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Original Research Article

Study of quality of life in early breast cancer patients

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Abstract

Background: Breast cancer is the most common malignancy in women worldwide and remains a significant cause of morbidity and mortality. It is a heterogeneous disease with various histopathological and molecular subtypes, resulting in differences in prognosis and treatment response. Early breast cancer (EBC) refers to cancer that is confined to the breast and possibly the nearby lymph nodes, without distant metastasis. The primary goal in the management of EBC is curative treatment while minimizing adverse effects and enhancing quality of life (QoL).

Materials and Methods: A prospective study was conducted using the WHOQOL-BREF instrument, which includes multiple questions to assess quality of life. The study included patients diagnosed with early breast cancer who underwent surgery, received treatment, and were attending follow-up at SGRDIMSR, Amritsar, Punjab. Assessments were carried out at three time points: pre-operatively, post-operatively, and three months after the completion of chemotherapy.

Result: In our study, 67% of participants were from rural areas and 33% from urban settings, reflecting the regional demographics. Although existing literature highlights rural-urban disparities in quality of life (QOL), often attributed to differences in healthcare access and social stigma, our findings revealed no significant variation based on place of residence. Marital status, however, emerged as a key determinant, with 94% of married participants reporting better QOL—consistent with studies that associate marriage with improved survival rates, treatment adherence, and psychological well-being. Religious affiliation and educational level did not show a significant impact on QOL, despite mixed findings in previous research. Notably, QOL improved significantly in the Physical and Social domains following chemotherapy, while a decline was observed in the Psychological domain and the Environmental domain remained largely unchanged. These findings emphasize the multifactorial nature of QOL and the importance of targeted interventions, particularly psychosocial support, tailored to individual patient backgrounds and treatment phases.

Conclusion: The breast cancer study population was predominantly composed of middle-aged, rural, married women with low educational attainment. Following chemotherapy, quality of life showed improvements in the physical and social domains, while the psychological domain declined and the environmental domain remained stable. Marital status had a significant positive influence on both physical and social aspects of quality of life. These findings suggest that care strategies should place greater emphasis on psychological support and social interventions, particularly for rural and less-educated patients.

Keywords: Early breast cancer, Quality of life, Pre-operative, Post-operative, Post-chemotherapy

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1. Introduction

Breast cancer is the most common malignancy among women worldwide and remains a significant cause of morbidity and mortality. It is a heterogeneous disease with diverse histopathological and molecular subtypes, leading to variations in prognosis and treatment response. Early breast cancer (EBC) refers to cancer confined to the breast and possibly the nearby lymph nodes, without evidence of distant metastasis. The primary objective in managing EBC is curative treatment while minimizing adverse effects and enhancing quality of life (QoL).[1]

Quality of life (QoL) is a multidimensional concept that encompasses physical, psychological, social, and functional well-being. In the context of breast cancer, QoL is shaped by factors such as disease progression, treatment modalities, and psychosocial influences.[2] While the prognosis of early breast cancer (EBC) has significantly improved with advances in early detection and treatment, the disease and its management continue to have a profound impact on patients' physical, emotional, and social well-being. As a result, QoL has become a vital component of comprehensive breast cancer care, especially in ensuring long-term survivorship and overall patient satisfaction.[3]

Breast cancer has overtaken lung cancer as the most commonly diagnosed cancer globally, accounting for 11.7% of all new cancer cases.[4] The highest incidence rates are

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observed in North America, Western Europe, and Australia, while lower rates are reported in sub-Saharan Africa. Despite global advances, survival rates vary considerably depending on access to healthcare. In high-income countries, the five-year survival rate exceeds 85%, largely due to early detection and effective treatment. In contrast, low- and middle-income countries experience significantly lower survival rates, primarily due to delayed diagnosis and limited access to appropriate therapies.[5]

Breast cancer is the most frequently diagnosed cancer among women worldwide, with an estimated 2.3 million new cases and nearly 685,000 deaths reported in 2020.[6] It poses a significant public health challenge, with incidence rates rising in both developed and developing nations. Survival outcomes, however, differ markedly across regions. High-income countries report higher survival rates, largely attributed to early detection, widespread screening programs, and access to advanced treatment modalities. In contrast, lower survival rates in resource-limited settings are often due to late-stage diagnosis and inadequate healthcare infrastructure.[7]

Early breast cancer is diagnosed through a combination of clinical examination, imaging modalities—such as mammography, ultrasound, and magnetic resonance imaging (MRI)—and histopathological evaluation via biopsy. Molecular classification, including the assessment of hormone receptor status (estrogen receptor [ER] and progesterone receptor [PR]) and HER2 expression, plays a pivotal role in guiding individualized treatment strategies.[8]

2. Materials and Methods

2.1. Study design

A prospective study based on multiple questions using WHOQOL-BREF instrument among patient diagnosed with early breast cancer reporting to Sri Guru Ram Das Institute of Medical Sciences and Research, Vallah, Sri Amritsar in Punjab.

