ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25dec114

A Pilot Study to Assess the Quality of Life Among Patients with Breast Cancer Undergoing Surgery and Chemotherapy Treatment at a Tertiary Care Hospital, Thrissur, India

Moly Thomas[1]; Dr. Rajee Reghunath[2]; Lakshmi G.[3]

[1]Associate Professor; Department of Medical Surgical Nursing,
Amala College of Nursing,
Thrissur, Kerala, India

[2] Prof., Principal, Department of Community Health Nursing,
Amala College of Nursing,
Thrissur, Kerala, India

[3]Prof., Department of Medical Surgical Nursing,
Amala College of Nursing,
Thrissur, Kerala, India

Corresponding Author: Moly Thomas[1]

Publication Date: 2025/12/08

Abstract: Cancer leads to various health-related hazards to patients, profoundly affecting their quality of life. Breast cancer is the most common cause of death for women around the world. The diagnosis and treatment of breast cancer may negatively affect the quality of life of women. This descriptive analytical study is aimed to assess the quality of life in women with breast cancer who were treated with surgery and chemotherapy.

- ***Objectives***

The study is aimed to assess the quality of life among breast cancer patients undergoing chemotherapy and surgical treatment.

- ***Methods***

This descriptive analytical cross sectional study enrolled 45 breast cancer patients who underwent chemotherapy and surgical procedures, specifically breast-conserving surgery or modified radical mastectomy, between October 17, 2023, and February 27, 2024.The structured questionnaire gathered clinical and socio demographic information. The Shapiro test assessed the normality of the data. EORTC QLQC30 and EORTC QLQBR-23 were used to assess the quality of life in breast cancer patients.

- ***Results***

Patients with breast cancer maintain good functional status, with the exception of cognitive functioning. Additionally, it highlights that these patients are experiencing fatigue, insomnia, appetite loss, constipation, and financial difficulties. Spearman's correlation is performed to check the relationship of QoL with other domains of the scale and it is revealed that domains such as Physical functioning and fatigue are significantly associated with QoL. Independent sample t test, U test and Kruskal Wallis test are applied to check the demographic and clinical variables associated with QoL domain based on normality assumptions. Variables 'support from children' and 'total number of support' were found to be significantly associated with QoL scale. Patients with breast cancer receiving chemotherapy and surgical treatment have good functional status, body image, and future perspectives. However, it also reveals that they are experiencing arm symptoms, particularly difficulty in raising their arms.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25dec114

***Keywords**: Breast Cancer, Quality of Life, Chemotherapy, Mastectomy, Breast Conservation Surgery*.

How to Cite: Moly Thomas; Dr. Rajee Reghunath; Lakshmi G. (2025) A Pilot Study to Assess the Quality of Life Among Patients with Breast Cancer Undergoing Surgery and Chemotherapy Treatment at a Tertiary Care Hospital, Thrissur, India. *International Journal of Innovative Science and Research Technology*, 10(12), 77-83. https://doi.org/10.38124/ijisrt/25dec114

I. INTRODUCTION

The National Cancer Registry Programme says that there will be 14,61,427 new cancer cases in India in 2022. Lung cancer in men and breast cancer in women were found to be the most common types of cancer. In India, breast cancer is the most common cancer among women, making up 28.2% of all female cancer cases. [1] By 2040, the number of people who die from breast cancer in Southeast Asia is expected to rise to 61.7%. [2] The number of new cases of female breast cancer that are age-standardized has risen by 40.7% from 1990 to 2016. Over the past 26 years, this trend has been seen in every state in India.[3]

Breast conservation surgery has become a widely recognized alternative to modified radical mastectomy. [4, 5, 6] Multidisciplinary management has enhanced the survival outcomes of breast cancer patients across all stages. Early diagnosis and multimodal treatment have increased the likelihood that individuals will maintain good health over an extended period. Surgical treatment for breast cancer can alter a woman's perception of her physique and self-identity. Indian women differ from Western women in terms of ethnicity, social standing, cultural practices, and economic status. Limited data is available concerning treatment options for Indian women, whose preferences regarding cosmetic outcomes or other considerations may differ from those observed in Western settings. The present data are inconsistent, with numerous studies suggesting a diminished quality of life associated with breast conservation surgeries in India. [4, 7, 8] A comprehensive review indicates differences in quality of life associated with the type of surgery among Asian patients.[9] For women diagnosed with breast cancer, undergoing a mastectomy may adversely affect their sense of femininity, potentially impacting their body image.[10] Chemotherapy may lead to various physical issues, such as hair loss, fatigue, decreased energy levels, pain, nausea, vomiting, and fluctuations in weight. A woman's breasts serve as a physical manifestation of her pride and identity, encompassing aspects such as her sexuality, motherhood, self-image, and self-esteem. Any injury inflicted upon her breast threatens her womanhood. [11]]

