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The Effect of Post-Mastectomy Concept Map Education on Patients' Discharge Training Satisfaction Levels: A Randomized Controlled Study

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ABSTRACT

Objective: To determine the effect of the education given with the concept map after mastectomy on the satisfaction level of the patients' discharge training.
Methods: The research was carried out in the Breast and Endocrine Surgery Clinic of the University Hospital located in a province in eastern Türkiye. The research was conducted using a randomized controlled experimental research model. 66 patients (33 experimental group, 33 control group) were included in the study. The patients in the experimental group were given discharge training with a concept map. “Descriptive Characteristics Form” and “Discharge Training Satisfaction Scale” were used to collect data. In the evaluation of the data; number, percentage, mean, standard deviation, chi-square, independent sample t-test and Cronbach Alpha Confidence Coefficient were used.
Results: There was no significant difference between the groups in terms of introductory features. In the study, it was determined that 57.6% of the patients in the experimental group were married, 81.8% had a nuclear family structure, 69.7% of the patients in the control group were married and 72.7% had a nuclear family structure. The mean scores of the patients in the experimental group were found to be significantly higher than the patients in the control group (p<.05).
Conclusion: It was found that the average score of the discharge training satisfaction scale of the patients who received discharge training with the concept map was higher than the control group. For this reason, it is recommended to expand the use of the discharge training given with the concept map after mastectomy.
Keywords: Mastectomy, concept mapping, patient satisfaction, patient discharge, patient education as topic

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Introduction

Breast cancer is the most common type of cancer among women, and according to Globacan statistics, one in four women diagnosed with cancer worldwide is reported to have breast cancer (Bray et al., 2024). Similar to global trends, the incidence of breast cancer in Türkiye has been increasing over the years (Koçan & Gürsoy, 2016).

In breast cancer, patients undergo treatments such as surgery, radiotherapy, chemotherapy, and hormonal therapies, which can cause significant stress (Liu et al., 2021). Although radical mastectomy is now a last-resort option in breast cancer treatment due to advancements in technology and surgical techniques, breast reconstruction emerges as an important procedure in cases where mastectomy is performed (Alhan et al., 2012). Mastectomy, one of the treatment methods for breast cancer, is an intervention that disrupts women's body image (Gülşen & Akansel, 2018). Additionally, the diagnosis and treatment of breast cancer affect the psychological, physical, spiritual, and social aspects of patients' lives (Okanlı, 2011). Therefore, postoperative care and discharge training are highly significant. To ensure that patients benefit more from their care processes, it is crucial to accurately identify and plan their learning needs, as well as to meet their informational requirements for adherence to post-discharge treatment (Naoum et al., 2020). After mastectomy, patients require information and education to participate in decisions regarding their health, manage symptoms related to their treatment, and cope with cancer (Kazanç et al., 2023). To facilitate patients' adaptation to the postoperative period and reduce surgery-related stress and uncertainties, the process should be supported with discharge training tailored to patient needs (Hashemi et al., 2020; Topuz et al., 2021). Increased patient satisfaction through discharge training enhances patients' adaptation to the hospital environment and positively influences their belief in recovering through the healthcare services they receive (Galvin et al., 2017). Therefore, ensuring the physical, psychological, and social well-being of patients after mastectomy requires comprehensive discharge training and a well-planned care strategy provided by clinical nurses (Büyükakincak et al., 2013; Ursavaş et al., 2014).

In nursing, the goal is to concretize and teach the education provided in patient care so that evidence-based knowledge can transform into skills. Visual and auditory tools used during education enhance its permanence and effectiveness (Yutmaz, 2018). To this end, there are various teaching methods that assist nursing students and nurses in accurately managing the information they need. One of these methods is the "concept map" (Dil & Öz, 2014). Concept maps strengthen memory by organizing, encoding, and presenting information in a schematic and visual manner. This teaching technique helps establish cause-and-effect relationships between concepts, enabling better understanding and application (Erdem et al., 2017).