The study population consists of women who had been diagnosed with early breast cancer, who are operated, managed and attending follow up at Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar, Punjab. The study will be conducted pre-operatively, post-operatively and at 3 months post chemotherapy.

2.2. Duration of study

^{1}ST August 2023 to 28th February 2025.

2.3. Sample size

100 Women diagnosed with locally advanced early breast cancer.

2.4. Inclusion criteria

Women diagnosed with early breast cancer, who underwent MRM and chemotherapy.

2.5. Exclusion criteria

1. Breast cancer patients who do not give consent.
2. Breast cancer patients undergoing neoadjuvant chemotherapy.
3. Breast cancer patients who are not mentally sound.
4. Breast cancer patients with no radiotherapy.

3. Questionnaire and Assessment

To protect participant’s confidentiality, the survey was completely anonymous. This survey included a validated quality of life (QOL) measurement instrument: The WHOQOL-BREF (World Health Organization Quality of Life Assessment Instrument- BREF) Spanish version. This QOL measurement is a short version of a generic World Health Organization Quality Of Life assessment instrument (WHOQOL-100). The WHOQOL-BREF is a self-administered survey that has been developed with a trans-cultural focus on quality of life as perceived by the person. In Indian set up of culture, society and integrity; studies provides evidences that revised WHOQOL-BREF is a reliable and valid instrument and can be used in Indian adolescents.[21]

The survey in this study contained a total of 26 questions from WHOQOL-BREF which provides a fast profile of 4 areas (domains). From those 26 questions, 2 questions were related to general health and overall quality of life; and the following 24 questions provided a broad and comprehensive assessment of the quality of life of a patient.

4. Results

Table 1:

Area	No. of cases	% age
Urban	33	33.0
Rural	67	67.0
Total	100	100.0

In the present study, the majority of early breast cancer patients (67%) were from rural areas, while 33% belonged to urban areas, indicating a higher representation of rural women in the study population.

Table 2:

Religion	**No. of cases**	**% age**
Hindu	28	28.0
Sikh	58	58.0
Christian	9	9.0
Muslim	2	2.0
Others	3	3.0
Total	100	100.0

In this study on quality of life in early breast cancer patients, the majority were Sikh (58%), followed by Hindus (28%), Christians (9%), Muslims (2%), and others (3%), reflecting the religious composition of the study group.

Table 3:

Marital status	**No. of cases**	**%age**
Unmarried	6	6.0
Married	94	94.0
Total	100	100.0

In the present study, most early breast cancer patients were married (94%), while only 6% were unmarried, indicating a predominantly married study population.

Table 4:

Education	**QOL Domain**							
	Physical		**Psychological**		**Social**		**Environment**	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Illiterate	69.24	18.17	13.64	9.69	49.05	22.17	24.93	5.89
Primary	63.45	25.37	16.81	8.92	45.56	26.69	24.69	7.03
Secondary	53.42	25.94	17.21	8.46	37.68	18.78	27.99	8.51
Graduate	54.76	22.96	13.89	4.81	58.33	30.05	33.34	7.87
p-value	0.054		0.346		0.212		0.071	

Table 5:

QOL Domain	**Preoperative**		**Postoperative**		**At 3 months (Post chemotherapy)**		**f-value**	**p-value**
	Mean	SD	Mean	SD	Mean	SD		
Physical	19.89	7.50	47.86	16.16	68.21	15.04	324.99	0.001
Psychological	23.33	8.74	20.75	11.00	15.50	9.62	16.478	0.001
Social	25.92	11.54	27.83	14.27	45.25	23.76	37.920	0.001
Environment	26.38	6.21	26.28	7.41	25.78	6.79	0.219	0.803

Table 6:

