

## Self-Management Educational program for Post-Mastectomy Lymphedema Women: Effect on Self-Care Practices and Adherence

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### KEYWORDS

Adherence, Post  
mastectomy  
lymphedema, Self-  
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### ABSTRACT:

**Background:** Since post-mastectomy lymphedema is a lifelong condition. Effective self-management is vital for reducing limb swelling, slowing disease progression, and enhancing self-care. So adhering to self-care regimens is paramount for effective lymphedema management. **Aim:** To evaluate the effectiveness of self-management educational program on women's self-care practices and adherence post-mastectomy lymphedema. **Hypothesis:** Implementing of self-management educational program will enhance self-care practices and adherence among post mastectomy lymphedema women. **Research design:** A quasi-experimental study design (pre–post test) was utilized. **Subjects:** Forty post-mastectomy women with lymphedema were enrolled in this study. **Setting:** The study was carried out in the breast, oncology outpatient clinics and the rheumatology and rehabilitation unit at Assiut University Hospital. **Tools:** Tool (I) Women's structured interview questionnaire, Tool (II): The Breast Cancer Related Lymphedema (BCRL) Self-Care Scale and Tool (III): BCRL Self-Care Adherence Questionnaire. **Results:** The mean age of the studied women was  $47.67 \pm 6.45$  years. Significant improvements were found in women's total knowledge and self-care scores regarding lymphedema after program implementation at ( $P < .001^{**}$ ). Additionally, total mean score of the BCRL Self-Care Adherence improved after program implementation, from ( $2.33 \pm 1.29$ ) pre-implementation to ( $4.68 \pm 1.59$  and  $5.4 \pm 1.55$ ) post (three and six months respectively). **Conclusion:** A lymphedema self-management educational program effectively enhanced self-care practices and adherence among post-mastectomy lymphedema women. **Recommendation:** Incorporating lymphedema self-management educational program into the standard nursing care plan for women with BCRL, ensuring it is regularly updated.

### Introduction:

Recent advancements in breast cancer therapeutic interventions have significantly improved survival rates. However, this progress is accompanied by higher incidence of long-term treatment sequelae, including post-mastectomy lymphedema (Marotta et al., 2023). Post-mastectomy lymphedema occurs in 20 to 75% of patients, often within the first 24 months after treatment (Jiang et al., 2024). Among the over 4 million women treated for breast cancer in the United States, approximately 5.6% of those who underwent sentinel lymph node biopsy develop Breast cancer–related lymphedema (BCRL), while this rate nearly quadruples to 20% in women who underwent axillary lymph node dissection (Fu et al., 2024).

Post-mastectomy lymphedema is a chronic condition characterized by swelling in the upper extremity caused by the accumulation of protein-rich fluid in the interstitial space due to interruption of the lymphatic vasculature (Kavak and Kavak, 2024). This swelling causes physical symptoms including pain, heaviness, reduced upper limb function, and stiffness of the affected limb. Beyond these physical manifestations, lymphedema also triggers a range of psychosocial responses, such as anxiety, depression and uncertainty. additionally, it places a substantial economic burden on the patients and healthcare system, ultimately leading to a decreased quality of life (Sun et al., 2024).

When lymphedema occurs, early intervention with non-surgical treatments is essential for managing symptoms and preventing complications. Complex decongestive therapy (CDT) is cornerstone of lymphedema treatment which contains two phases: the first (intensive) phase, typically lasting 2-4 weeks involves manual lymph drainage (MLD), compression bandaging, skin care, and exercises aimed at

decreasing limb volume and alleviating symptoms. The second (maintenance) phase focuses on preserving the outcomes of the first phase through self-drainage, compression garments, skin care, and exercises (**Sahbaz-Pirincci et al., 2024**).

Lymphedema self-management, the second phase of standard treatment, must be sustained throughout life. Adherence to self-management is essential to prevent illness progression and worsening symptom severity. It refers to how closely an individual's behavior aligns with the healthcare provider's advice and treatment plan (**Kandasoglu and Delialioglu, 2024**). In this context, nurses play a crucial role by providing evidence-based self-management education, empowering patients to independently manage their condition, and equipping them with the skills and knowledge needed to enhance treatment adherence and improve daily functioning (**Hemati et al., 2024**).

#### **Significance of the study:**

Lymphedema is one of the most dreaded complications that frequently arise after mastectomy, creating a lifelong burden for nearly all breast cancer survivors and leading to various negative physical and psychosocial outcomes. About one in five women who undergo breast cancer surgery is at risk of developing lymphedema (**Hemati et al., 2024**). Although post-mastectomy lymphedema is incurable, it is a manageable condition that demands lifelong patient commitment to self-management in order to control symptoms, slow disease progression, and reduce lymphedema stages and infection risk. Despite the importance of self-management, research indicates that adherence levels remain suboptimal (**Pu et al., 2023**). This highlights the vital role of nurses in identifying and addressing patient concerns, as well as in providing the essential knowledge, skills, and support needed to improve lymphedema self-care practices and adherence following mastectomy.