The use of concept maps in nursing education has been shown to enhance nurses' critical thinking and communication skills (Cook et al., 2012). In a study conducted by Gerdeman and colleagues, it was found that cases prepared using concept maps improved clinical judgment skills among nursing students (Gerdeman et al., 2013). When the studies are examined, it can be stated that the use of education provided with concept maps in nursing education is highly significant in terms of developing critical thinking and communication skills.

The use of concept maps in nursing education facilitates a systematic approach to patient care, making the connections and relationships between disease and health management, treatment, and the nursing process more comprehensible. Additionally, concept maps, when integrated with the critical thinking process in nursing, can contribute to transferring holistic patient care into clinical practice (Aein & Aliakbari, 2017). This study was conducted to examine the effect of education provided through concept maps on patients' satisfaction levels with discharge training after mastectomy. This study will serve as a pioneering effort in utilizing concept maps in patient education and will contribute to the literature. The hypotheses of the research are as follows:

H1: Education provided through concept maps after mastectomy has an effect on patients' satisfaction levels with discharge training.

Methods

Type of the Study

This study was designed and conducted as a randomized controlled experimental type.

Place and Time of the Study

This study was conducted with patients who had undergone mastectomy at the Breast and Endocrine Surgery Clinic of a University Hospital located in the eastern part of Türkiye, between April 2020 and November 2021. The clinic has a bed capacity of 24. The rooms are designed for single, double, or triple occupancy. After mastectomy, patients typically stay in the hospital for an average of 3 days.

Population and Sample of the Study

The population of the study consisted of patients hospitalized at the Breast and Endocrine Surgery Clinic of a University Hospital located in the eastern part of Türkiye, during the specified dates. In this study, prior to starting the research, an a priori power analysis was conducted using G*Power software, version 3.0.1, to determine the sample size (Faul et al., 2007). According to Cohen (Cohen, 2013), with a medium effect size of 0.5, a 0.05 error margin level, and a 95% confidence interval, it was determined that there should be a total of 50 patients, with 25 patients in each group. To account for potential data losses, an additional approximately 25% backup sample was included, and the study was completed with a total of 66 patients, 33 in the experimental group and 33 in the control group, during the specified dates. To assess the adequacy of the sample size, a post hoc power analysis was conducted after the study was completed. The power analysis showed that the effect size of the study was 2.44, with a power of 0.99, at a significance level of 0.05 and a 95% confidence interval. These values indicate that the sample size was adequate (Çapık, 2014).

The inclusion criteria for the study were as follows: female patients who were on the first postoperative day after mastectomy, aged between 18 and 75, literate, willing to participate in the study, without mental or communication problems, and without visual or hearing perception issues.

The exclusion criteria for the study were as follows: illiterate patients, those with mental or communication problems, those with visual or hearing perception issues, patients who withdrew from the study at any stage, and patients who developed complications in the early postoperative period.

The reporting of the study was conducted according to the CONSORT (Consolidated Standards of Reporting Trials) guidelines for randomized controlled trials, and the CONSORT flowchart of the study is presented in Figure 1.

Instruments

Descriptive Characteristics Form' and "Discharge Training Satisfaction Scale" were used to collect the data.

Descriptive Characteristics Form: It consists of a total of five questions including age, marital status, educational status, family type, number of children if married (Alacacıoğlu et al., 2014; Kurt et al., 2013).

Discharge Training Satisfaction Scale: It was developed by Meşe and Köşgeroğlu (Meşe & Köşgeroğlu, 2021). The Discharge Training Satisfaction Scale is a five-point Likert-type scale consisting of 21 items in total: three items related to the discharge process, three items related to personal information, seven items related to home care, three items related to infection, and five items related to follow-up. The Cronbach's Alpha (α) reliability coefficient of the scale is .91. The scoring of the scale items is as follows: (5) completely satisfied, (4) satisfied, (3) somewhat satisfied, (2) dissatisfied, and (1) completely dissatisfied. The scale does not contain any negative items. The lowest possible score from the scale is 21, and the highest possible score is 105. As the scale score increases, the patient's satisfaction with the discharge training increases. In this study, the Cronbach's Alpha (α) reliability coefficient is .95.