Age	**QOL Domain**							
	Physical		**Psychological**		**Social**		**Environment**	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
20-40	54.43	26.77	18.25	6.90	42.53	21.97	27.70	6.12
41-60	65.14	22.31	14.88	10.17	45.24	22.78	24.33	7.73
61-80	70.68	17.05	12.67	9.48	51.04	23.09	25.91	6.86
>80	66.43	21.22	16.67	6.59	41.67	37.73	26.88	7.20
p-value	0.067		0.158		0.587		0.266	

Table 7:

Residence	**QOL Domain**							
	Physical		**Psychological**		**Social**		**Environment**	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Urban	64.39	22.53	15.40	10.70	45.20	21.25	25.48	7.38
Rural	62.95	23.50	15.42	8.33	45.90	24.42	25.98	7.01
p-value	0.771		0.992		0.890		0.739	

Table 8:

Religion	QOL Domain							
	Physical		Psychological		Social		Environment	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Hindu	67.35	23.54	15.03	9.24	43.15	21.16	24.78	6.30
Sikh	62.25	22.49	16.31	9.79	46.84	24.37	26.62	7.15
Christian	59.13	25.45	12.50	5.10	49.07	25.84	25.00	4.94
Muslim	75.00	10.10	12.50	0.00	37.50	17.68	20.32	6.63
Others	54.76	35.23	12.50	7.22	41.67	28.87	26.04	17.77
p-value	0.708		0.737		0.914		0.624	

At 3 months post-chemotherapy, quality of life (QOL) domains were analyzed across different educational levels. In the physical domain, mean scores ranged from 53.42 (SD = 25.94) in the secondary education group to 69.24 (SD = 18.17) in the illiterate group, with a p-value of 0.054, showing a marginally significant difference. In the psychological domain, scores ranged from 13.64 (SD = 9.69) in the illiterate group to 16.81 (SD = 8.92) in the primary education group, with a p-value of 0.346, indicating no significant difference. For the social domain, mean scores ranged from 37.68 (SD = 18.78) in the secondary education group to 58.33 (SD = 30.05) in the graduate group, with a p-value of 0.212, suggesting no significant variation. In the environmental domain, mean scores ranged from 24.69 (SD = 7.03) in the primary education group to 33.34 (SD = 7.87) in the graduate group, with a p-value of 0.071, indicating no significant difference across educational levels.

The analysis of quality of life (QOL) domains at preoperative, postoperative, and 3 months post-chemotherapy time points revealed significant changes in most domains. In the physical domain, the mean score showed a substantial increase from 19.89 (SD = 7.50) preoperatively to 47.86 (SD = 16.16) postoperatively, and further to 68.21 (SD = 15.04) at 3 months, with an F-value of 324.99 and a p-value of 0.001, indicating a significant improvement over time. The psychological domain saw a decline, with scores decreasing from 23.33 (SD = 8.74) preoperatively to 20.75 (SD = 11.00) postoperatively, and further to 15.50 (SD = 9.62) at 3 months (F-value = 16.478, p = 0.001). In the social domain, the mean score increased from 25.92 (SD = 11.54) preoperatively to 27.83 (SD = 14.27) postoperatively, and significantly to 45.25 (SD = 23.76) at 3 months (F-value = 37.920, p = 0.001). However, the environmental domain showed minimal change, with mean scores of 26.38 (SD = 6.21) preoperatively, 26.28 (SD = 7.41) postoperatively, and 25.78 (SD = 6.79) at 3 months (F-value = 0.219, p = 0.803), indicating no significant difference over time.

The quality of life (QOL) domains at 3 months post-chemotherapy were analyzed across different age groups. In the physical domain, mean scores ranged from 54.43 (SD = 26.77) in the 20–40 age group to 70.68 (SD = 17.05) in the 61–80 age group, with a p-value of 0.067, indicating no significant difference between age groups. For the psychological domain, mean scores ranged from 18.25 (SD = 6.90) in the 20–40 age group to 12.67 (SD = 9.48) in the 61–80 age group, with a p-value of 0.158, suggesting no significant difference across age groups. In the social domain, mean scores ranged from 42.53 (SD = 21.97) in the 20–40 age group to 51.04 (SD = 23.09) in the 61–80 age group, with a p-value of 0.587, indicating no significant difference. Lastly, in the environmental domain, mean scores ranged from 24.33 (SD = 7.73) in the 41–60 age group to 26.88 (SD = 7.20) in the >80 age group, with a p-value of 0.266, showing no significant variation across age groups.

