

Effectiveness of discharge teaching regarding post-mastectomy care on self-care practice and arm lymphedema among patients with breast cancer.

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Background: Breast Cancer is the most commonly diagnosed cancer among women worldwide. Simple mastectomy and modified radical mastectomy are the preferred surgery to treat breast cancer. Patients undergone mastectomy experience arm lymphedema symptoms which affects their physiological as well as psychological well-being. The main objective of this study was to assess the effectiveness of discharge teaching regarding post mastectomy care on self-care practice and arm lymphedema among patients with breast cancer undergone mastectomy.

Methods: Quantitative research approach with quasi-experimental time series design was used in this study. Fifty-two patients with breast cancer were selected by consecutive sampling technique. Baseline data on self-care practice and arm lymphedema symptoms were collected on 1st post-operative day. Day-wise intervention on post mastectomy care was taught and practiced by patients from 1st to 7th post operative days regarding wound care, precautions related to operated arm, dietary measures and post mastectomy exercise. On the 7th post operative day i.e., on the day of discharge from hospital post-test one was done and data on self-care practice, arm lymphedema symptoms and arm circumference measurement were collected. Patients were provided with booklet on post mastectomy care. On the 15th post operative day i.e., on the day of first follow-up post-test two was done.

Result: The result revealed that at pre-test patient had below average self-care practice score and also experienced various arm lymphedema symptoms such as arm heaviness, arm tightness, pain, edema and limited upper arm movement. Post intervention on 15th post-operative day participant's self-care practice score and arm movement was improved and arm lymphedema symptoms were reduced.

Conclusion: Discharge teaching regarding post mastectomy care was effective in improving self-care practice and reducing arm lymphedema in patients with breast cancer underwent mastectomy.

Keyword: Breast Cancer, Discharge teaching, Post mastectomy care, Self-care Practice, Arm lymphedema.

INTRODUCTION

According to International Agency for Research on Cancer (IARC), in 2020 cancer has been ranked as a leading cause of death accounting for 19.3 million newly diagnosed cases and 9.9 million cancer deaths worldwide.¹ In terms of new cases, breast cancer (2.26 million) was diagnosed as the most prevalent cancer, along with lungs cancer (2.21 million), colon and rectal cancers (1.93 million), prostate cancer (1.41 million) respectively.² Compared to other

countries, cancer-related fatalities were most commonly recorded in Asia (48.4%), next to Europe (23.4%) and America (21%).

Prusty. R. K. et al., (2020) stated that breast mass (75%), breast shape and size changes (57%), and lump beneath armpit (56%), pain in one breast (56%) were the most commonly reported symptom by breast cancer patients, while lack of information and late examination at an advanced stage led to an increase in the breast cancer mortality rate.³ Janz. N. K et al., (2007) conducted a study to find out the most common symptoms experienced by women post mastectomy. Result revealed that numbness, pain, tenderness, discomfort, tingling sensation, edema, and limited movement of operated arm were the most common symptoms reported.⁴ Breast cancer treatments differs based on its severity whereas, the two most common surgical approaches performed are simple mastectomy and modified radical mastectomy.⁵ Lymphedema is the most common complication that can occur within weeks, months or many years later after mastectomy.⁶ It is characterized as edema in right or left arm due to collection of fluid rich in protein in the interstitial space as a result of mastectomy.

During clinical visit and interaction with the patients and their family members it was found that majority of the patients and their relatives wanted information regarding care to be done after mastectomy in the hospital and at home, various measures to be taken to reduce post mastectomy symptoms and regarding lymphedema and its preventive measures. Several studies have assessed the effectiveness of nursing program on patient's self-care practice and prevention of lymphedema post-mastectomy. Ramadan K.M. et al (2023) reported that study participants did not develop breast cancer related lymphedema during 3- and 6-month follow-up after the implementation of nursing program.⁷ Anishya. A and Appavu. S (2021) reported an overall decrease in shoulder pain by the end of fourth week after the implantation of post mastectomy exercise.⁸

Therefore, researcher prepared discharge teaching on post mastectomy care which included aspects such as wound care, drain handling and care, precautionary measures to be taken on the operated arm, dietary instructions and post mastectomy exercises.

Objective

The objective of the study was to determine the effectiveness of discharge teaching regarding post mastectomy care on self-care practices and arm lymphedema among patients with breast cancer undergone mastectomy.

