burning sensation and redness; however, the patients in the experimental group, who had trainings from the breast care nurse, had less symptoms. In conclusion, a well-organised and demonstration-based patient education by means of audio-visual tools can be influential for patients in terms of preventing lymphedema and lymphangitis.

**Keywords:** Breast Care Nurse, Lymphedema, Lymphedema Education

\*Sorumlu yazar: [ebrumm.2310@gmail.com](mailto:ebrumm.2310@gmail.com) (E. KARAASLAN KARACA).

<sup>1</sup> Uzm. Hem., SANKO Üniversitesi, Lisansüstü Eğitim Enstitüsü, Hemşirelik, Gaziantep, Türkiye 

<sup>2</sup> Prof. Dr., Balıkesir Üniversitesi, Sağlık Bilimleri Fakültesi, Hemşirelik Bölümü, Balıkesir, Türkiye 

<sup>3</sup> Arş. Gör., SANKO Üniversitesi, Sağlık Bilimleri Fakültesi, Hemşirelik Bölümü, Gaziantep, Türkiye 

## INTRODUCTION

As in the past, breast cancer continues to be one of the diseases that increase mortality and morbidity. According to the 2024 data of the American Cancer Society, it is reported that women will develop lifetime breast cancer in America. It is estimated that approximately 310.720 new cases of invasive breast cancer will be detected and 40.920 breast cancer patients might die (American Cancer Society 2024). With 46.8 per hundred thousand women (nearly 17,000 women), breast cancer is the most common type of cancer in Turkey (Turkey Cancer Control Program Ankara 2016).

Various findings appear in breast cancer. Physiological problems, such as postoperative infection, lymphedema and pain, and psychosocial problems, such as future anxiety, altered body image with losing breast, changes in sexual life and depression, may occur in patients after surgical operation (Al-Hilli and Wilkerson; 2021)

Nursing care is important in ensuring patients' rapid recovery after surgery (Çelebi and İlçe; 2023). In order to improve the quality of the life of breast cancer patients, comprehensive information and counselling provided by nurses during surgery, radiation therapy, target therapy and chemotherapy treatments are important (Atlas et al., 2024).

Lymphedema and lymphangitis are among the most common findings which breast cancer patients experience and about which they need information after surgery and radiotherapy. In particular, patients undergoing axillary dissection have risks like lymphedema and lymphangitis in the first year (Kuruvilla at al., 2021).

In the surgical treatment of this disease, axillary lymph node dissection (ALND) is applied together with surgical intervention for various purposes after breast conserving surgery or mastectomy. ALND has traditionally been used for disease staging, determining prognosis, local tumour control and guiding adjuvant therapy. Especially in patients with

axillary dissection in breast surgery, most of the information needs are directed to prevent lymphedema and lymphangitis and to reduce findings (Yıldız and Karayurt, 2011). In the guidelines of the breast consensus conference of the American Society of Clinical Oncology (ASCO), sentinel lymph node biopsy reflects the status of lymph nodes in the axilla and causes dissection of positive metastases in the axilla; in other words, it leads to ALND (Lyman et al., 2014).

Lymphedema is a chronic condition which is defined as the accumulation of lymph fluid in the interstitial space due to the injury of lymph nodes in the lymph system during the treatment of breast cancer. Patients with lymphedema have a lower quality of life than those without lymphedema (Torgbenu et al., 2022).

Meeting information needs of patients for lymphedema will positively affect their experiences about the disease and prevent psychological problems (Campbell-Enns et al., 2015).

Lymphedema associated with breast cancer may be one of the disturbing long-term forms of breast cancer treatment. Many studies have emphasized the effectiveness of different treatment modalities in terms of reducing the risk of breast cancer-related lymphedema. 10 cases including 1205 participants were examined. The follow-up period ranged from 2 days to 2 years after the intervention. As the outcome criteria, lymphedema, infection, shoulder range of motion, pain, psychosocial morbidity, functional level of daily living activities and health-related quality of life (HRQOL) were evaluated (Choi Kyoung et al., 2015).

In this Cochrane study (2015), a total of four studies examined manual lymph drainage (MLD), including general care and other interventions. In one of the researches, patients receiving only MLD service with physiotherapy and patients receiving standardized patient education, exercise training and MLD were evaluated. Lymphedema was detected to a lesser extent in the group receiving standardized patient education for the prevention of lymphedema, learning the exercises and receiving MLD with the support of a

physiotherapist. Two of the four studies on shoulder mobility, in which patient education was combined with MLD with a physiotherapist and a patient doing exercises at home, were compared only with patient education. At a normal range of motion; the mean difference for the abduction was 22° and the mean difference for flexion was 14°. Lymphedema with these values is significant and has a healthier degree in patients receiving training, exercising and MLD treatment than those receiving only training. The program that includes patient education, MLD and exercises showed better shoulder mobility in terms of lateral arm movement (shoulder absorption) and forward flexion in the first weeks after breast cancer surgery. Two other studies on MLD found pain in patients. In both studies, results regarding quality of life were contradictory (Stuiver et al., 2015). The aim of this study is, in this context, to investigate the impact of the education of patients having axillary lymph node dissection on lymphedema prevention and behaviours towards these preventions.