The impact of cancer results in overall decline in quality of life. Quality of life should be assessed, regularly monitored and treated promptly at all stages of disease, to optimise patient clinical outcomes. Health care professionals should be more aware about how to assess quality of life in order to meet their needs following acute treatment. As quality of life is most affected in women undergoing breast surgery and receiving chemotherapy, this study was prompted to assess the quality of life among patients with breast cancer undergoing breast surgery and chemotherapy treatment.

➢ *Objectives*

- Assess the quality of life among patients with breast cancer undergoing breast conservation surgery and modified radical mastectomy
- Find the correlation between Quality of life and its functional & symptom domains.
- Find the association of quality of life with selected socio demographic and disease related variables

➢ *Hypotheses*

- H1- There will be significant correlation between quality of life and its functional & symptom domains
- H2- There will be significant association between quality of life with selected socio demographic and disease related variables

II. MATERIALS & METHODS

This descriptive analytical study performed in the oncology units of a tertiary hospital, Thrissur, Kerala, India. This study was performed subsequent to approval from the Institutional Review Board and Ethics Committee of our institution. The duration of the study was from 17/10/23 to 27/2/24. Women with pathologically proven breast carcinoma undergone MRM or BCS and received minimum 4 cycles of chemotherapy were recruited for the study according to the inclusion criteria. The primary objective of the study was to assess the quality of life among patients with breast cancer undergone breast conservation surgery and modified radical mastectomy. A total of 45 patients were enrolled in the study. Written Informed consent was obtained from selected breast cancer patients who had undergone breast surgery and received a minimum of four cycles of chemotherapy. This was done following a detailed explanation of the study's aim, procedure, and the participants' role.

The investigator collected the baseline data with the help of a structured questionnaire and the clinical data collected by the researcher using medical records and interview techniques. Everyone who took part filled out the Quality of Life Questionnaire (EORTC QLQ-C30) and the QLQ-BR23.Data analysis was conducted by using SPSS software, Version 23, and R software, with scoring performed according to the scoring manual. Frequencies and their related percentages used to summarize categorical variables. Because the data didn't follow a normal distribution, the continuous variables were described in terms of their median and interquartile range.

➢ *Statistical Analysis*

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25dec114

Frequency and percentage used to summarize all the categorical variables. Median and IQR [Q1, Q3] used to summarize quantitative variables because the data doesn't follow normality assumptions.U test, t test and Kruskal-Wallis test were conducted to examine the association of QoL with demographic and disease related variables, considering the nature of the variables and their normality. Spearman's correlation is performed to check the relationship of QoL with functional and symptom domains of the scale. P value < 0.05 is considered as statistically significant and the entire analysis is performed using SPSS 23 and R software.

III. RESULT

Table 1 Frequency and Percentage Distribution of Patients with Breast Cancer According to Selected Socio Demographic and Disease Related Variables

Sl. No	Variables	Categories	Frequency	Percentage
1	**Age in years**	18-30	2	4.44
		31-43	4	8.89
		44-56	17	37.78
		57-70	22	48.89
2	**Education**	Professional	5	11.11
		Graduate	8	17.78
		Intermediate/ diploma	11	24.44
		High school	14	31.11
		Middle school	3	6.67
		Primary education	4	8.89
3	**Occupation**	House wife	28	62.22
		Govt. job	2	4.44
		Private job	14	31.11
		Retired	1	2.22
4	**Duration of disease**	> 6months	29	64.44%
		< 6months	16	35.56%
5	**Stages of cancer**	Stage 1	7	15.56%
		Stage 2	23	51.11%
		Stage 3	15	33.33%
6	**Type of breast surgery**	MRM	37	82.22%
		BCS	8	17.78%
7	**BMI**	<25	22	48.89%
		25-30	17	37.78%
		>30	6	13.33%
8	**Type of Support**			
	Economical support	yes	42	93.33
		No	3	6.67
	Emotional support	Yes	22	48.89
		No	23	51.11
	Physical support	Yes	28	62.22
		No	17	37.78
	Spiritual support	Yes	8	17.78
		No	37	82.22
9	**Total number of support**			
		One	6	13.33
		Two	26	57.78
		Three	10	22.22
		Four	3	6.67
10	**Type of Supporting Members**			
	Spouse	Yes	30	66.67
		No	15	33.33
	Children	Yes	23	51.11
		No	22	48.89
	Friends	Yes	1	2.22
		No	44	97.78
	Relatives	Yes	5	11.11
		No	40	88.89