#### **Aims of the study:**

- Assess knowledge and self-care practices of women related to post mastectomy lymphedema.
- Design and implement self-management educational program for women with post-mastectomy lymphedema.
- Evaluate effect of self-management educational program on women's self-care practices and adherence post mastectomy lymphedema.

#### **Hypothesis:**

Implementing of self-management educational program will enhance self-care practices and adherence among post mastectomy lymphedema women.

#### **Patients and Methods**

##### **Research design:**

A quasi-experimental study design (pre–post test) was utilized to conduct this study.

##### **Setting:**

The study was carried out in the breast, oncology outpatient clinics and the rheumatology and rehabilitation unit at Assiut University Hospital.

##### **Subjects:**

Forty post-mastectomy women with lymphedema were enrolled in this study. A sample size calculation was conducted using EPI info7, utilizing data from **Assiut University Hospitals records (2022)**, which indicating that about 250 women were attended to the aforementioned setting during the year 2021-2022. With a 95% confidence level and a 5% confidence limit, the calculated sample size was 151. The educational program was initially applied to 25% of this sample. To account for potential dropouts and refusals, final sample size was increased to forty.

##### **Inclusion criteria:**

Participants inclusion criteria included: women diagnosed with post-mastectomy lymphedema, absence of debilitating comorbidities that would hinder self-care practices, No prior participation in lymphedema-related educational programs, and accepted participation in the study.

### **Tools of the study:**

The study utilized three tools for data collection:

#### **Tool I: A Structured Interview Questionnaire for Post-Mastectomy Lymphedema Women:**

Developed by the researcher to assess demographic characteristics, medical history and post mastectomy lymphedema knowledge. It divided into three parts:

**Part (1): Demographic data of women:** encompassing age, marital status, educational level, occupation, monthly income, and residence.

**Part (2): Medical history of women:** including the following to assess women's past and present medical history such as affected (dominant) side, the location and stage of lymphedema, any pre-existing chronic conditions, and a family history of breast cancer.

**Part (3): Pre/Post Knowledge Assessment Questionnaire:** It consisted of **two sections; the first**, comprised nine multiple-choice questions (MCQs) designed to assess knowledge about post-mastectomy lymphedema. These questions addressed key items as the definition, etiology, signs and symptoms, risk factors, occurrence time, stages, potential complications, signs of infection (cellulites) requiring immediate medical intervention, and conservative management options of post mastectomy lymphedema.

**The second section** evaluated women's knowledge of self-care for post-mastectomy lymphedema. It consisted of 10 (MCQs) on topics including (CDT) phases, skin care precautions to minimize lymphedema symptoms, proper nutrition, the definition and contraindications of manual lymphatic drainage (MLD), key considerations for performing self-MLD, the wearing schedule for compression garments, the duration of compression bandage wear, proper care and cleaning of compression garments and bandage wrapping supplies, and signs indicating the need for garment replacement.

#### **Scoring system:**

Responses were scored with one for correct answers, while incorrect or don't know answers received a score of zero. The total score was determined by adding up the scores for each item and then converting into a percentage. Knowledge was categorized as satisfactory if the percentage score was 60% or higher and unsatisfactory if it was below 60% (**Mahmoud and Ammar., 2019**).

#### **Tool II: The Breast Cancer Related Lymphedema (BCRL) Self-Care Scale:**

Breast Cancer Related Lymphedema (BCRL) Self-Care Scale was developed by (**Deveci et al., 2023**). It is a validated and reliable tool for assessing self-care practices among patients with BCRL. Healthcare professionals can use this scale to standardize the evaluation of self-care practices, monitor patient progress and assess the effectiveness of interventions designed to improve self-care practices.

It composed of 31 items structured into four subdimensions. **The first** was Protection; focused on safeguarding the patient's arm from infection and pressure. **The second**, Activity and Disease Process Management, centered on aspects related to exercise, regularity of follow-up visits, and knowledge of the disease and self-care practices. **The third**, termed Pressure Management, addressed items concerning compression garments use and care. **The fourth**, entitled Sustainability, concentrated on sustaining self-care practices.

A four-point likert scale was used to rate the responses to these items, with "4" indicating always, "3" for often, "2" for occasionally, and "1" for none. Reverse scoring was applied to items 4, 5, 6, 8, 9, 10, 11, 24, 26, and 28 which assessed negative behaviors such lifting weights with the afflicted arm, taking blood pressure from the affected arm, giving blood, receiving an injection, and doing repetitive household chores like dishwashing. The scale yielded a minimum possible score of 31 and a maximum of 124. Higher scores reflect better self-care practices.