In this study;

H0: Patients with axillary dissecting breast cancer that were educated do not differ in terms of managing, controlling, and reducing lymphedema from those patients who received routine clinical service.

H1: Patients with axillary dissecting breast cancer that were educated differ in terms of managing, controlling, and reducing lymphedema from those patients who received routine clinical service.

## MATERIALS AND METHODS

### Design

This is a clinical quasi-experimental study using a control group.

### Place and time

The research was carried out at the Breast Surgery Unit of Private Hospital. Private Hospital is a preferred

hospital because it is a well-equipped and competent hospital in the field of breast surgery. For this reason, it was considered to be appropriate to conduct the study in this hospital. The data for the study was collected over 21 months.

### Population and sample

The population of the study consisted of patients who were admitted to the Department of Breast Surgery at Private Hospital who were scheduled for axillary dissection for breast surgery. According to the sample calculation of the sample with definite population calculation formula, 61 patients with breast cancer were included in the study. The formula of the sample calculation for patients with breast cancer was  $n = \frac{Nt^2 pq}{(d^2 (N-1) + t^2 pq)}$ . The first 31 patients included in the study were designated as the experimental group (Group1) (n = 31), while the next 30 patients were included the control group (Group 2) (n = 30).

### Data collection procedures

The data of the study were collected by the researcher by face to face interview method before and after the surgery using 3 different evaluations. Under the supervision of the researcher, the patients filled out the evaluation forms before and after the operation, at the discharge, and on the 10th day after the discharge. The average time taken for the patients to respond to the assessment forms and measurements was a total of 15 minutes.

### Data collection tools

- Voluntary informed consent form
- Socio-demographic data collection form
- Postoperative period (3 days) follow-up form
- Follow-up form after discharge (10 days)

## Variables

The dependent variables of the study are knowledge and behaviour aimed at preventing lymphedema. The independent variable of the study is the patient education given with education booklet.

## Data analysis

In the analysis of the data, mean  $\pm$  std. deviation values were given as descriptive statistics. Categorical variables were defined as number (n) and percentage (%). Student-t test was used to compare the numerical data in two groups. Spearman rank correlation coefficient was used to test the relationships between ordinal variables, while chi-square test and Fisher's exact test were used to test the relationships between categorical variables. The analyses were performed in the "Statistical Package for the Social Sciences" (SPSS) 22.0 software.  $P < 0.05$  was considered statistically significant.

## Ethics

Prior to the study, permission was obtained from a Private University Clinical Research Ethics Committee (protocol no: 03.2016/4, date: 21.10.2016). Patients were informed about the purpose and method of the study. Written consent was obtained from the participants. Literate patients over 40 years of age who underwent axillary dissection due to breast cancer were included in the study.

-Patients who had verbal communication problems after surgery,

-Patients who had a previous psychiatric diagnosis,

-Patients using psychiatric drugs were not included in the study.

## The Content of the Training Material Includes

What is the lymphatic system, what is lymphedema, what causes lymphedema, when does lymphedema

develop, what are the symptoms of lymphedema, how can you protect yourself from lymphedema, what should you do if your arm swells, how is lymphedema diagnosed, how should you measure your arm, how is lymphedema treated, how does lymphedema affect you, Can pressure pump devices be used, Should you exercise, Is there any medication it contained the titles.

## Research flow

In this study, patients were divided into two groups as Group 2 (n = 30) and Group 1 (n = 31). The preoperative lymphedema evaluations of the patients in Group 2 were performed. Patients in Group 2 were given only routine clinical information during the preoperative and postoperative period.

Patients in Group 1 were evaluated before admission to the breast surgery service. Therefore, each patient in Group 1 was verbally informed about the preventive treatment of lymphedema and the routine clinical information by the researcher. Patients then read all the information in the guideline. The total duration of health education was 20-30 minutes. Health education was performed face to face in an empty and quiet room in the ward. Arm measurements were performed at the same intervals in the control and experimental group patients.

## RESULTS

Table 1 shows the sociodemographic characteristics of the breast cancer patients. The average age of the patients who underwent axillary lymph node dissection for breast cancer was  $54.24 \pm 5.56$  (min: 40, max: 67). The average age of 31 people in Group 1 was 56.25; the average age of 30 patients in Group 2 was 52.16 years. The experimental and control groups were homogeneously included in the groups ( $p > 0.05$ ). 88.5% (n=54) of the patients were married. (Table 1).