METHODS

Research Approach

Quantitative research approach with quasi-experimental time series design was used.

Research Setting

The study was conducted in the Onco-surgery ward of Cancer Research Institute (CRI), a unit of Himalayan Hospital, Uttarakhand state, India.

Sample

A total of 52 patients with breast cancer underwent mastectomy at Cancer Research Institute, were included in the study.

Sampling Technique

Consecutive sampling technique was adopted to enrol the eligible sample for the present study.

Inclusion criteria

1. Patients willing to participate and gave written consent for the study.
2. Patients who could understand Hindi and English.
3. Female patients undergoing mastectomy.

Exclusive criteria

1. Patients getting discharged after mastectomy with drain.

Ethical consideration

Ethical permission was obtained from ethics committee of university. Administrative permission was obtained from Director Cancer Research Institute. An informed written consent was taken from all the participants.

Data collection tool

- *Socio-demographic variable*
- *Clinical Profile*
- *Self-care practice scale:* A self-structured tool was developed with responses agree, disagree and neutral and had included a total of 26 positive statements. Self-care practice scale consisted a total of 4 domain:
 1. Wound care (6 items)
 2. Precautions taken at operated arm (8 items)
 3. Diet (9 items) and
 4. Exercise (3 items)

The Score was categorized as:

26-43 = Below average practice

44-61 =Average practice

62-78 =Good practice

- **Arm lymphedema symptom checklist:** A checklist was developed with responses Yes and No and had included a total of 27 symptoms.

The checklist included 4 domains:

1. Symptoms reported by the patients in the operated arm (8 items)
2. Inspection of the operated arm (5 items)
3. Palpation of the operated arm (9 items)
4. Measurement of the operated arm (5 items)

The first domain included the symptoms which were reported by the patients and the remaining four domain symptoms were assessed by the researcher.

- **Arm circumference measurement tool:** The arm circumference measurement was done using flexible inch tape at both operated and non-operated arm at different parts of hand which included mid-finger, wrist, mid-forearm, elbow, upper-arm and armpit. According to symptom management guidelines of lymphedema, difference of 2.0 cm between the operated and non-operated arm is considered clinically significant and indicative of lymphedema.

Data Collection Procedure

The eligible participants were identified through onco-surgery ward census and were re-confirmed through document verification. The samples were selected through consecutive sampling technique based on the inclusion and exclusion criteria. On the 1st post operative day, the patients and their relatives were explained with the purpose of study and the process of data collection. Thereafter, an informed written consent was taken from patients and their relatives. They were also assured regarding the confidentiality of their information and they were allowed to withdraw anytime during the study.

On the 1st post-operative day baseline data was collected using socio-demographic variable, clinical profile and self-care practice assessed by the investigator using self-care practice scale.

From 1st to 7th post-operative day, day-wise intervention was provided. Every post mastectomy exercise taught were demonstrated by the investigator and return demonstration was done by the participants.

On the 1st post-operative day participants were taught hand ball exercise which were to be performed for 100 times each day (i.e., 20-20-20-20-20 times each). On 2nd post-operative day, participants were taught regarding drain care and handling and also were ambulated. Participants were also educated regarding precautionary measures that were to be taken post-mastectomy on the operated arm. On 3rd post-operative day, participants were taught combing exercise both clockwise and anticlockwise which were to be performed 5 times in a day. As the normal diet was resumed from 3rd post-operative day participants were also provided adequate information regarding dietary measures which participants had to follow post-mastectomy. On 4th post-operative day, participants were taught wrist lift exercises which were to be performed 5 times in a day. On 5th post-operative day, participants were taught arm lift exercise which were to be performed 5 times in a day. On 6th post-operative day, participants were taught wound care which were to be performed at home after the removal of drain on the 7th day. The 24-hour drain was noted every post-operative day and once the drain decreased to 10-15ml for 2 consecutive days the drain was then removed. On 7th post-operative day i.e., on the day of discharge, after drain removal participants were taught wall climbing exercises which were to be performed 5 times in a day.

Same day after the gap of 6 hours 1st post-test was conducted using self-care practice scale, arm lymphedema checklist and arm circumference measurement tool. The participants were also provided with informational booklet regarding post mastectomy care same day. They were instructed to practice the instructions and exercises mentioned in the booklet daily.

