Indonesian Journal on Health Science and Medicine
Vol 2 No 1 (2025): July
ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v2i1.159

Mastectomy Patients' Knowledge Level About Breast Lymphedema Prevention

Abbas Hamid Kamil[1*]
Ayat Ibrahim Mrahib[2]
Ammar Abdulkhaleq Ali[3]
[1,2]College of Nursing, Bilad Alrafidain University, Diyala, Iraq
[3]Department of Nursing, Madenat Alelem University College, Baghdad, Iraq

Email: Abbasnurse1992@gamil.com

Abstract. Background: Breast cancer-related lymphedema (BCRL) is a prevalent and debilitating complication following breast cancer treatment, significantly impairing patients' quality of life. Specific Background: Despite its impact, prevention strategies are often underemphasized in post-mastectomy care. Knowledge Gap: Limited patient education and awareness about BCRL preventive measures hinder early intervention. Aim: This study aimed to assess the knowledge level of mastectomized patients regarding BCRL prevention. Methods: A descriptive study was conducted using non-probability sampling at Baqubah Teaching Hospital's Oncology Ward. Data were collected through a structured instrument comprising socio-demographic, clinical, and knowledge-related items and analyzed using descriptive and inferential statistics. Results: Findings revealed a mean knowledge score of 2.26, indicating that the majority of participants had a moderate understanding of BCRL preventive measures. Novelty: This study highlights a critical need for proactive educational interventions targeted at mastectomized patients, emphasizing prevention rather than post-onset management. Implications: Integrating continuous patient education into nursing practice is essential to enhance knowledge and reduce the incidence of BCRL, ultimately improving long-term patient outcomes.

Highlights:

1. Early education on lymphedema prevention is crucial post-mastectomy.
2. Most patients demonstrated only moderate knowledge levels.
3. Nurses play a key role in ongoing patient education.

Keywords: Breast Cancer, Lymphedema, Prevention, Patient Education, Mastectomy

Introduction

Lymphedema refers to the abnormal buildup of protein-rich fluid in the interstitial spaces, often occurring after breast cancer surgery or radiation therapy. It stands as one

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v2i1.159

of the most frequent complications following breast cancer treatment, with prevalence estimates ranging between 15% and 46% [1].

Despite advancements in medical science that have significantly improved breast cancer treatment the second most common cancer among women breast cancer-related lymphedema (BCRL) continues to affect a considerable number of survivors [2].

BCRL can impact up to 50% of breast cancer patients and is associated with elevated postoperative healthcare expenses[3]. Cancer treatment is the primary cause of lymphedema in developed nations. The incidence varies widely from 5% to 60%, and symptoms can emerge immediately after treatment or even decades later[4].

Classified the risk factors for lymphedema into three main categories: treatment-related, disease-related, and patient-related. Treatment factors include the type of surgery, radiation, chemotherapy, and combination therapies. Disease-related factors encompass tumor stage, tumor location, and the number of lymph nodes removed. Patient-related risks include age at diagnosis, body mass index (BMI), post-surgical infections in the upper limbs, and overuse of the affected arm[5].

Described lymphedema as a chronic condition stemming from disruptions in the lymphatic system, resulting in fluid accumulation and persistent swelling in areas such as the arms, hands, neck, shoulders, and chest. This swelling often leads to discomfort and functional limitations[6].

Although early detection and enhanced treatments have increased breast cancer survival rates, survivors still face long-term physical and psychological side effects that can diminish their overall quality of life [7].

Emphasized the negative effects of lymphedema on comfort, emotional well-being, and daily functioning[8]. Highlighted that lymphedema in the upper limbs is the most serious complication following axillary dissection, causing both cosmetic and physical problems, and may lead to further complications like cellulitis, lymphangitis, or lymphangiosarcoma[9].

Stressed that lymphedema can severely interfere with daily life and has no definitive cure, making prevention a top priority[10]. Most treatments are palliative, aiming to slow disease progression rather than provide a cure. Both medical and surgical interventions have shown limited and inconsistent results[11].