The investigation of the level of information and the attitudes of the patients about lymphedema prevention in postoperative (3rd day) patients with

breast cancer diagnosis is given in Table 2. 50.8% (n=31) of the patients raised their arm while sitting. While this number was 100% (n=31) in the experimental group, no patient raised his arm in the control group. Of the 61 patients who underwent surgery for breast cancer, 29.5% (n=18) knew how to measure arm with a tape measure. 29.5% (n=18) of the patients in Group 1 knew how to measure arm with a tape measure, whereas there was no patient in Group 2 who knew how to measure arm with a tape measure.

There was a statistical difference between the experimental and control groups ( $p < 0.05$ ). Of the 61 patients who underwent mastectomy and axillary dissection, 70.5% (n=43) were consuming protein-rich foods. 90.3% (n=28) of the patients in Group 1 were consuming protein-rich foods, whereas 50.0% (n = 15) of the patients in Group 2 stated that they consumed protein-rich foods. There was a significant difference between the groups ( $p < 0.05$ ) (Table 2).

**Table 1.** Investigation of Sociodemographic Characteristics of Breast Cancer Patients

Sociodemographic Characteristics	All Groups (n=61)	Experimental Group (n=31)	Control Group (n=30)	Chi-Square	P value
	Number/ Percentage	Number/ Percentage	Number/ Percentage		
<b>Marital Status</b>					
Married	54-88,5	27-87,1	27-90	0,126	0,722
Single	7-11,5	4-12,9	3-10		
<b>Education</b>					
Primary school	30-42,9	9-29,1	21-70	16,45	0,02
Middle School	14-23	13-41,9	1-3,3		
High school	8-13,1	5-16,1	3-10		
University	9-14,8	4-12,9	5-16,7		
<b>Occupation</b>					
Housewife	44-72,1	25-80,6	19-63,3	3,40	0,182
Worker	2-3,3	0-0	2-6,7		
Civil Servant	15-24,6	6-19,4	9-30		
<b>Economic Situation</b>					
Income is equivalent to expense	26-42,6	17-54,8	9-30	0,048	
Income is more than expense	18-29,5	5-16,1	13-43,3		
Income is less than expense	17-27,9	9-29	8	26,7	

\*\*  $p > 0.05$  there is homogeneity between the groups, the groups are similarly distributed.

\*  $p < 0.05$  there is no homogeneity between the groups, the groups are not similarly distributed.

16.4% (n = 10) of 61 patients with lymph dissection knew that they needed to have a iodine at their home. 32.3% (n = 10) of the patients in Group 1 knew that they needed to have a iodine at their home, whereas there was no patient (n=0) in Group 2 who knew that he needed to have a iodine at his home. There was a statistically significant difference between the experimental and control groups ( $p < 0.05$ ). 49.2% (n = 30) of 61 patients who underwent axillary dissection

for breast cancer knew what to do in case of any scratches, cuts or damage to the affected side. 98.8% (n = 30) of the patients in Group 1 knew what to do in case of any damage on the affected arm, whereas there was no patient (n=0) in Group 2 who knew what to do. There was a statistically significant difference between Group 1 and Group 2 ( $p < 0.05$ ) (Table 4). The investigation of the findings about lymphedema in postoperative (3rd day) patients with breast cancer

diagnosis is given in Table 3. All the patients answered questions about the examination of the postoperative lymphedema findings. 100% (n=61) of all the patients in the two groups had sensitivity in the affected arm.

There was no statistical difference between the groups ( $p > 0.05$ ). 100% (n=61) of all the patients with lymph dissection reported pain in the affected arm. There was no statistical difference between the groups ( $p > 0.05$ ).

**Table 2.** Investigation of the Level of Information and the Attitudes of the Patients about Lymphedema Prevention in Postoperative (3rd day) Patients with Breast Cancer Diagnosis

Level of Information and the Attitudes of the Patients about Lymphedema Prevention	All Groups (n=61)	Experimental Group (n=31)	Control Group (n=30)	P value
	Number/ Percentage	Number/ Percentage	Number/ Percentage	
<b>The patient holds his arm high while sitting</b>				
Yes	31-50,8	31-100	0-0	0,00
No	30-49,2	0-0	30-100	
<b>The patient holds his arm high while lying down</b>				
Yes	18-29,5	15-48,4	3-10	0,001
No	43-70,5	16-51,6	27-90	
<b>The patient does not lie down on the affected arm</b>				
Yes	35-57,4	30-90,8	5-16,7	0,00
No	26-42,6	1-3,2	25-83,3	
<b>The salt intake of the patient is limited</b>				
Yes	26-42,6	23-74,2	3-10	0,00
No	35-57,4	8-25,8	27-90	
<b>He knows that he needs to take measurements of his hand, upper arm and lower arm with a tape measure and keep records of them</b>				
Yes	18-29,5	18-58,1	0-0	0,00
No	43-70,5	13-41,9	30-100	
<b>The patient consumes protein-containing foods. (Chicken, meat, eggs, beans, chickpeas, etc)</b>				
Yes	43-70,5	28-90,3	15-50	0,001
No	18-29,5	3-9,7	15-50	
<b>The patient knows that he needs to have a iodine at his home, he knows that he needs to be protected from germs</b>				
Yes	10-16,4	10-32,3	0-0	0,001
No	51-83,6	21-67,7	30-100	
<b>The patient does not measure blood pressure from the affected arm (tested by a blood pressure measurement and examined if the patient stretched his affected arm forward or not)</b>				
Yes	22-36,1	18-58,1	4-13,3	0,000
No	39-63,9	13-41,9	26-86,7	
<b>The patient knows what to do if the affected arm or hand is scratched*** (Those who express that they will soap their hands and wipe them with an antiseptic solution)</b>				
Yes	30-49,2	30-96,8	0-0	0,000
No	31-50,8	1-3,2	30-100	