On 15th post-operative day i.e., on the first follow-up, 2nd post-test was conducted using self-care practice scale, arm lymphedema checklist and arm circumference measurement tool.

The data collection process was terminated after thanking each participant for their participation and cooperation.

RESULT

Data analysis was done using both descriptive and inferential statistics using statistical software SPSS (version 20). Categorical data were expressed in terms of frequency and percentage. As the data was non-normally distributed, non-parametric test (Friedman test) was used to assess

the effectiveness of discharge teaching regarding post mastectomy care on self-care practice and arm lymphedema among patients with breast cancer undergone mastectomy.

Table no. 1 Frequency and percentage distribution of socio-demographic variables of study participants

n=52

Sl. No	Characteristics		Frequency (f)	Percentage (%)
1.	Age (in years)	>25-44	24	46.2
		45-65	23	44.2
		>65	5	9.6
2.	Level of Education	No formal education	13	25.0
		Primary education	5	9.6
		Secondary education	8	15.4
		Higher secondary education	11	21.2
		Graduation and above	15	28.8
3.	Marital Status	Married	32	61.6
		Unmarried	5	9.6
		Widow	15	28.8
4.	Occupation	Home-maker	27	51.9
		Private	16	30.8
		Government	9	17.3
5.	State wise distribution of patients with breast cancer	Uttarakhand	39	75
		Uttar Pradesh	7	13.4
		Delhi	1	1.92
		Himachal Pradesh	1	1.92
		Bihar	4	7.8
6.	Treatment cost bearing	Self	24	46.2
		Ayushman Bharat	15	28.8
		Golden card	3	5.8
		CGHS	8	15.4
		ECHS	2	3.8
7.	Place of residence	Rural	16	30.8
		Urban	36	69.2
8.	Types of family	Nuclear	10	19.3

		Joint Co-extended	27	51.9
			15	28.8
9. a)	Any history of cancer in the family	No	41	78.9
		Yes	11	21.1
b)	Site of cancer	Ca breast	6	54.6
		Ca Neck	1	9.0
		Ca Ovary	2	18.2
		Ca GB	2	18.2
10. a)	Taking alcohol presently	Yes	1	1.9
		No	51	98.1
b)	Past history of taking alcohol:	Yes	3	5.8
		No	49	94.2
c)	No. of years:	15-30 years	2	66.7
		>30 years	1	33.3
11.a)	Smoking presently	Yes	1	1.9
		No	51	98.1
b)	Past history of smoking	Yes	6	11.5
		No	46	88.5
c)	No. of years	15-30 years	2	33.3
		>30 years	4	66.7
12.a)	Taking tobacco presently	Yes	-	-
		No	52	100%
b)	Past history of taking tobacco	Yes	-	-
		No	52	100%
13.	Dietary habits:	Vegetarian	16	30.8
		Non-vegetarian	24	46.2

	Eggetarian	12	23.0
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Table 1 reveals out of 52 participants 46.2% were aged between less than 25-44 years. 28.8% of study participants were graduates whereas, 25% of them did not receive any formal education. Majority (66.6%) of participants were married and 51% belonged to joint families. Majority (51.9%) participants were homemaker by occupation and 69.2% were living in urban area. Maximum (46.6%) of participants were self-financed whereas, 28.8% of participants received treatment through Ayushman Bharat, 15.4% by CGHS, 5.85% by Golden card and remaining 3.8% by ECHS.

Family history of cancer was present in 21% study participants, out of which majority (54.6%) reported family history of breast cancer. 1.9% of study participants was taking alcohol presently. However, 5.8% had a past history of taking alcohol out of which 66.7% were taking alcohol from past 15 to 30 years and 33.3% for more than 30 years. 1.9% of study participants were smoking presently and 11.5% had past history of smoking, out of which 33.3% were smoking for past 15-30 years and 66.7% for more than 30 years. None of the study participants were taking tobacco presently and in the past years and 46.2% of the study participants were non vegetarian.