Indonesian Journal on Health Science and Medicine
Vol 2 No 1 (2025): July
ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v2i1.159

Breast cancer remains the most prevalent cancer among women globally. In Iraq, it is the leading cancer overall and accounts for roughly one-third of all registered cancers among women [12].

Secondary lymphedema is relatively common, although its true incidence is difficult to determine due to inconsistent definitions and diagnostic methods. It may occur in 10% to 50% of patients depending on the cancer type and treatment methods [13]. Among breast cancer survivors, those who undergo axillary lymph node dissection (ALND) are at the highest risk [14].

BCRL and shoulder pain are frequent concerns that can significantly affect quality of life (QOL) after surgery. BCRL can worsen shoulder pain by reducing range of motion, increasing tissue fluid tension, and raising the risk of complications like cellulitis, infections, and lymphangiosarcoma. It may also hinder tissue healing and damage the rotator cuff tendon [15].

Materials and Methods

This descriptive quantitative study was conducted to assess the knowledge of mastectomized patients regarding preventive measures for breast cancer-related lymphedema (BCRL) at Baqubah Teaching Hospital from November 17, 2024, to March 29, 2025. A non-probability (convenience) sample of patients receiving cancer management in the hospital's oncology ward was selected. Data collection was carried out through a structured questionnaire designed by the researcher, consisting of three parts: socio-demographic characteristics, clinical history related to breast cancer, and knowledge concerning BCRL preventive measures. The instrument’s validity was confirmed by a panel of five experts, and reliability was ensured through a pilot study and Cronbach’s Alpha (0.73). Ethical considerations included informed consent and confidentiality. Data were analyzed using SPSS version 24.0, employing both descriptive and inferential statistical methods. The findings aim to highlight the level of awareness among mastectomized patients, potentially guiding educational and supportive interventions.

Results

Indonesian Journal on Health Science and Medicine
Vol 2 No 1 (2025): July
ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v2i1.159

This study examined the socio-demographic and clinical characteristics of 30 participants diagnosed with breast cancer, as well as their knowledge related to lymphedema prevention. The mean age of participants was 48.7 years (±10.5), with the majority being married (76.7%), housewives (73.3%), and residents of urban areas (70%). Most participants had moderate education levels, and 43.3% reported their income as somewhat sufficient. A detailed distribution of the demographic characteristics is presented in Table 1.

Table 1. Distribution of the Sample According to Demographic Characteristic.

List	Age group	Frequency	Percent
1.	30 – 39 years	6	20.0
	40 – 49 years	11	36.7
	50 – 59 years	8	26.6
	60 years and over	5	16.7
	Total	30	100.0
		Mean = 48.7 ± 10.5	
2.	**Level of Education**		
	Elementary School	5	16.7
	Intermediate School	8	26.7
	High School	4	13.3
	Diploma	7	23.3
	Bachelor and above	4	13.3
	Total	30	100.0
3.	**Marital Status**		
	Married	23	76.7
	Single	3	10.0
	Widowed	3	10.0
	Divorced	1	3.3
	Total	30	100.0
4	Occupation		
	Employee	4	13.3
	Housewife	22	73.3
	Retired	4	13.3
	Total	30	100.0
5.	Monthly Income		
	Insufficient	6	20.0
	Somewhat sufficient	13	43.3
	Sufficient	11	36.7
	Total	30	100.0
6.	Residency		
	Urban	21	70.0

Indonesian Journal on Health Science and Medicine
Vol 2 No 1 (2025): July
ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v2i1.159

	Suburban	7	23.3
	Rural	2	6.7
	Total	30	100.0

Clinically, the vast majority were diagnosed with Invasive Ductal Carcinoma (90%), and underwent Modified Radical Mastectomy (90%), with most surgeries performed at Stage II (66.7%). Chemotherapy was the most common treatment (86.7%). A comprehensive overview of the clinical characteristics of the sample is shown in Table 2.