$p < 0.05$  \*, (The patients who said "yes" to the questions are shown in the table.)

There is no chi-square value as Fisher's exact test is used because of the values that are 5 and below. \*\*\*

**Table 4.** Investigation of the Findings about Lymphedema in Postoperative (3rd day) Patients with Breast Cancer Diagnosis

Findings about Lymphedema in the affected arm	All Groups (n=61)	Experimental Group (n=31)	Control Group (n=30)	Chi-square	P value
	Number/ Percentage	Number/ Percentage	Number/ Percentage		
<b>Sensitivity</b>					
Yes	61-100	31-100	30-100	-	0,000
No	0-0	0-0	0-0		
<b>Pain</b>					
Yes	61-100	31-100	30-100	-	0,000
No	0-0	0-0	0-0		
<b>Stiffness</b>					
Yes	55-90,2	31-100	24-80,0	6,87	0,009
No	6-9,8	0-0	6-20,0		
<b>Tightness</b>					
Yes	34-55,7	16-51,6	18-60,0	0,435	0,510
No	27-44,3	15-48,4	12-40,0		
<b>Numbness</b>					
Yes	10-16,4	5-16,1	5-16,7	-	0,955
No	51-83,6	26-83,9	25-83,3		
<b>Rigidity</b>					
Yes	0-0	0-0	0-0	-	0,000
No	61-100	31-100	30-100		
<b>Burning sensation</b>					
Yes	21-34,4	8-25,8	13-43,3	-	0,150
No	40-65,6	23-74,2	17-56,7		
<b>Tingle</b>					
Yes	7-11,5	0-0	7-23,3	-	0,005
No	54-88,5	31,100	23-76,7		
<b>Seroma formation</b>					
Yes	15-24,6	7-22,6	8-22	0,137	
No	53-86,9	22-71	10-33,3		
<b>Redness</b>					
Yes	29-47,5	9-29,0	20-66,7	8,658	
No	32-52,5	22-71	10-33,3		
<b>Swelling</b>					
Yes	7-11,5	0-0	7-23,3	8,171	
No	54-88,5	31-100	23-76,7		
<b>Warmth</b>					
Yes	22-36,1	7-22,6	15-50	4,971	
No	39-63,9	24-77,4	15-50		

p <0.05 \*, (The patients who said "yes" to the questions are shown in the table.)

There is no chi-square value as Fisher's exact test is used because of the values that are 5 and below. \*\*\*

All of 61 patients who underwent dissection had no rigidity in the affected arm. There was no statistical difference between the groups ( $p > 0.05$ ). 34.4% (n = 21) of 61 patients who underwent axillary dissection reported burning sensation in the affected arm. 25.8% (n = 8) of the patients in Group 1 reported burning sensation in the affected arm, and 43.3% (n = 13) of the patients in Group 2 reported burning sensation in the affected arm. There was no statistical difference between the groups ( $p > 0.05$ ).

11.5% (n = 7) of 61 patients with lymph dissection reported tingling in the affected arm. While all the patients in Group 1 stated that there was no tingling in the affected arm, 23.3% (n = 7) of the patients in Group

2 stated that there was tingling in the affected arm. There was a statistical difference between the groups ( $p < 0.05$ ) (Table 4). There was a statistically significant difference between the groups ( $p < 0.05$ ). 11.5% (n=7) of 61 patients who underwent lymph dissection and mastectomy had swelling of the affected arm. None of the patients in Group 1 had swelling on the affected arm. 23.3% (n=7) of the patients in Group 2 had swelling of the affected arm. There was a statistical difference between the groups ( $p < 0.05$ ).

36.1% (n = 22) of the patients who had lymph dissection had warmth on the affected arm. 22.6% (n = 7) of the patients in Group 1 had warmth on affected arm; 50% (n=15) of the patients in Group 2 had warmth

on affected arm. There was a statistical difference between the groups ( $p < 0.05$ ) (Table 4).