#### **Tool III: BCRL Self-Care Adherence Questionnaire:**

Clinical guidelines for lymphedema management, which outline seven distinct self-management behaviors, serve as the foundation for adhering to lymphedema self-care recommendations (**National Lymphedema Network, 2011**). Participants' adherence to each of the seven self-management behaviors

will be evaluated, with a binary score of "One" for adherence and "Zero" for non-adherence. Overall adherence will be categorized as low (below 50%), medium (50% to 75%), or high (75% or higher).

### **Educational Program on Self-Management for Women with Post-Mastectomy Lymphedema:**

The researcher designed this program following literature review (Amy et al., 2024), (Elia and Maruccia., 2024), (PALABIYIK E., 2023), (Abd Elsalam et al., 2022) to equip women with the necessary knowledge and self-care practices needed to effectively manage their post-mastectomy lymphedema . The booklet was designed as a comprehensive and user-friendly resource, offering clear information in Arabic, and enriched with visually appealing illustrations and images to accommodate women of diverse educational backgrounds and ensuring accessibility and understanding for all. **It is organized into two portions:**

**The theoretical portion** included an overview of the lymphatic system's anatomy and physiology, along with detailed information on post-mastectomy lymphedema, covering its definition, causes, signs and symptoms, risk factors, stages, , and potential complications. Additionally, it provided guidelines on infection prevention and management, proper hand and arm care, maintaining a healthy diet, and recognizing when to seek medical attention.

**The practical portion** covered the proper application techniques and care instructions for compression bandages and garments. It also included a detailed demonstration of upper extremity lymphedema exercises and the Manual Lymphatic Drainage (MLD) massage technique.

### **Administrative framework and ethical considerations:**

The study received ethical approval from the Institutional Review Board (IRB) at the Faculty of Nursing, Assiut University, on May 29, 2023, under IRB reference number 1120230624 and registered at [www. clinical trials.gov.](http://www.clinicaltrials.gov) with (identifier NCT06591871). A formal letter was issued by the Dean of the Faculty of Nursing to the directors of outpatient clinics at Assiut University Hospital, seeking official authorization for data collection. All participating women gave informed consent after fully understanding the study's objectives, potential benefits, risks, and procedures. The researcher handled patient data with the utmost confidentiality and anonymity. All participants had the right to choose freely whether to join the study and were able to leave at any moment without giving a reason. The researcher exhibited a profound respect for the cultural and value systems of all participants.

### **Content validity and reliability:**

A jury of five experts, including three specialists in medical-surgical nursing from the Faculty of Nursing at Assiut University and two medical experts from the Department of General Surgery at Assiut University Hospital, was convened to evaluate the content validity. They assessed the appropriateness, comprehensiveness, and applicability of the tools. In response to the expert's recommendations, a few modifications were made to the tools. The final versions of the tools underwent a reliability analysis using Cronbach's alpha coefficient to assess internal consistency. The Cronbach's alpha values for tools I, II, and III were 0.79, 0.82, and 0.84 respectively.

### **Pilot study:**

Ten percent of the sample participated in a pilot study to assess the feasibility, application, clarity of the research tools and to determine how long they would take to complete. Based on the pilot study findings, the study tools were adjusted as needed, including the deletion, addition, or rephrasing of certain statements to create the final version. Consequently, the sample involved in the pilot study was not included in the study.

### **Procedure:**

Over the period of ten months, commencing in July 2023 and concluding in April 2024, data collecting and the educational program were implemented in four stages.



**I- The preliminary stage:**

It entailed in-depth review of contemporary national and international literature in nursing and medicine (Amy et al., 2024; Elia and Maruccia, 2024; PALABIYIK E., 2023; Tatar K., 2023; Cansız et al., 2022; El-Araby et al., 2020). Based on this review, the researcher developed the data collection tools. Additionally, a detailed outline for the educational program was created, serving as the foundation for a self-management educational program. This program was subsequently designed, developed, and compiled into a booklet, with expert feedback obtained to ensure its validity.

**II-Assessment and planning stage:**

Following the acquisition of official approval, the researcher commenced collecting of data by reviewing the patient visitation schedule for the predetermined sites and attended the outpatient clinics three days per week, specifically Sundays, Tuesdays, and Thursdays, during morning shifts from 9:00 AM to 2:00 PM. At the commencement of the interview, the researcher introducing herself to the women and providing a clear explanation of the study's purposes.

The women who fulfilled the inclusion criteria were chosen, and the researcher conducted face-to-face interviews with them on the day of their visit, either in the outpatient clinics or in waiting rooms that were reasonably quiet, well-lit and ventilated, with comfortable seating and sufficient space for ensuring a conducive environment to facilitate the educational program implementation. Prior to providing informed consent, these women were briefed on the study's objectives and assured of the strict confidentiality of their information.

The researcher conducted a baseline assessment prior to implementing the educational program. Initially, demographic and medical health history data were gathered through a series of questions presented in (Part 1&2 of tool I). Afterwards, the researcher used (Part 3 of tool I, tool II& III) to assess the women's knowledge, lymphedema self-care practices, and self-care adherence. The researcher took between 45 and 60 minutes with each woman to finish these tools.