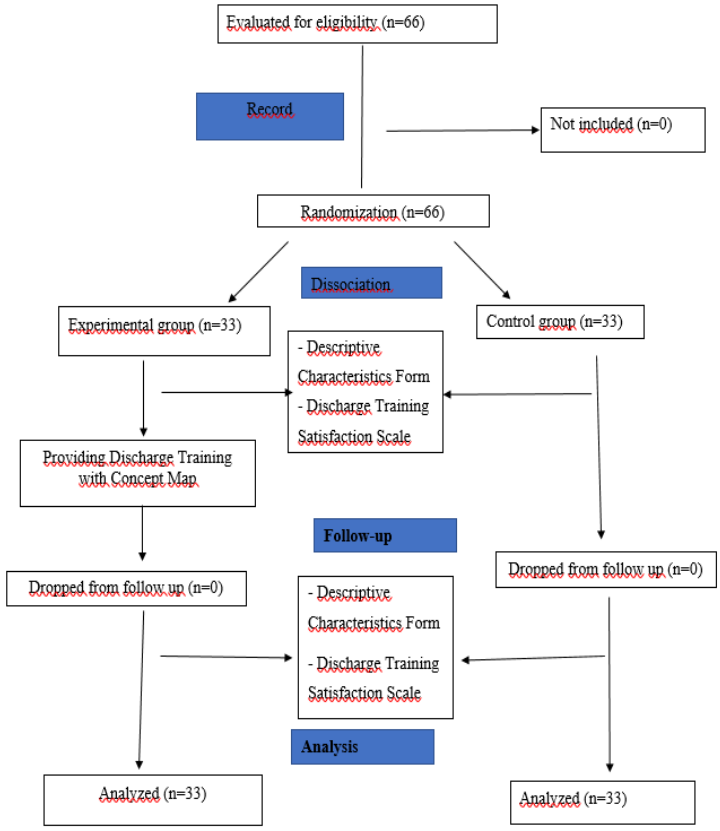

Figure 1. Consort 2010 Research Application Flowchart

Data Collection

On the first postoperative day following mastectomy, patients who agreed to participate in the study were assigned to either the control or experimental group through cluster randomization using the website www.randomizer.org. Patients were assigned to either the experimental or control group using a random number generator with two-block randomization (random.org). This randomization method continued until the required sample size was reached for both groups. The researcher assigned individuals to the research groups. No blinding was applied for either the patients or the researchers throughout the study.

The experimental and control group patients were asked to fill out the descriptive characteristics form. Both groups received routine discharge training, lasting approximately 15 minutes, on postoperative care from the ward nurses on the first postoperative day. The experimental group additionally received discharge training schematized with a concept map, provided by the researcher. A pilot study was conducted with 10 patients to evaluate the clarity and understandability of the concept map prepared by the researcher. The training was conducted in the patient's room for an average of 30 minutes using a concept map created by reviewing the literature about what patients should do for care, exercise and protection after mastectomy, and especially about the problems and complications they will encounter after surgery. The training was conducted in a way that patients could understand, allowing patients to ask questions and using an encouraging approach to ask questions if they did not understand (Kimiafar et al., 2016; Yeşilyurt & Fındık, 2016). The control group was not provided with any training by the researcher. The discharge training satisfaction scale was administered to both groups of patients prior to discharge.

Figure 2 shows the discharge training for post-mastectomy patients schematised with a concept map.