The investigation of the level of information and the attitudes of the patients with breast cancer diagnosis about lymphedema prevention after discharge (10 days after surgery) is given in Table 5. 60.7% ( $n = 37$ ) of 61 patients with lymph dissection raised their arm while sitting. While this number was 100% ( $n=31$ ) in the experimental group, 20% ( $n = 6$ ) of the patients in Group 2 raised their arms. There was a statistical difference between the patients in Group 1 and the patients in Group 2 ( $p < 0.05$ ). 50.8% ( $n = 31$ ) of the patients who had breast cancer dissection held their arms high while lying down. 100% ( $n = 31$ ) of the patients in Group 1 kept their arms high while lying down, whereas there was no patient in Group 2 who kept his arm high while lying down. There was a statistically significant difference ( $p < 0.05$ ). While all the patients in Group 1 did arm and shoulder exercises, the number of the patients doing arm and shoulder exercises in Group 2 was 20% ( $n=6$ ). There was a significant statistical difference between Group 1 and the Group 2. 59% ( $n = 36$ ) of 61 patients who underwent surgery for breast cancer knew how to measure arm with a tape measure. 67.6% ( $n = 38$ ) of 61 patients who underwent axillary dissection for breast cancer knew what to do in case of any scratches, cuts or damage to the affected side. 100% ( $n = 31$ ) of the patients in Group 1 knew what to do in case of any damage on the affected arm, while 23.3% ( $n = 7$ ) of the patients in Group 2 knew what to do. There was a statistically significant difference between Group 1 and the Group 2 ( $p < 0.05$ ).

59% ( $n = 36$ ) of 61 patients who underwent lymph dissection reported that they used gloves when washing dishes or in contact with heat. While all the patients in Group 1 reported that they used gloves when washing dishes or in contact with heat (pots, pans, trays, etc.), the number of the patients in Group 2 that reported the same was 16.7% ( $n = 5$ ). There was a statistically significant difference between Group 1 and the Group 2 ( $p < 0.05$ ) (Table 5).

34.4% ( $n = 21$ ) of 61 patients who had lymph dissection and mastectomy had sensitivity in the affected arm. While 12.9% ( $n = 4$ ) of the patients in Group 1 had tenderness in the affected arm, 56.7% ( $n = 17$ ) of the patients in Group 2 had sensitivity in the affected arm. There was a statistically significant difference between Group 1 and the Group 2 ( $p < 0.05$ ). 31.1% ( $n = 19$ ) of 61 patients who underwent lymph dissection and mastectomy reported pain. While 9.7% ( $n = 3$ ) of the patients in Group 1 had pain in the affected arm, 53.3% ( $n = 16$ ) of the patients in Group 2 reported pain in the affected arm. There was a statistical difference between them ( $p < 0.05$ ). 21.3% ( $n = 13$ ) of 61 patients who underwent lymph node dissection and mastectomy had stiffness in the affected arm. There was no stiffness in the affected arms of the patients in the experimental group, whereas 17% ( $n = 13$ ) of the patients in Group 2 had stiffness in the affected arm. There was a statistical difference between the two groups ( $p < 0.05$ ). 34.4% ( $n = 21$ ) of 61 patients who underwent lymph dissection and mastectomy had tightness in the affected arm. While none of 31 patients in Group 1 had tightness, 70% ( $n = 21$ ) of the patients in Group 2 had tightness in the affected arm. Patients in Group 1 had less tightness in the affected arm than those in the control group. There was a statistical difference between the groups ( $p < 0.05$ ). 11.5% ( $n = 7$ ) of 61 patients who underwent lymph dissection and mastectomy reported numbness in the affected arm. 6.5% ( $n = 2$ ) of the patients in Group 1 reported numbness in the affected arm, and in Group 2 16.7% ( $n = 5$ ) of the patients reported numbness in the affected arm. There was no statistical difference between the groups ( $p > 0.05$ ). 6.6% ( $n = 4$ ) of 61 patients who underwent lymph dissection and mastectomy had rigidity in the affected arm. While the rigidity of the affected arm was not observed in the experimental group, it was observed in the 13.3% ( $n = 4$ ) of the patients in the control group. There was a significant statistical difference between the groups ( $p < 0.05$ ) (Table 6). 14.8% ( $n = 9$ ) of 61 patients with lymph node dissection and mastectomy had swelling of the affected arm. No swelling was observed in the arms of the patients in the experimental group, whereas in the



control group, 30% (n = 9) had swelling in the arm. There was a statistical difference between the experimental and control groups (p <0.05).