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25dec114

Table 1 shows that majority of breast cancer patients (48.89%) were between the ages of 57 and 70, that most of them had finished high school education (31.11%), and that most of them were housewives (62.22%). A larger percentage (64.44%) had been diagnosed for more than six months, and more than half (51.11%) were in Stage II of breast cancer. Most patients (82.22%) had modified radical mastectomy, and over half (48.89%) had a BMI of less than 25. Economic assistance was good (93.33%), while emotional (48.89%) and spiritual (17.78%) help were scarce. More over half (57.78%) got two kinds of help, mostly from spouses (66.67%) and children (51.11%).

Different domains of scales are summarized as mean and SD for normally distributed and median and IQR for not normal data. Details are given below.

Table 2: Assess the Quality of Life Among Patients with Breast Cancer After Surgical and Chemotherapy Treatment According to EORTC QLQ C30.

Domains of Scales	Score	Mini- Mum	Maxi-Mum	Median	Q1	Q3
QoL (QoL 30)	Global Health Status	0.00	83.33	50.00	33.33	50.00
Functional scales (QoL 30)	Physical functioning	33.33	93.33	73.33	60.00	86.67
	Role functioning	33.33	100.00	66.67	50.00	66.67
	Emotional functioning	0.00	100.00	Mean = 61.66; SD=22.92		
	Cognitive functioning	0.00	50.00	16.67	0.00	33.33
	Social functioning	0.00	100.00	66.67	50.00	83.33
Symptom scales / items (EORTC QLQ C30)	Fatigue	11.11	100.00	55.56	33.33	66.67
	Nausea and vomiting	0.00	83.33	16.67	0.00	50.00
	Pain	0.00	66.67	16.67	0.00	33.33
	Dyspnea	0.00	66.67	0.00	0.00	0.00
	Insomnia	0.00	100.00	33.33	0.00	66.67
	Appetite loss	0.00	100.00	33.33	0.00	66.67
	Constipation	0.00	100.00	33.33	0.00	66.67
	Diarrhea	0.00	100.00	0.00	0.00	33.33
	Financial difficulties	0.00	100.00	66.67	33.33	66.67

Table 2 reveals that patients with breast cancer have moderate quality of life and maintain good functional status, with the exception of cognitive functioning. Additionally, it highlights that these patients are experiencing fatigue, insomnia, appetite loss, constipation, and financial difficulties.

Table 3: Assess the Quality of Life Among Patients with Breast Cancer After Surgical and Chemotherapy Treatment According to EORTC QLQ BR 23

Domains of scales	Score	Mini-Mum	Maxi-Mum	Median	Q1	Q3
Symptom scales / items (QLQ-BR23)	Systemic therapy side effects	4.76	71.43	47.62	42.86	57.14
	Upset by Hair loss	.00	100.00	.00	.00	33.33
	Arm Symptoms	11.11	100.00	77.78	66.67	100.00
	Breast symptoms	.00	41.67	8.33	.00	16.67
Functional scales / items (QLQ-BR23)	Body Image	.00	100.00	66.67	58.33	83.33
	Future Perspective	.00	100.00	66.67	33.33	66.67
	Sexual functioning	.00	33.33	16.67	.00	33.33
	Sexual enjoyment	.00	66.67	.00	.00	33.33

Table 3 reveals that patients with breast cancer receiving chemotherapy and surgical treatment have good functional status, body image, and future perspectives. However, it also reveals that they are experiencing arm symptoms, particularly difficulty in raising their arms.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25dec114

Table 4: Correlation Between Quality of Life and its Functional & Symptom Domains