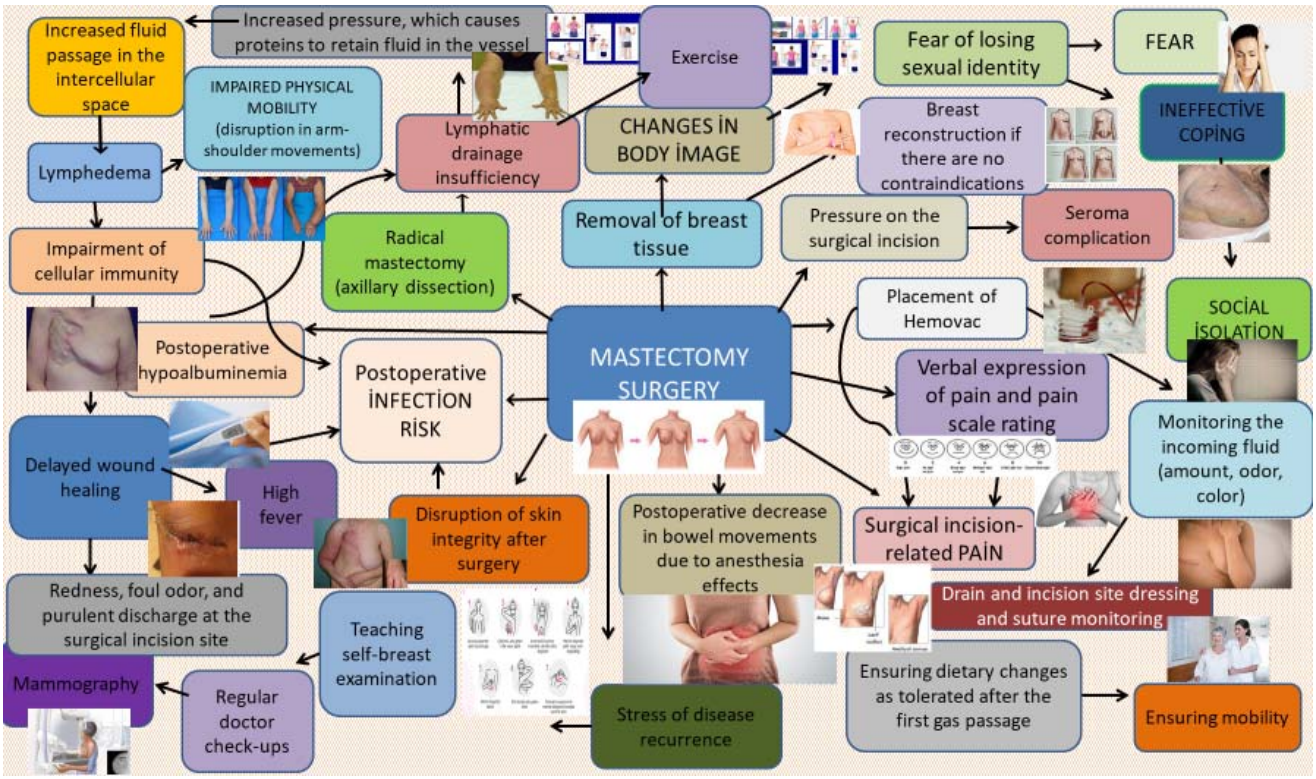

Figure 2. Concept map

Statistical Analysis

The SPSS 21.0 package programme was utilised for the purpose of conducting a statistical analysis of the data. The reliability of the measurement tools was ascertained by means of the Cronbach α coefficient. The skewness and kurtosis values were analysed in order to ascertain whether the measurements were normally distributed. It was determined that skewness and kurtosis values in the range of +3 and -3 indicated that the measurements showed a normal distribution (Pallant, 2020). The evaluation of the data was conducted by employing a range of statistical methodologies, including number, percentage, mean, standard deviation, chi-square, and independent sample t-test. The calculation of effect size was facilitated by Cohen's d value, with the following classification system being employed: effect size $0.10 \leq d \leq 0.24$= small level, $0.25 \leq d \leq 0.39$= medium level, and $0.40 \leq d$= large level (Çapık, 2014). The significance level of the tests was evaluated at $p<.05$.

Ethical Aspects of the Research

The research was subject to approval from the Ataturk University Ethics Committee (decision no. 2020-3/1, date: 06.04.2020) and written permission from the hospital where the research was conducted. Verbal and written consent

was obtained from the patients participating in the research. In accordance with the Helsinki Declaration of Human Rights, individual rights were protected during the study.

Results

It was determined that there was no statistically significant difference between the experimental and control groups in terms of descriptive characteristics and the groups were similar (p>.05) (Table 1).

The mean scores of the sub-dimensions of the Discharge Training Satisfaction Scale for the groups are compared in Table 2. A statistically significant difference was identified between the mean scores of the discharge training satisfaction scale sub-dimension and total scores of the patients in the experimental and control groups. In addition, the mean score of the discharge training satisfaction scale of the experimental group was higher than that of the control group (p<.05).