The researcher analyzed the collected data to pinpoint each participant's specific educational needs. From these insights, a tailored program implementation plan was developed, covering session frequency and duration, instructional methodologies, teaching aids, and evaluation strategies. To ensure consistent engagement, a structured schedule was established to facilitate regular meetings and initiate the program implementation sessions.

**III- The implementation stage:**

Guided by the baseline assessment, five sessions were used to carry out the educational program, comprising two theoretical and three practical. To convey the program's theoretical content. The researcher employed a multifaceted approach, including group discussions, lectures, educational booklets and power point presentations. On the other hand, the practical component emphasized hands-on learning, utilizing demonstrations, re-demonstrations, tangible materials, and video illustrations.

The session durations were customized to fit each woman's needs, comprehension, and interest, with an average length of 45 to 60 minutes. They were held either individually or in small teams of no more than three women. The researcher opened each session with welcoming the women, summarizing the content of the preceding session and explaining the current session's objectives in a clear and understandable manner. During the sessions, the researcher encouraged questions and utilized encouragement approaches to actively engage the women in participation.

**The first session** served as an introductory overview of the educational program, highlighting its significance and intended outcomes. during this session, women received foundational knowledge on post-mastectomy lymphedema, encompassing a concise overview of lymphatic system's anatomy and physiology, as well as information on definition of post mastectomy lymphedema , its potential etiologies, key signs and symptoms, associated risk factors, staging criteria, and potential complications.

**In the second session**, the researcher provided the women with guidelines on infection prevention and management, caring of their hands and arms, maintaining a healthy diet, and recognizing when to seek medical attention.

**The third session** was a practical demonstration of manual lymphatic drainage (MLD) massage. The researcher initiated the session with an overview of MLD, covering its definition, physiological effects, contraindications, and essential factors for proper application. Subsequently, the researcher conducted the MLD technique under the guidance of a physiotherapist and a lymphedema specialist nurse. The technique was applied for 20-30 minutes, three times a week, and continued for duration of 2-4 weeks. After this phase, the researcher instructed the women in a simplified version of MLD, called self-MLD, which enabled them to apply the technique independently for the rest of their lives.

**The fourth session** focused on compression therapy, which was segmented into two phases. In Phase I, the intensive phase, the researcher applied arm compression bandages to the women for 2-4 weeks. Subsequently, they progressed to the maintenance phase, where the researcher provided instruction on the proper use of a compression garment. Furthermore, the researcher gave the women detailed guidance regarding the care and maintenance of compression garments and bandages, including how to clean them properly, when to wear them, and indicators that the garments should be changed.

**The fifth session** centered on exercises for upper extremity lymphedema, conducted with the assistance of a certified lymphedema nurse and a physiotherapist. The researcher additionally stressed the necessity of wearing the compression bandages while performing the exercises. Then, the researcher distributed a comprehensive booklet to the women, summarizing the key points from the sessions and serving as a reference for future consultation. To ensure ongoing assessment, the researcher organized follow-up visits via mobile phone to conduct the post-test.

#### **IV- Evaluation Phase:**

A post-test was conducted to evaluate changes in the knowledge and self-care practices of the women immediately after the program's implementation and three months later, utilizing the same tools of pretest (Part 3 of tool I & tool II) to measure the program's effectiveness. Furthermore, after three and six months following program implementation, the researcher used (tool III) to evaluate women's self-care adherence. These assessments were conducted either by calling the women or interviewing them in the previous outpatient clinics.

#### **Statistical design:**

The researcher used SPSS version 26.0 to analyze and code the data. Categorical variables were expressed as frequencies and percentages, while continuous variables, as means and standard deviations. For comparing categorical variables, chi-square and Fisher exact tests were utilized, while continuous variables were compared using t-tests or ANOVA. The association between the scores was ascertained using Pearson correlation. Statistical significance was determined at a p-value of less than 0.05.