Table 2. Frequency and percentage distribution of clinical variables of study participants.

n=52

Sl. No	Characteristics		Frequency (f)	Percentage (%)
1.	Final Diagnosis	IDC (Infiltrating Ductal Carcinoma)	52	100
2.	Grade of Carcinoma	1 2 3	8 26 18	15.4 50.0 34.6
3.	Side of breast involved	Left Right	30 22	57.7 42.3
4.	Type of surgery undergone	Simple mastectomy Modified radical mastectomy	24 28	46.2 53.8
5.	Duration of illness	Less than 1 year 1-2 year	41 11	78.8 21.2

6.	Pathologic stage classification	T1 N0 M0-T1c N0 M0 T2 N0 M0-T2 N2 M0 T3 N0 M0-T3 N1 M0 T4 N1 M0-T4b N3 M0	8 29 7 8	15.4 55.8 13.4 15.4
7.	Sign and symptoms first experienced	Painless mass Changes in shape and size of breast and nipple	49 3	94.2 5.8
8.	Menstrual status	Menstruating Postmenopausal	35 17	67.3 32.7
9.	Height (cm)	140-150 151-160 161-170	22 21 9	42.3 40.4 17.3
10.	Weight (kg)	40-60 61-80 81-100	28 22 2	53.8 42.3 3.9
11.	BMI	Below 18.5 (Underweight) 18.5-24.9 (Normal) 25-29.9 (Obese) 30 and above (Obesity)	1 24 20 7	1.9 46.2 38.4 13.5
12.	Any other comorbidities	Hypertension Type 2 Diabetic Mellitus Hypothyroidism Hyperthyroidism Bronchial asthma Pulmonary Tuberculosis Hypertension, Type 2 Diabetic Mellitus, Hypothyroidism Hypertension, Hypothyroidism	6 5 7 1 1 1 3 2	23.0 19.2 27 3.9 3.9 3.9 11.5 7.6

Table 2 reveals that 100 % of study participants were diagnosed with Infiltrating Ductal Carcinoma (IDC) of breast out of which 50% of the study participants were diagnosed with grade 2 carcinoma. Majority (55.8%) of participants were categorized under T2 N0 M0-T2 N2 M0. Majority (53.8%) of participants had undergone modified radical mastectomy whereas, 46.2% had undergone simple mastectomy. Majority (57.7%) of study participants were diagnosed with breast cancer on left side of breast. Majority (67.3%) study participants were menstruating whereas, (32.7%) were post-menopausal. Majority (78.8%) of study participants were diagnosed with breast cancer in less than one year. Maximum (94.2%) of study participants experienced painless mass as a first symptom. Regarding comorbidities 27% of participants were diagnosed with hypothyroidism. Regarding BMI, maximum (46.2%) of study participants had normal BMI, whereas (38.4%) were categorized into obese and 1(3.5%) under obesity according to adult body mass index category.

Effectiveness of discharge teaching regarding post mastectomy care on self-care practice of patients undergone mastectomy

Table 3. Mean and standard deviation of self-care practice score of patients with breast cancer underwent mastectomy

n=52

Test	Mean ± SD	Median (IQR)	Mean Rank	Friedman Test Value	P value
Pre-test (1 st post operative day)	38.21±3.79	38(35-41)	1.00	104.000	0.000*
Post Test 1 (7 th post operative day)	60.71±3.76	61(58-64))	2.00		
Post Test 2 (15 th post operative day)	77.69±0.82	78(78-78)	3.00		

IQR=Interquartile range, SD= standard deviation, df=2, Tabulated value= 5.99, p<0.05,

*significant

Table 3 depicts that, at pre-intervention the mean score was 38.21±3.79, which was increased to 60.71±3.76 and 77.69±.82 on 7th and 15th post operative day. Friedman test was applied to test differences in the mean scores which was significant with F=104.000 at P=0.000*. The

results reveal that discharge teaching regarding post mastectomy care was helpful in improving the self-care practice.