Table 1.
Comparison of the Descriptive Characteristics of the Patients in the Experimental and Control Groups

Variables	Experimental (n=33)		Control (n=33)	
	n	%	n	%
Age				
18-38	5	15.2	3	9.1
39-59	27	81.8	22	66.7
60 ve üzeri	1	3.0	8	24.2
$\chi2$= 6.455, p=.400				
Marital status				
Single	14	42.4	10	30.3
Married	19	57.6	23	69.7
$\chi2$= 1.048, p=.306				
Education Status				
Literate	16	48.5	15	45.5
Secondary education	12	36.4	12	36.4
Higher education	5	15.2	6	18.2
$\chi2$= .123, p=.940				
Family Type				
Nuclear family	27	81.8	24	72.7
Extended family	6	18.2	9	27.3
$\chi2$= .776, p=.378				
Having Children				
Yes	32	97	32	97
No	1	3	1	3
$\chi2$= .000, p=1.000				
$\chi2$= Chi-squared test				

Discussion

This is the first study to examine the effect of discharge training with concept map on discharge satisfaction after mastectomy. In this study, the findings obtained were interpreted and discussed in line with the literature and studies in the neighbouring group, since there were no studies directly related to the subject.

Table 2.
Comparison of the Mean Scores of the Sub-Dimensions of the Discharge Training Satisfaction Scale of the Groups

	Experimental Group $\bar{X}\pm SS$	Control Group $\bar{X}\pm SS$	Statistical Analysis
Discharge Training Satisfaction Scale			
Home Care	33.54±1.54	23.42±5.65	t=-9.925 p<.001 cohen d=2.44
Infection	14.36±0.69	10.03±2.83	t=-8.529 p<.001 cohen d=2.10
Controls	23.06±1.14	17.36±4.82	t=-6.597 p<.001 cohen d=1.62
Discharge Process	13.78±0.73	11.30±2.24	t=-6.044 p<.001 cohen d=1.48
Personal information	12.93±1.17	11.33±2.16	t=-3.755 p<.001 cohen d=0.92
Total	97.69±1.87	73.45±14.20	t=-9.71 p<.001 cohen d=2.39

In this study, when the findings of the descriptive characteristics of the experimental and control group patients were compared, it was found that there was no statistical significance between the marital status. educational status, family type and having children; the groups were similar in terms of these characteristics. The similarity of the groups is important in terms of the effectiveness and reliability of the application.

In the learning process, concept maps are used in clinical applications. case presentations and lectures. In the study conducted by Saeidifard et al., with medical students in which concept maps were used in teaching evidence-based education subjects, the total score of the experimental

group was higher than the control group. In their study, Saeidifard et al., stated that case presentations discussed with concept maps had positive effects on students' comprehension and critical thinking achievements (Saeidifard et al., 2014).

The correct discharge training of patients ensures that they are more ready for discharge and therefore discharge training is important in meeting patient needs. Discharge training provides patient-centred communication by involving patients in the discharge process. Concept maps enable information to be schematised and presented in a visual way and strengthen memory. In nursing, concept maps are used as a guide in planning work (Dil & Oz, 2016; Gümüş et al., 2020)

Mastectomy surgeries cause women to lose their self-esteem and cause physical and psychosocial problems (Neto et al., 2013; Odigie et al., 2010). In the literature, it is reported that symbols such as aesthetics. femininity. motherhood and sexuality are perceived as loss in women after mastectomy. Therefore. in order to prevent the emergence of these problems, it is necessary to inform women on issues such as body perception, skin care, and reconstruction. In the study, the mean scores of the discharge training satisfaction scale of the patients who received personalised information in the experimental group were significantly higher. Pourbalouch et al. (2019) argued that educational interventions can enable patients to confidently participate in the decision-making process and improve their problem-solving skills related to their health status (Pourbalouch et al., 2019). In Coşkun et al. (2016) study, it was suggested that both written and oral discharge training increased the knowledge levels of patients and helped them solve the problems they experienced after discharge. In this study. it was found that the patients in the experimental group who received concept map-based training had higher discharge training satisfaction scale scores compared to the control group (Coskun et al., 2018). This finding shows that the study is supported by the literature and that the experimental group patients who received education with concept maps were better informed than the control group patients. In the study conducted by Şahin et al., it was determined that patients who underwent colorectal cancer surgery needed information on treatment, complications and activities of daily living before discharge (Şahin et al., 2015). Especially after the surgical procedure, patients need more personal information, which makes discharge training very important. For this reason, it is thought that education with concept maps will be positively effective in the disease process and in the management of the disease.