## Results:

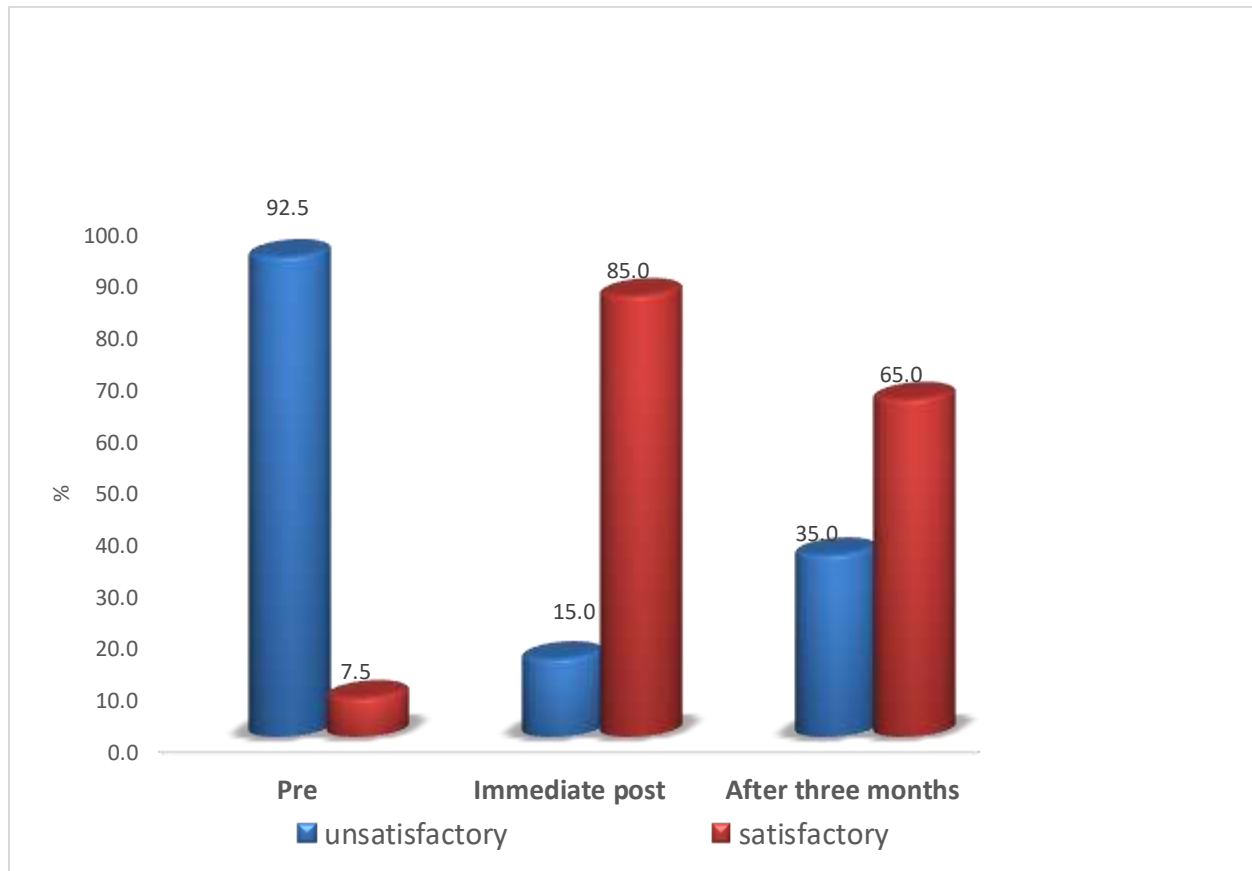
**Table 1: Frequency Distribution of Demographic Characteristics for the Studied Women (n=40)**

Variables	n=40	%
<b>Age</b>		
30-<40	8	20.0
40-<50	21	52.5
50-60	11	27.5
<b>Mean ± SD</b>	<b>47.67±6.45</b>	
<b>Marital status</b>		
Single	8	20.0
Married	32	80.0
<b>Education level</b>		
Illiterate	7	17.5
Read and write	14	35.0
Intermediate education	11	27.5
High education	8	20.0
<b>Occupation</b>		
House wife/not working	23	57.5
Working	17	42.5
<b>Income</b>		
Sufficient	14	35.0
Insufficient	26	65.0
<b>Residences</b>		
Urban	16	40.0
Rural	24	60.0

**Table 2: Frequency Distribution of Medical History for the Women (n=40)**

Variables	No	%
<b>Affected(dominant) side</b>		
Right	28	70.0
Left	12	30.0
<b>Lymphedema location</b>		
Arm	23	57.5
Arm and hand	14	35.0
Arm and breast	3	7.5
<b>Lymphedema stages</b>		
Stage (0)	3	7.5
Stage (I)	16	40.0
Stage (II)	19	47.5
Stage (III)	2	5.0
<b>chronic diseases</b>		
Hypertension	11	27.5
Diabetes mellitus	4	10.0
Bronchial asthma	2	5.0
None	23	57.5
<b>Family history of breast cancer</b>		
Yes	26	65.0
No	14	35.0