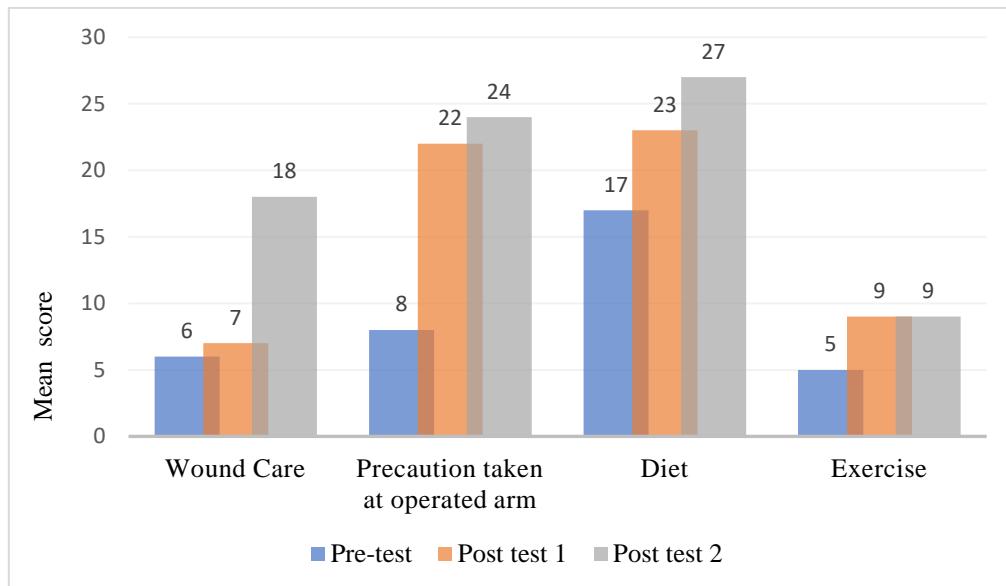


Figure 1. Mean score of domain wise self-care practice of patients with breast cancer undergone mastectomy

The figure above illustrates that, the mean score of each domain (wound care, precautions related to operated arm, diet and exercise) have shown significant improvement in the self-care practice from 1st post-operative day(pre-test) to 15th post-operative day (post-test 2). Therefore, it can be concluded that discharge teaching regarding post mastectomy care was effective in improving self-care practice in every domain.



Figure 2. Percentage distribution of self-care practice of patients with breast cancer undergoing mastectomy

At pre-test, out of 52 participants majority (88.5%) of participants had below average and (11.5%) had average self-care practice score. On 7th post operative day (51.9%) of the study participants had average and (48.1%) had good self-care practice score whereas, on 15th post operative day (100%) all participants had good self-care practice score regarding post mastectomy care. This could be inferred that post mastectomy care was effective in improving the self-care practice of patients with breast cancer undergone mastectomy.

Effectiveness of discharge teaching regarding on post mastectomy care on arm lymphedema symptoms

Table 5. Frequency and percentage distribution of symptoms of arm lymphedema in patients with breast cancer underwent mastectomy

n=52

Sl.no	Arm lymphedema symptoms	Pre-test		Post test on 7 th day		Post test on 15 th day		
		f	%	f	%	f	%	
1.	Symptoms reported by patients in operated arm	Arm heaviness	37	71.2	24	46.2	3	5.8
		Arm tightness	6	11.5	2	3.8	-	-
		Pain	48	92.3	41	78.8	18	34.6
		Tingling	24	46.2	14	26.9	6	11.5
		Numbness	44	84.6	42	80.8	42	80.8
		Fatigue	29	55.8	10	19.2	4	7.7
		Discomfort	30	57.7	33	63.5	33	63.5
2.	Palpation of operated arm	Warmth	9	17.3	2	3.8	-	-
		Tenderness	48	92.3	41	78.8	18	34.6
		Edema in upper arm	-	-	2	3.8	-	-
		Edema in forearm	2	3.8	2	3.8	-	-
		Edema in hand	2	3.8	2	3.8	-	-
3.	Measurement of operated arm	Limited elbow movement	26	50	8	15.4	-	-
		Limited arm movement	45	86.5	26	50	4	7.69

		Limited shoulder movement	52	100	40	76.9	7	13.5
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Table 4 illustrates that on 1st post-operative day (pre-test), the participants experienced various symptom such as arm tightness, arm heaviness, pain, tingling sensation, numbness, fatigue, discomfort, warmth, tenderness and edema in upper arm, forearm and hand which was reduced by 15th post-operative day (2nd post-test) also the elbow, arm and shoulder movement was improved by the 15th post-operative day, which reveals that post-mastectomy exercise taught by investigator was effective in reducing the arm lymphedema symptoms.