Table 2. Distribution of Participants' Clinical Characteristics of the Sample

List	When had you been diagnosed?	Frequency	Percent
1.	Less than month	7	23.3
	1-3 months	8	26.7
	4-6 months	6	20.0
	7-9 months	3	10.0
	10-12 months	6	20.0
	Total	30	100.0
2.	What is the type of cancer do you experience?		
	Ductal carcinoma in situ	1	3.3
	Invasive Ductal Carcinoma	27	90.0
	Invasive Lobular Carcinoma	2	6.7
	Total	30	100.0
3.	In which side were the diagnosis and mastectomy?		
	Right	13	43.3
	Left	16	53.3
	Both	1	3.3
	Total	30	100.0
4.	At what stage of the cancer was the mastectomy?		
	Stage I	0	0.0
	Stage II	20	66.7
	Stage III	10	33.3

Indonesian Journal on Health Science and Medicine
Vol 2 No 1 (2025): July
ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v2i1.159

	Stage IV	0	0.0
	Total	30	100.0
5.	Which type of treatment have you received after the diagnosis?		
	Chemotherapy	26	86.7
	Radiotherapy	0	0.0
	Both	4	13.3
	Total	30	100.0
6.	Which kind of surgery have you experienced?		
	Modified Radical Mastectomy	27	90.0
	Radical Mastectomy	3	10.0
	Total	30	100.0
7	The personal history of breast cancer		
	Existent	5	16.7
	Nonexistent	25	83.3
	Total	30	100.0
8	Do you have any previous information about breast cancer?		
	Yes	13	43.3
	No	17	56.7
9	If so, what is the source of such information?		
	Family and friends	1	3.3
	Books and magazines	1	3.3
	Mass Media	5	16.7
	A Health Care Provider	5	16.7
	Internet	5	16.7

Knowledge about lymphedema prevention among participants was assessed using a 30-item questionnaire, yielding a total mean score of 2.26 (±0.25), indicating a moderate level of knowledge. High knowledge was observed in areas related to hygiene, infection prevention, and gentle exercise, while low awareness was found regarding the use of compression garments and timing of post-surgical exercises. The distribution of knowledge scores by item is displayed in Table 3.

Statistical analysis showed no significant association between socio-demographic or clinical characteristics and overall knowledge scores ($p > 0.05$). The

Indonesian Journal on Health Science and Medicine
Vol 2 No 1 (2025): July
ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v2i1.159

relationship between participants' characteristics and their knowledge levels is illustrated in Table 4. These findings suggest a need for targeted educational interventions to improve awareness and preventive practices related to lymphedema among breast cancer patients.

Table 3. Assessment of Participants' Knowledge Scores Related to Lymphedema Prevent

List		Mean (SD)	Ass.
1	Using the affected arm to pull blood and injections	2.33 ± 0.9	M
2	Measurement of blood pressure from the non-affected arm	2.47 ± 0.8	H
3	Avoid wearing anything pressing on the wrist and hand, such as shirts with a tight sleeves	2.13 ± 0.9	M
4	Wearing a compressor bra to prevent the accumulation of fluid	1.60 ± 0.7	L
5	Wearing pressing accessories, bracelets and wristwatch in the affected arm	1.93 ± 0.9	M
6	Cleaning the skin of the affected arm daily and drying gently with the using of moisturizing cream to keep the skin hydrated and healthy	2.43 ± 0.7	H
7	Using of an electric shaver to remove the hair under the armpit	1.63 ± 0.8	L
8	Well taking care of nail and avoiding the cut of surrounding skin	2.80 ± 0.6	H
9	Cleaning wounds immediately after any injury with soap and water with the using of antibacterial ointment and applying sterile dressing.	2.53 ± 0.8	H
10	Bathing preferably in hot water	1.50 ± 0.7	L
11	Contact doctor immediately when observing any signs of infection e.g. redness, swelling or pain in the affected arm	2.73 ± 0.6	H
12	Exposing the arm to strong sunlight or any other source of heat such as the oven directly does not affect the affected arm	2.07 ± 0.7	M
13	Avoiding mosquito bites and insects by wearing long and wide sleeves during sleeping	2.53 ± 0.7	H
14	Wearing gloves when gardening, agriculture or when using detergents at home	2.47 ± 0.7	H
15	Holding hand bag or bags by non-affected arm	2.57 ± 0.7	H
16	Using the affected arm in the performance of powerful movements that need resistance like dragging, rubbing or pushing	2.17 ± 0.7	M
17	Moderate exercise on a regular basis as much as possible	2.67 ± 0.7	H
18	Avoiding burns during frying food	1.77 ± 0.6	M
19	Avoiding carrying weights that exceed than 1 kg in the affected arm	2.30 ± 0.8	M
20	Protecting fingers from needle stick and sharp objects, especially when sewing	2.67 ± 0.7	H