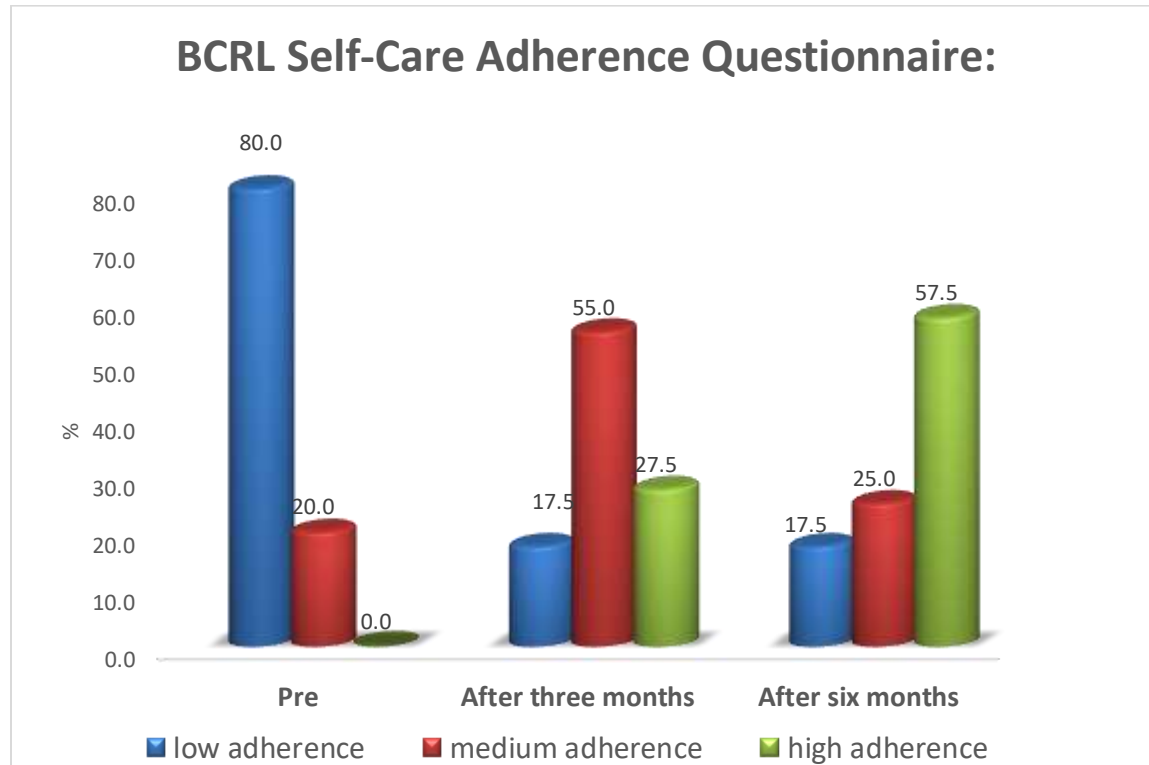
**Fig. 1: Women's Total Knowledge Scores levels Pre and Post-Implementation of the Educational Program (Immediate and Three Months) (n=40)**

**Table 3: Total and Subdimensions Mean Scores Regarding Lymphedema Self-Care Pre and Post Implementation of Educational Program (Immediate and three months) (n= 40)**

Breast Cancer Related Lymphedema Self-Care Scale	Max Score	Pre	Immediate post	After three months	F	P.value
		Mean±SD	Mean±SD	Mean±SD		
Protection	44	26.28±3.73	35.35±3.17	38.18±5.02	94.28	<0.001**
Activity and disease process management	32	15.3±3.73	22.63±2.75	25.1±3.98	83.51	<0.001**
pressure management	16	8.05±2.34	11.68±1.65	12.65±2.55	47.92	<0.001**
Sustainability	32	16.63±3.32	22.13±2.9	23.88±4.11	47.30	<0.001**
<b>Total Breast Cancer Related Lymphedema Self-Care Scale</b>	<b>124</b>	<b>66.25±9.05</b>	<b>91.78±6.78</b>	<b>99.8±13.14</b>	<b>122.55</b>	<b>&lt;0.001**</b>

*One-way Anova T-test quantitative data between the three groups or more*

*\*Significant level at P value < 0.05, \*\*Significant level at P value < 0.01*



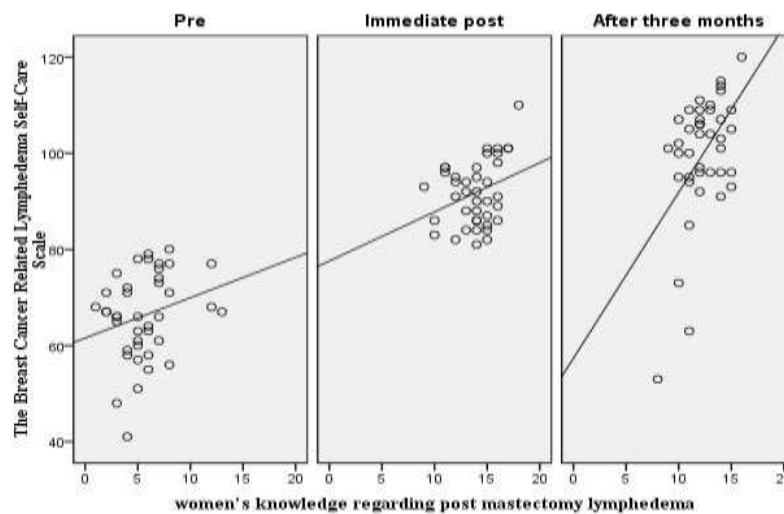
**Fig. 2: Women's Total BCRL Self-Care Adherence Scores Levels Pre and Post-Educational Program Implementation (Three and Six Months) (n=40)**