Table 5. Mean and standard deviation of arm circumference measurements of patients with breast cancer underwent mastectomy.

n=52

Sl. No	Arm Circumference Measurement		Pre-test (1 st post operative day) Mean±SD	Post-test 1 (7 th post operative day) Mean±SD	Post-test 2 (15 th post operative day) Mean±SD	Interpretation
1	Mid- Finger	Operated arm	4.57±.57	4.57±.57	4.57±.57	No Lymphedema
		Non-operated arm	4.57±.57	4.57±.57	4.57±.57	
2	Wrist	Operated arm	15.11±1.09	15.10±1.09	15.09±1.10	No Lymphedema
		Non-operated arm	15.09±1.10	15.09±1.10	15.09±1.10	
3	Mid- forearm	Operated arm	19.92±3.12	19.91±3.11	19.89±3.06	No Lymphedema
		Non-operated arm	19.84±3.06	19.84±3.06	19.84±3.06	
4	Elbow	Operated arm	21.49±3.32	21.47±3.31	21.44±3.30	No Lymphedema
		Non-operated arm	21.40±3.30	21.40±3.30	21.40±3.30	
5	Mid Upper arm	Operated arm	26.51±4.28	26.56±4.32	26.44±4.34	No Lymphedema
		Non-operated arm	26.29±4.20	26.29±4.20	26.29±4.20	

6.	Armpit	Operated arm	32.93±4.81	32.94±4.79	32.76±4.79	No Lymphedema
		Non-operated arm	32.59±4.67	32.59±4.67	32.59±4.67	

IQR=Interquartile range, SD= standard deviation, df=2

Table 5 depicts a slight increase in mean score of arm circumference on 1st post operative day which was decreased by 15th post operative day (post-test 2) and the difference between the operated and non-operated arm at different area was less than 2.0cm which can be interpreted as absence of lymphedema. Therefore, it could be inferred that post mastectomy exercises taught to patients and performed by patients daily was effective in preventing lymphedema in areas of operated hand.

DISCUSSION

Self-care practice

The outcome revealed that self-care practices of study participants were progressively increased in the three consecutive assessments. The mean score on 1st post-operative day was 38.21±3.79 which was increased to 60.71±3.76 and 77.69±.82 by 7th and 15th post-operative day. A significant difference was found in mean scores of all three observation with F=104.000 at P=0.000* revealing that discharge teaching on post mastectomy care was effective in improving self-care practice.

The results are similar to study conducted by Pushpa. J.S (2017) which showed a significant difference in pre and post intervention self-care practice score. The mean score at pre-test was 3.33±1.51, which was increased to 7.87±1.57 at post-test.⁹ Hashem. E.M et al., (2020) revealed that self-care practice mean score at baseline was 12.37±2.98, which was increased to 35.13±2.32 at discharge and 37.27±3.23 at three-month follow-up.¹⁰

Symptoms of arm lymphedema

The results showed that patients experienced various symptoms of arm lymphedema such as arm heaviness, arm tightness, pain, tingling sensation, tenderness, edema in upper arm, forearm and hand which decreased from 1st to 15th post operative day. Whereas, it was also found that participants upper limb function of operated arm was also improved by 15th post-operative day.

This reveals that discharge teaching on post mastectomy care was effective in reducing symptoms of arm lymphedema.

The results of the study were consistent with Togawa. K et al., (2021). The result revealed that the most common symptoms experienced by patient with breast cancer post mastectomy were arm heaviness 52%, numbness 47% and arm tightness 45%.¹¹ Gamee H.M et al., (2019), study results showed that on comparison with the control group, arm lymphedema symptom was significantly reduced in the study group and none of the study participants developed arm lymphedema post mastectomy.¹²

Arm circumference measurements

The findings demonstrates that arm circumference measurements did not increase with time and the difference between the operated and the non-operated arm was less than 2cm, which further reveals that none of the study participants developed lymphedema. This might be because patients performed post-mastectomy exercises daily.

The results of the present study were supported by study conducted by Priya. C (2015). Their result revealed that at pre-test 96.67% participants had mild lymphedema, 3.33% had moderate lymphedema whereas, during post-test none of the participants had lymphedema.¹³ Kothe. A et al., (2022) conducted a study. Results revealed that at pre-intervention 13.3% reported mild, 50% moderate and 36.7% with severe lymphedema, whereas, the post-test conducted on 7th post operative day showed that 40% had no lymphedema, 46.7% had mild and 13.3% had moderate lymphedema and none of the participants had severe lymphedema.¹⁴

CONCLUSION

The findings of this research study highlighted that discharge teaching was effective for patients with breast cancer undergoing mastectomy in improving the self-care practice of patient's health related issues with breast cancer also reducing the symptoms of arm lymphedema of those affected individuals.

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