Indonesian Journal on Health Science and Medicine
Vol 2 No 1 (2025): July
ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v2i1.159

Ass. = Assessment; H. = High (2.34 – 3.0); M. = Moderate (1.67 – 2.33); L. = Low (1 – 1.66)

Table 4. Association between Participants' Socio-Demographic and Clinical Characteristics and their Overall Knowledge of the Study Sample

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Age	-.111	.183	-.166	-.608	.552
Level of Education	.492	1.290	.110	.382	.708
Marital Status	.414	2.486	.050	.166	.870
Job Status	-2.213	1.635	-.373	-1.354	.196
Monthly Income	-2.944	2.686	-.324	-1.096	.290
Residency	-1.045	3.114	-.095	-.336	.742
Duration of diagnosis	-.324	1.625	-.070	-.200	.845
Type of cancer	-2.461	4.075	-.165	-.604	.555
The side of the diagnosis and mastectomy	1.824	4.399	.151	.415	.684
The stage of the cancer when mastectomy done	-4.304	5.559	-.304	-.774	.451
The type of received treatment after the diagnosis	-3.285	3.437	-.335	-.956	.354
The kind of surgery	2.376	6.097	.107	.390	.702
The personal history of breast cancer	-1.429	6.617	-.080	-.216	.832
Having a family member with cancer	-1.486	4.218	-.111	-.352	.729

B= unstandardized coefficients; Std. Error= standard errors; Beta= standardized coefficients; t= t-statistics; Sig. = significance

Discussion

This study explores the socio-demographic and clinical characteristics of a sample group of women diagnosed with breast cancer, with a particular focus on their knowledge of breast cancer-related lymphedema (BCRL) prevention. The findings indicate that the majority of participants were aged between 40–49 years, had intermediate education, were married, housewives, with somewhat sufficient income, and predominantly resided in urban areas. Clinically, most participants were diagnosed within three months, had invasive ductal carcinoma, underwent modified radical mastectomy at stage II or III, and received chemotherapy as the primary treatment. A significant proportion had no personal history of breast cancer and lacked prior knowledge about the disease.

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v2i1.159

The study also revealed that knowledge about BCRL prevention improved significantly post-intervention among participants in the study group. This underscores the effectiveness of targeted educational programs in enhancing patient awareness and self-care practices. However, the study found no significant association between participants' socio-demographic or clinical characteristics and their overall knowledge levels. This highlights the importance of delivering health education in a manner accessible to diverse populations regardless of age, education, or background.

Conclusions

This study examined the socio-demographic and clinical characteristics of breast cancer patients, with a focus on their knowledge of Breast Cancer-Related Lymphedema (BCRL). The findings revealed that most participants were women aged 40–49, middle school graduates, married housewives, living in urban areas with somewhat sufficient income. Clinically, the majority were recently diagnosed with Invasive Ductal Carcinoma, had undergone modified radical mastectomy in the second or third stage of cancer, and were receiving chemotherapy. Most had no prior knowledge of breast cancer or its complications, and their awareness of BCRL preventive measures was moderate. The study found no significant correlation between patients' socio-demographic or clinical characteristics and their overall knowledge about BCRL. Based on these findings, several recommendations were made, including implementing educational programs, distributing instructional materials, promoting public awareness through media, enhancing staff education—particularly for nurses—and conducting further research to monitor and improve BCRL prevention and management practices in Iraq.