**Table 4: Correlation Coefficient between Women's Total Knowledge Scores and Total BCRL Self- Care Scores Pre and Post-Implementation of the Educational Program (Immediate and Three Months) (n=40)**

Correlation between total knowledge scores & total (BCRL) self-care scores	Total (BCRL) self-care scores					
	Pre		Immediate post		After three months	
	r	P	r	P	r	P
Total knowledge scores	0.249	0.121	.314*	0.049	.491**	0.001

\*Statistically Significant Correlation at P. value <0.05

\*\*Statistically Significant Correlation at P. value <0.01



**Fig. 3: Scatter Plot Showing the Correlation Coefficient between Women's Total Knowledge Scores and Total BCRL Self-Care Scores Pre and Post-Implementation of the Educational Program (Immediate and Three Months) (n=40)**

**Table 5: Correlation Coefficient between Women's Total BCRL Self-Care Adherence Score, Total Knowledge Scores, and Total BCRL Self-Care Scores Pre and Post-Implementation of the Educational Program (n=40)**

Correlation between total BCRL Self-Care Adherence score, total knowledge scores & total (BCRL) self-care scores	Total BCRL Self-Care Adherence Questionnaire					
	Pre		After three months		After six months	
	r	P	r	P	r	P
Total knowledge scores	0.120	0.461	.330*	0.038	0.161	0.321
Total (BCRL) self-care scores	0.182	0.261	.444**	0.004	0.258	0.107

\*Statistically Significant Correlation at *P. value* <0.05

\*\*Statistically Significant Correlation at *P. value* <0.01

**Table 1:** illustrated that; (52.5%) of the studied women their age ranged from 40 to less than 50 with mean  $\pm$ SD 47.67 $\pm$ 6.45 years. Marital status was predominantly married (80.0%), and more than one third (35.0%) could read and write. Over half (57.5%) were house wives. Additionally, (65%) of the women had insufficient monthly income and (60.0%) resided in rural areas.

**Table 2:** revealed that most women were right dominant side. Over half (57.5%) exhibited arm lymphedema, and (47.5) % were classified as stage II lymphedema. Additionally, More than half (57.5%) did not report any chronic diseases, while a family history of breast cancer was present in 65% of the cases.

**Figure 1:** Demonstrated that, (92.5%) of women exhibited unsatisfactory total knowledge score level pre program implementation. However, 85.0% achieved satisfactory scores immediately, with 65.0% maintained satisfactory scores three months later, demonstrating a highly significant improvement ( $p < 0.001$ ).

**Table 3:** indicated a highly statistically significant difference in the mean scores for all lymphedema self-care subdimensions (protection, activity and disease management, pressure management, and sustainability) pre and post program implementation ( $p < 0.001^{**}$ ). Total mean score of women's lymphedema self-care was 66.25  $\pm$  9.05 prior to the program, while, it become (91.78 $\pm$ 6.78%& 99.8 $\pm$ 13.14 %) post program (immediate and three months respectively).

**Figure 2:** showed that 80.0% of the studied women had low adherence scores to BCRL self-care before the program. After three months, 55.0% demonstrated medium adherence, and six months later, 57.5% showed high adherence.

**Table 4 and figure 3:** revealed a statistically significant positive correlation between total knowledge scores and total BCRL self-care scores post-implementation of the educational program, both immediately ( $r = .314$ ,  $p = 0.049$ ) and at three months ( $r = .491$ ,  $p = 0.001$ ).

**Table 5:** revealed a statistically significant positive correlation between the women's total adherence to BCRL self-care scores and their corresponding total knowledge and BCRL self-care scores at the three-month follow-up.

## Discussion

Post mastectomy lymphedema is a chronic condition that requires lifelong management. Adherence to lymphedema self-management is critical for preventing disease progression, reducing symptom severity, and safeguarding physical, psychosocial, and emotional well-being, as well as enhancing overall quality of life (Li et al., 2022).

Thus, this study was undertaken to evaluate effect of self-management educational program on women's self-care practices and adherence post-mastectomy lymphedema.

In terms of demographic data, the mean age  $\pm$  SD of the women was  $47.67 \pm 6.45$  years, aligning with **El-Araby et al. (2020)**, who reported a mean age was  $47.71 \pm 7.16$  years. However, it contrasts with **Mohamed et al. (2023)**, who found a higher mean age of  $57.50 \pm 6.44$  years. This finding may be attributed to the increased incidence of breast cancer and subsequent lymphedema in women over 40, due to menopausal transitions, hormonal fluctuations, and elevated genetic mutations.