**Table 5.** Investigation of the Level of Information and the Attitudes of the Patients with Breast Cancer Diagnosis about Lymphedema Prevention after Discharge (10 Days after Surgery)

Level of Information and the Attitudes of the Patients about Lymphedema	All Groups (n=61)	Experimental Group (n=31)	Control Group (n=30)	Chi-Square	P value
	Number/ Percentage	Number/ Percentage	Number/ Percentage		
<b>The patient holds his arm high while sitting</b>					
Yes	37-60,7	31-100	6-20	40,88	0,000
No	24-39,3	0-0	24-80		
<b>The patient holds his arm high while lying down</b>					
Yes	31-50,8	31-100	0-0		
No	30-49,2	0-0	30-100		
<b>The patient does not lie down on the affected arm</b>					
Yes	46-75,4	30-96,8	16-53,3	15,51	0,000
No	15-24,6	1-3,2	14-46,7		
<b>The patient does arm and shoulder exercises</b>					
Yes	37-60,7	31-100	6-20	40,88	0,000
No	24-39,3	0-0	24-80		
<b>The salt intake of the patient is limited</b>					
Yes	52-85,2	31-100	21-70	10,91	0,001
No	9-14,8	0-0	9-30		
<b>He knows that he needs to take measurements of his hand, upper arm and lower arm with a tape measure and keep records of them</b>					
Yes	36-59	31-100	10-33,3	30,74	0,000
No	25-41	0-0	25-83,3		
<b>The patient consumes protein-containing foods.</b>					
Yes	41-67,2	31-100	10-33,3	30,74	0,000
No	20-32,8	0-0	20-66,7		
<b>The patient knows that he needs to have a iodine at his home, he knows that he needs to be protected from germs</b>					
Yes	36-59	31-100	5-16,7		
No	25-41	0-0	25-83,3		
<b>The patient does not measure blood pressure from the affected arm (tested by a blood pressure measurement and examined if the patient stretched his affected arm forward or not</b>					
Yes	46-75,4	31-100	15-50	20,55	
No	15-24,6	0-0	15-50		
<b>The patient knows what to do if the affected arm or hand is scratched (Those who express that they will soap their hands and wipe them with an antiseptic solution</b>					
Yes	38-62,3	31-100	7-23,3	38,15	
No	23-37,7	0-0	23-76,7		
<b>The patient wears gloves when washing dishes or in contact with heat (pots, trays .etc)</b>					
Yes	36-59	31-100	5-16,7	-	
No	25-41	0-0	25-83,3		

p <0.05 \*, (The patients who said "yes" to the questions are shown in the table.)

**Table 6.** Investigation of the Findings about Lymphedema in Patients with Breast Cancer Diagnosis after Discharge (10 Days after Surgery)

Findings about Lymphedema in the affected arm	All Groups (n=61)	Experimental Group (n=31)	Control Group (n=30)	Chi-Square	P value
	Number/ Percentage	Number/ Percentage	Number/ Percentage		
<b>Swelling</b>					
Yes	19-31,1	0-0	19-63,3	28,515	0,000
No	42-68,9	31-100	11-36,7		
<b>Sensitivity</b>					
Yes	21-34,4	4-12,9	17-56,7	12,93	0,000
No	40-65,6	27-87,1	13-43,3		
<b>Pain</b>					
Yes	19-31,1	3-9,7	16-53,3	13,54	0,000
No	42-68,9	28-90,3	14-46,7		
<b>Stiffness</b>					
Yes	13-21,3	0-0	21-70	33,09	0,000
No	48-78,7	31-100	43-56,7		
<b>Tightness</b>					
Yes	21-34,4	0-0	21-70	33,09	0,000
No	40-65,4	31-100	9-30		
<b>Numbness</b>					
Yes	7-11,5	2-6,5	5-16,7	-	0,211
No	54-88,5	29-93,5	25-83,3		
<b>Rigidity</b>					
Yes	4-6,6	0-0	4-13,3	-	0,035
No	57-93,4	31-100	26-86,7		
<b>Burning sensation</b>					
Yes	5-8,2	0-0	5-16,7	-	0,018
No	56-91,8	31-100	25-83,3		

p<0.05\*, (The patients who said "yes" to the questions are shown in the table \*\*)  
There is no chi-square value as Fisher's exact test is used because of the values that are 5 and below. \*\*\*

**Table 7.** Investigation of the Findings about Lymphedema in Patients with Breast Cancer Diagnosis after Discharge (10 Days after Surgery)

Findings about Lymphedema in the affected arm	All Groups (n=61)	Experimental Group(n=31)	Control Group (n=30)	Chi-Square
	Number/ Percentage	Number/ Percentage	Number/ Percentage	
<b>Tinge</b>				
Yes	11-18	0-0	11-36,7	13,86
No	50-82	31-100	19-63,3	
<b>Seroma formation</b>				
Yes	8-13,1	0-0	8-26,7	9,514
No	53-86,9	31-100	22-73,3	
<b>Limited hand movement</b>				
Yes	8-17,4	0-0	5-16,7	-
No	38-82,6	31-100	28-83,3	
<b>Redness</b>				
Yes	9-14,8	1-3,2	8-26,7	6,66
No	52-85,2	30-96,8	22-73,3	
<b>Swelling</b>				
Yes	9-14,8	0-0	9-30	10,91
No	52-85,2	31-100	31-70	
<b>Warmth</b>				
Yes	2-3,3	0-0	2-6,7	-
No	59-96,7	31-100	28,93,3	

p<0.05\*, (The patients who said "yes" to the questions are shown in the table \*\*)