Today, especially postoperative patients need home care needs. For this reason, nurses should provide discharge training to patients and their relatives for home care needs (Bilik, 2017). In the study, the mean scores of the home care sub-dimension of the discharge training satisfaction scale were found to be statistically significantly higher in the experimental group patients. In the randomised controlled study conducted by Mohammadi, Zabolypour, Ghaffari, and Arazi in Iran, when the discharge planning programme was applied to the families of stroke patients, the level of care readiness of the families in the experimental group was found to be high and it was observed that they experienced less stress (Mohammadi et al., 2019). In a study conducted by Ben-Morderchai et al., with orthopaedic patients who received discharge training. it was found that patients' home care needs and surgery-specific anxiety decreased, while patient satisfaction increased (Ben-Morderchai et al., 2010). In a study conducted by Hu et al. with kidney transplant patients who received individualised discharge training and telephone follow-up for one month, the readiness for discharge of the experimental group was found to be significantly higher (Hu et al., 2020). The mean scores of patients' readiness for discharge and home care were found to be statistically significant with the updated discharge training application by Waniga et al. (Waniga et al., 2016). Patients stated that they were satisfied with the discharge training given. As seen in the studies, it was found that patients who received discharge training had reduced home care needs and concerns, and had higher levels of patient satisfaction and readiness for discharge. The findings of the study support the literature.

In the study, it was found that the mean score of the discharge training satisfaction scale controls sub-dimension of the experimental group patients was statistically higher than the control group patients. Symptoms that were not present in the hospital may occur at home after discharge. Patients should be able to distinguish whether these symptoms are a normal part of recovery or whether they indicate the development of a complication. For this reason, nurses should check whether patient education is adequate before discharge and whether it is well understood by patients (Soyer et al., 2018).

Studies have found that discharge training increases satisfaction (Bol et al., 2015; Fırat & Öztunç, 2019; Tuna & Celik, 2014). In the study, the high mean scores of the patients in the experimental group on the discharge training satisfaction scale related to the discharge process coincide with the studies conducted.

In the study, it was found that the mean score of the experimental group was higher than that of the control group in the infection signs and symptoms sub-dimension of the discharge training satisfaction scale. Faydalı and Bayraktar found that patients receiving burn treatment and their relatives lacked information about dressing. exercise, drug use, position, Bathing, clothing needs, protection from infection and signs of infection after discharge and wanted to receive more information on these issues (Faydalı & Bayraktar, 2011). As a result of the study, it was found that providing education to patients on signs and symptoms of infection had a positive effect on patient satisfaction.

The findings of this study are similar to the literature and confirm the hypothesis *"H1: Post-mastectomy training with concept map has an effect on patients"* satisfaction level with discharge training.

Study Limitations

The results obtained in the study are limited to the answers given to the scale used and the self-reports of the patients. In addition, the pre-preparation of the concept map by the researcher was determined as the limitations of the study.

Conclusion and Recommendations

In the study, it was found that the total and sub-dimension mean scores of the discharge training satisfaction scale in the experimental group patients who received discharge training with concept map were higher and statistically significant compared to the control group patients.

Nurses use various methods to increase the effectiveness of patient education and patient satisfaction in the preoperative and postoperative period in clinics. In this study. discharge training with concept maps was found to be effective in increasing patient satisfaction and it is recommended to be used in discharge training of mastectomy patients. In the future, it is recommended to use patient education with concept maps in different patient groups and to evaluate its effectiveness.

Ethics Committee Approval: Ethics committee approval for this study was received from Atatürk University (Date: 6 April 2020, Number: 2020-3/1).
Informed Consent: Verbal and written consent was obtained from the patients participating in the study.
Peer-review: Externally peer-reviewed.
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