The study also indicated that the majority of women were married, consistent with the findings of **Kandasoglu and Delialioğlu, (2024)**. In the researcher's view, this may be because many married women take on primary caregiving responsibilities for their families, which put extra strain on their upper limbs, which could increase the risk of lymphedema.

Concerning education, occupation, and residence, the current study found that over one-third of the women could read and write, more than half were housewives, and less than two-thirds lived in rural areas. These findings are consistent with **Sobh et al. (2023)**, who reported a predominance of housewives and rural residents in both the control and study groups. In contrast, **Wang and Du., (2024)** found that nearly half of the women were employed, and more than one-third having higher educational attainment. The researcher attributes these results to the lower socioeconomic status in rural areas, where traditional gender roles, including marriage and household responsibilities, often limit women's opportunities to pursue formal education.

Concerning to affected (dominant) side, lymphedema location and stage, the majority of studied women experienced lymphedema in their dominant right arm, with nearly half presenting with stage II, consistent with **Abed El-Rahman and Abdelkader, (2023)** and **Ramirez-Parada et al., (2023)**, who reported similar patterns in right-handed participants. However, **Çolak, et al., (2024)** observed lymphedema in both the arm and hand of over one-third of participants, and **Omar, et al., (2020)**, found that the majority of participants had stage I lymphedema. According to the researcher, most of the studied women were married housewives, which increased their susceptibility to lymphedema due to the frequent use of their dominant arm in daily activities and potential exposure to household detergents.

Furthermore, the study showed that more than half of the women reported no chronic diseases and less than two-thirds had familial history of breast cancer. These findings align with those reported by **Deveci et al., (2021)** but contrast with **Abd Elsalam et al., (2022)**, who found that over two thirds of their participants had no family history of breast cancer. The researcher suggests that the absence of chronic comorbidities among many of the studied women may positively influence their self-management strategies for lymphedema.

As hypothesized, the study demonstrated a significant improvement in women's total knowledge score level post program implementation. This result supported by **Ramadan et al., (2023)**, who found that participant's total knowledge was unsatisfied prior to the educational program, while after its implementation, most participants exhibited a high level of satisfaction. Similarly, these findings agreed with **Natarajan et al., (2023)**, whose study showed a significant improvement in the post test knowledge score compared to the pretest.

From the researcher's perspective, the high knowledge scores among women immediately post the program were a result of the researcher's use of incentive, reinforcement, and repetition techniques, which fostered active engagement and acceptance of lymphedema. While, at the three-month follow-up, a minor reduction in knowledge was noted, likely due to the natural decline in information retention over time. Conversely, the acquired skills improved with consistent practice.

The study's findings confirm that the program effectively improved women's lymphedema self-care practices. These findings align with **Gooda et al., (2023)**, who reported a highly statistically significant improvement in women's self-care practices in the post-intervention phase compared to pre-intervention. Similarly, **Deveci et al., (2021)** found that women who received self-care education had higher lymphedema self-care practice scores than those who did not. Additionally, **El-Araby et al.,**



(2019) concluded that educational instructions significantly improved self-care practices among women with BCRL.

The researcher credited the program's success in improving women's lymphedema self-care practices to the effective implementation of self-management techniques, such as exercises, compression therapy, and self-lymphatic massage. Different teaching approaches utilization, including demonstrations and opportunities for questions, significantly enhanced women's engagement. Moreover, their strong motivation to conquer lymphedema and fulfill their familial responsibilities encouraged strict adherence to the program's self-care instructions and follow-up recommendations.

Also, the program demonstrated a significant enhancement in women's adherence to self-care practices, aligning with **Cansız et al., (2022)**. Their study revealed a notable increase in patient compliance following a self-management lymphedema education program. The researcher attributed the women's high adherence post-program to improved their lymphedema self-care practices, knowledge and effective symptom management.

The study further revealed a statistically significant positive correlation between total knowledge and BCRL self-care scores after the program. This finding is consistent with **Mahrous et al. (2021)**, who demonstrated that increased knowledge of lymphedema is a key predictor of effective self-care practices in post-mastectomy patients.

The study also demonstrated a statistically significant positive correlation between women's total adherence to BCRL self-care and their total knowledge and self-care scores at the three-month follow-up. This aligns with **Sun et al. (2024)**, who indicated that breast cancer survivors with a higher level of knowledge and self-efficacy in managing lymphedema are more likely to adhere to recommended self-care guidelines.

#### **Conclusion:**

Implementation of a lymphedema self-management educational program significantly enhanced knowledge, self-care practices, and adherence among post-mastectomy lymphedema women.

#### **Recommendation:**

- Establishing an outpatient lymphedema clinic with a multidisciplinary team of physicians, physiotherapists, social workers, and lymphedema specialist nurses to provide comprehensive care, including diagnosis, treatment, patient education, and long-term follow-up.
- For generalization of the study results replicated the study on larger sample size and different hospitals setting is advised.

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