3.3% (n = 2) of the patients who had lymph dissection and mastectomy had warmth on the affected arm. No warmth was observed in the arms of the patients in the experimental group, whereas, in the control group, 6.7% (n = 2) of the patients had warmth in the affected arm. There was a statistical difference between the groups ( $p < 0.05$ ) (Table 7).

## DISCUSSION

In this study, the effect of a 40-minute training designed with a face-to-face training booklet for patients with resected lymph nodes from the axillary region due to breast cancer on preventing lymphedema was investigated. Compared to Group 2 patients, it was observed in all the findings that Group 1 patients knew the measures to prevent lymphedema and took these measures and developed behaviour to prevent lymphedema [Table 3, Table 4]. When we look at the level of information and behaviours, in the postoperative (3rd day) follow-up 100% of Group 1 acted in accordance with the statement "patient holds his arm high while sitting", whereas no patient in Group 2 did. 48.4% of Group 1 acted in accordance with the statement "the patient is not lying on the affected arm", while 10% of Group 2 acted in accordance with it. 10 days after the operation, 100% of Group 1 acted in accordance with the same statement; however, in the control group, even those who held their arms high in the first days no longer paid attention to it while lying down.

Both on the 3rd day after surgery and on the 10th day after discharge, the number of the patients who avoided salty food intake was higher in the experimental group.

Patients who measured their arm with a tape measure at 10 cm above and below the elbow and who continued this after discharge were mostly in the experimental group. Both groups were careful about nutrition. The number of the patients who cared about wound healing and consumed protein-rich foods was similar in both groups, both after surgery and after discharge. However, the patients in Group 1 were more

careful about the intake of protein-containing foods, and the difference was statistically significant. Patients who had antiseptic solutions like iodine at home in order to prevent lymphangitis were more in Group 1 compared to the control group.

Both the experimental and control groups were careful in terms of not having their blood pressure measured from the arm they were operated on, both on the 3rd postoperative day and 10 days after discharge. However, on the 10th day after discharge, when patients were asked for their arms for blood pressure measurement, 100% of the patients in Group 1 refused to give their arms while 50% of the patients in Group 2 gave their arms and forgot their sensitivity.

Patients in Group 1 knew better than Group 2 that if there was a scratch or injury to the hand they should wipe it with iodine. Patients in both the experimental and control groups were careful not to lift heavy things in order to protect the surgical sites. However, there was a statistically significant difference between the experimental and control groups in terms of the level of information about lymph nodes removal-related lymphangitis and prevention behaviours of lymphangitis. The patients of Group 1 was more informed, and they developed an attitude.

Patients in Group 1 had started arm and shoulder exercise, but most of the patients in Group 2 started these exercises 10 days after discharge and after our warnings. There was a significant statistical difference in terms of arm and shoulder exercises in the experimental and control groups.

While Group 1 stated that they would use gloves while cooking to avoid burns, Group 2 did not express any sensitivity in this regard.

Patients in Group 1 did not wash dishes by hand and did not deal with soil. They knew that they should wear gloves if they came in contact with dishwashing liquid and soil. Group 2 did not do them either, but it was determined that the information about the subject was not much in the control group.

The planned training, which was prepared with the training booklet given to Group 1 on the day before the operation, took approximately 40 minutes. The researcher, who was selected as the nurse of this area and took care of the breast cancer patients in the experimental group, showed and explained how to measure arm with a tape measure, how to keep a record of it and how to put the pillow under the arm.

According to all these results, it was observed that patients in Group 1 developed better behaviour and attitude towards prevention of lymphedema with the effect of the nurse who gave information on lymphedema prevention such as consumption of low-salt and protein-rich foods, water consumption, not strangling the arm with tight clothing, not measuring the blood pressure on the affected arm, not having injection on the affected arm, not lying down on the affected arm, and holding the arm high even when sitting.

In addition, the training gave the patients in Group 1 more accurate behaviours than Group 2 patients after the discharge by giving information about the importance of using antiseptic solutions and gloves to prevent lymphangitis and by demonstrating arm and shoulder exercises.

Hutchison stated in 2018 that the planned training designed to prevent lymphedema and that lymphangitis should be done by the nurse who was constantly in contact with breast cancer patients. Our research is similar to Hutchison 2018 (Hutchison, 2018).

Pain, sensitivity and tightness in the affected arm of the patients were similar in both groups 3 days after surgery. These findings may have been influenced by postoperative inflammation.