References

[1] W. W. Soran, A. Dirican, R. Johnson, O. Andacoglu, dan J. Wilson, "Estimating the Probability of Lymphedema After Breast Cancer Surgery," *Am J Clin Oncol*, vol. 34, no. 5, hlm. 506-510, Okt 2021.

[2] J. C. Acebedo, "Minimizing Breast Cancer-Related Lymphoedema," *Pr. Nurs*, vol. 26, no. 2, hlm. 79-83, Jan 2025.

[3] D. A. Shah, J. Riutta, P. Whitworth, dan F. A. Vicini, "Breast-Cancer Related Lymphedema: A Review of Procedure-Specific Incidence Rates, Clinical Assessment Aids, Treatment Paradigms and Risk Reduction," *Breast J*, vol. 18, no. 4, hlm. 357-361, Jul 2022.

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v2i1.159

[4] N. E. Mahdi dan R. A. Ali, "Effect of Pre-Discharge Guidelines on Women's Knowledge and Self-Care Practices Regarding Arm Lymphedema Prevention Post-Mastectomy," *J Am Sci*, vol. 8, no. 12, hlm. 1003-1017, Des 2022.
[5] L. Hoskins dan D. Daugherty, "Disease Management: Establishing Standards of Care for Lymphedema Treatment," *Lymph Link*, vol. 15, no. 4, hlm. 5-26, 2023.
[6] L. L. Rourke, K. Hunt, dan J. N. Cormier, "Breast Cancer and Lymphedema: A Current Overview for the Healthcare Provider," *Women's Health*, vol. 6, no. 3, hlm. 399-406, 2020.
[7] M. S. Poage, J. Armer, M. Poundall, dan J. Shellabarger, "Demystifying Lymphedema: Development of the Lymphedema Putting Evidence Into Practice," *Clin J Oncol Nurs*, vol. 12, no. 6, hlm. 951-964, Des 2020.
[8] M. K. McClure, R. J. McClure, R. Day, dan A. M. Brufsky, "Randomized Controlled Trial of the Breast Cancer Recovery Program for Women With Breast Cancer-Related Lymphoedema," *Am J Occup Ther*, vol. 64, no. 1, hlm. 59-72, 2020.
[9] C. Ozaslan dan B. Kuru, "Lymphedema After Treatment of Breast Cancer," *Am J Surg*, vol. 187, no. 1, hlm. 69-72, 2024.
[10] B. Smoot *dkk.*, "Upper Extremity Impairments in Women With or Without Lymphoedema Following Breast Cancer Treatment," *J Cancer Surviv*, vol. 4, no. 2, hlm. 167-178, 2020.
[11] J. Ferlay *dkk.*, "Cancer Incidence and Mortality Worldwide: Sources, Methods and Major Patterns in GLOBOCAN 2012," *Int J Cancer*, vol. 136, no. 5, hlm. 359-386, 2025.
[12] N. Alwan, "Breast Cancer: Demographic Characteristics and Clinico-Pathological Presentation of Patients in Iraq," *East Mediterr Health J*, vol. 16, no. 11, hlm. 1073-1078, 2020.
[13] K. Larouche dan M. F. Witty, "Treatment of Cancer-Related Secondary Lymphedema," *INESSS Savoir Prend Forme*, vol. 7, no. 3, hlm. 14-17, Apr 2021.
[14] S. F. Shaitelman *dkk.*, "Recent Progress in the Treatment and Prevention of Cancer-Related Lymphedema," *CA Cancer J Clin*, vol. 65, no. 1, hlm. 55-81, 2022.
[15] M. K. Jang, S. Oh, dan J. Kim, "The Influence of Arm Swelling Duration on Shoulder Pathology in Breast Cancer Patients With Lymphedema," *PLoS One*, vol. 10, no. 11, hlm. 1-7, 2025.