Domains of Qol	Correlation Coefficient	P value
Physical Functioning	0.446	0.002*
Role Functioning	0.163	0.285
Emotional Functioning	0.033	0.832
Cognitive Functioning	-0.259	0.086
Social Functioning	0.14	0.36
Fatigue	-0.382	0.01*
Nausea and vomiting	0.042	0.782
Pain	0	0.998
Dyspnea	-0.039	0.798
Insomnia	-0.273	0.07
Appetite loss	-0.263	0.081
Constipation	-0.269	0.074
Diarrhea	0.077	0.617
Financial difficulties	0.04	0.796
Systemic therapy side effects	0.145	0.343
Upset by hair loss	0.005	0.973
Arm symptoms	0.25	0.097
Breast symptoms	-0.07	0.649
Body image	0.122	0.424
Future perspective	0.015	0.92
Sexual functioning	0.108	0.536
Sexual enjoyment	0	1

Table 4 - Spearman's correlation analysis reveals statistically significant relationships between quality of life and two variables: a positive correlation with the Physical Functioning score ($r = 0.446$, $p = 0.002$) and a negative correlation with the Fatigue score ($r = -0.382$, $p = 0.01$).

Independent sample t test, U test and Kruskal Wallis test are applied to check the demographic and clinical variables associated with QoL based on normality assumptions.

Table 5: Association Between Quality of Life with Selected Socio Demographic and Disease Related Variables

Variables	Test	Statistic	p_value
Age	Kruskal-Wallis	3.561	0.313
Education	Kruskal-Wallis	10.203	0.07
Occupation	Kruskal-Wallis	2.55	0.466
Support from children	Mann-Whitney U test	139	0.008*
Total number of support	Kruskal-Wallis	6.128	0.047*
Duration of disease	Mann-Whitney U test	211.5	0.626
Stage of cancer	Kruskal-Wallis	0.617	0.734
Type of surgery	t test	0.179	0.862
BM1	Kruskal-Wallis	0.906	0.636

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25dec114

The table 5 depicts that a statistically significant association between quality of life and support from children, with a Mann-Whitney U test value of 139 (p = 0.008). Additionally, there is a statistically significant association between quality of life and total number of support, as evidenced by a Kruskal-Wallis test value of 6.128 (p = 0.047).

IV. DISCUSSION

The present study reveals that the patients with breast cancer have moderate quality of life and they maintain good functional status, with the exception of cognitive functioning. Additionally, it highlights that these patients are experiencing fatigue, insomnia, appetite loss, constipation, and financial difficulties. Supporting this study another cross sectional study conducted by safee etal in Iran to assess the Qol among 119 breast cancer patients undergoing chemotherapy by using EORTC QLQ- C30 questionnaire, revealed a mean score of 64.92±11.42 for their global health status, indicating a moderate level of quality of life. The cognitive and social functioning subscales yielded the most favourable functional outcomes and the emotional functioning subscale received the lowest scores. Patients with breast cancer experienced insomnia, fatigue, and pain. Among demographic factors only occupational status (P=0.036) was associated with Global Quality of life and in clinical factors duration of disease (P=0.017) and grade of cancer (P<0.001) associated with global QOL. [12]

This results are consistent with another descriptive-analytical cross-sectional study was undertaken in Iran to identify the factors that influence the quality of life of 166 breast cancer patients undergoing treatment by a convenience sample method. The overall quality of life score was determined to be moderate (59.1 ± 17.4). The cognitive performance subscale got the greatest average score, 74.9 ± 23.8. In contrast, the emotional performance subscale showed the lowest average, 51.4 ± 21 [13]

A contradictory findings of the above results showed in an another correlational study conducted in Iran in 2024, to examine the relationships between quality of life, sleeplessness, and the attitudes and beliefs of among 468 women receiving chemotherapy by using the QLQ-C30, the Insomnia Severity Index (ISI), and the Cancer Attitude and Belief Questionnaire, showed a high quality of life score (81.46, standard deviation: 21.4) and mild insomnia, as indicated by a score of 10.54 (standard deviation: 5.86). Quality of life showed a statistically significant negative relationship with both insomnia (r=-0.147; p < 0.05) and patients' attitudes and beliefs about cancer (r=-0.653; p < 0.05). [14]

V. CONCLUSION & IMPLICATIONS

The study highlights the moderate quality of life among breast cancer patients and the need for regular assessment of quality of life. It emphasizes the importance of addressing fatigue, insomnia, and financial difficulties to improve patient outcomes. The findings suggest that healthcare professionals should consider socio-demographic factors and support systems when planning care for breast cancer patients.

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