Considering the findings of the patients discharged from the hospital ten days after the surgery, it can be pointed out that the patients in Group 2 had more symptoms of mild oedema, sensitivity, pain, feeling of tightness, burning sensation and redness; however, the patients in the experimental group, who had trainings from the breast care nurse, had less symptoms

According to these results, it can be stated that the planned visual training with a booklet that was given to the patients in Group 1 is more effective than the one that was given to Group 2 in clinical routine and that the planned information that is occasionally told to patients in clinical routine does not change their behaviour (Gregory et al., 2017).

## CONCLUSION

To teach patients the preventive measures for lymph edema and lymphangitis in patients whose lymph nodes have been removed due to breast cancer, to change the knowledge and behaviors of patients on these issues, and to change the changes in their lives due to lymph node dissection research with a wider range of educational contents can be planned in order to plan.

## Limitation of the Research

Since this study was conducted in a single center, its results can only be generalized to this patient group.

**Conflict of Interest:** The authors have no conflicts of interest to declare.

**Financial Disclosure:** The authors declared that this study has received no financial support.

## REFERENCES

- Al-Hilli, Z., & Wilkerson, A. (2021). Breast surgery: management of postoperative complications following operations for breast cancer. *Surgical Clinics*, 101(5), 845-863.
- Atlas, S. J., Haas, J. S., Perez, G. K., Park, E. R., & Peppercorn, J. M. (2024). Engaging patients, oncologists, and primary care clinicians in the care of cancer survivors: A

- coordinated care model with system-level technology to move the outcomes needle. *JCO Oncology Practice*, OP-23.
- Campbell-Enns, H., & Woodgate, R. (2015). The psychosocial experiences of women with breast cancer across the lifespan: a systematic review protocol. *JB Evidence Synthesis*, 13(1), 112-121.
- Choi, J. K., Kim, H. D., Sim, Y. J., Kim, G. C., Kim, D. K., Yu, B. C., ... & Jeong, H. J. (2015). A survey of the status of awareness of lymphedema in breast cancer patients in Busan-Gyeongnam, Korea. *Annals of Rehabilitation Medicine*, 39(4), 609-615.
- Çelebi, E., & İlçe, A. (2023). Cerrahi Kliniklerde Çalışan Hemşirelerin Eras Protokolleri Hakkındaki Bilgi Düzeylerinin Belirlenmesi. *Sağlık Bakım ve Rehabilitasyon Dergisi*, 1(1), 12-24.
- Gregory, K., & Schiech, L. (2017). Looking into secondary lymphedema. *Nursing2023*, 47(11), 34-42.
- <https://www.cancer.org/cancer/types/breast-cancer/about/how-common-is-breast-cancer.html> [09.10.2024]
- Hutchison, N. A. (2018). Diagnosis and treatment of edema and lymphedema in the cancer patient. *Rehabilitation Nursing Journal*, 43(4), 229-242.
- Kuruvilla, A. S., Krajewski, A., Li, X., Yang, J., Mulay, S. R., Agha, S. M., ... & Shroyer, L. W. (2021). Risk Factors Associated with Post-Mastectomy Breast Cancer Lymphedema: The New York State Experience. *Journal of the American College of Surgeons*, 233(5), S201.
- Lyman, G. H., Temin, S., Edge, S. B., Newman, L. A., Turner, R. R., Weaver, D. L., ... & Giuliano, A. E. (2014). Sentinel lymph node biopsy for patients with early-stage breast cancer: American Society of Clinical Oncology clinical practice guideline update. *Journal of Clinical Oncology*, 32(13), 1365-1383.
- Stuiver, M. M., ten Tusscher, M. R., Agasi - Idenburg, C. S., Lucas, C., Aaronson, N. K., & Bossuyt, P. M. (2015). Conservative interventions for preventing clinically detectable upper - limb lymphoedema in patients who are at risk of developing lymphoedema after breast cancer therapy. *Cochrane Database of Systematic Reviews*, (2).
- Torgbenu, E., Lockett, T., Buhagiar, M., Requena, C. M., & Phillips, J. L. (2022). Improving care for cancer-related and other forms of lymphoedema in low-and middle-income countries: a qualitative study. *BMC Health Services Research*, 22(1), 461.
- Turkey Cancer Control Program Ankara 2016; [http://www.iccpportal.org/system/files/plans/Turkiye\\_Kanser\\_Kontrol\\_Program\\_English.pdf](http://www.iccpportal.org/system/files/plans/Turkiye_Kanser_Kontrol_Program_English.pdf) , s41,42 Retrieved: 31 January 2018.
- Yıldız, A., & Karayurt, Ö. (2011). Meme Kanseri Kadınların Lenfödem Nedeniyle Yaşadıkları Güçlükler. *Meme Sağlığı Dergisi/Journal of Breast Health*, 7(3).