The quality of life (QOL) domains at 3 months post-chemotherapy were compared between urban and rural residents. In the physical domain, the mean scores were 64.39 (SD = 22.53) for urban residents and 62.95 (SD = 23.50) for rural residents, with a p-value of 0.771, indicating no significant difference between the two groups. For the psychological domain, the mean scores were 15.40 (SD = 10.70) for urban residents and 15.42 (SD = 8.33) for rural residents, with a p-value of 0.992, showing no significant difference. In the social domain, the mean scores were 45.20 (SD = 21.25) for urban residents and 45.90 (SD = 24.42) for rural residents, with a p-value of 0.890, indicating no significant variation between the two groups. Finally, in the environmental domain, the mean scores were 25.48 (SD = 7.38) for urban residents and 25.98 (SD = 7.01) for rural residents, with a p-value of 0.739, suggesting no significant difference in environmental quality of life based on residence.

The quality of life (QOL) domains at 3 months post-chemotherapy were compared across different religious groups. In the physical domain, the mean scores ranged from 54.76 (SD = 35.23) in the "Others" group to 75.00 (SD = 10.10) in the Muslim group, with a p-value of 0.708, indicating no significant difference between religious groups. For the psychological domain, mean scores ranged from 12.50 (SD = 5.10) in the Christian group to 16.31 (SD = 9.79) in the Sikh group, with a p-value of 0.737, showing no significant difference. In the social domain, the mean scores ranged from 37.50 (SD = 17.68) in the Muslim group to 49.07 (SD = 25.84) in the Christian group, with a p-value of 0.914, suggesting no significant variation across religious groups. Finally, in the environmental domain, the mean scores ranged from 20.32 (SD = 6.63) in the Muslim group to 26.62 (SD = 7.15) in the Sikh group, with a p-value of 0.624, indicating no significant difference in environmental quality of life between religious groups.

5. Discussion

In our study, 33% of patients were from urban areas and 67% from rural regions, reflecting the broader demographic distribution in India. Previous research from central rural India reported that younger age, lower education levels, and unmarried status were associated with poorer quality of life (QoL) among breast cancer patients (Gangane N et al.[9], 2017), while higher income and greater self-efficacy were linked to improved QoL (Cahir C et al. , 2017). However, findings across studies are not always consistent. For instance, a study from Ireland found that rural breast cancer survivors reported better emotional well-being and overall QoL, possibly due to stronger community support systems. These variations highlight the importance of considering local socio-cultural and economic contexts when assessing and addressing QoL in breast cancer care.

In our study, the religious composition of participants—28% Hindu, 58% Sikh, 9% Christian, 2% Muslim, and 3% other—reflects the demographic distribution of Punjab, where Sikhs are the majority. Research on the impact of religion on quality of life (QoL) in breast cancer patients remains limited. A study in rural India found that non-Hindu patients reported better physical and psychological QoL, while Hindu patients reported stronger social relationships (Gangane N et al.[9] 2017). In contrast, Gupta H et al.[10] (2022) found no significant differences in QoL among Hindu, Muslim, and Sikh patients. These mixed findings suggest that while religious affiliation may influence QoL, factors such as age, education, and social support are likely more critical in determining overall well-being.

In our study, 94% of participants are married, while 6% are unmarried. Research consistently indicates that marital status has a significant impact on breast cancer outcomes, with married individuals often experiencing better survival rates. A systematic review by Zhu S and Lei C [11] (2023) found that marriage is associated with improved overall and cancer-specific survival. In contrast, unmarried individuals, particularly those who are divorced or separated, tend to have worse outcomes (Krajc K et al.[12], 2023). Unmarried women also face a higher risk of late-stage diagnosis and increased mortality, with studies showing a 25% greater risk of late-stage diagnosis and a 19% higher mortality rate compared to married women (Aneja S[13] Martínez ME et al.[14] 2017). Additionally, marriage is linked to better adherence to treatment and improved physical and mental health-related QoL, with mental health benefits often persisting beyond one year post-treatment. Given that most participants in our study are married, these findings underscore the importance of spousal support in enhancing treatment adherence and overall well-being. However, individual experiences may vary, and factors such as marital quality, social support, and personal coping mechanisms also play crucial roles in shaping health outcomes and QoL in breast cancer patients.

In our study, we assessed the Quality of Life (QoL) across different educational levels in breast cancer patients three months post-chemotherapy. We found no statistically significant differences in the Physical (p=0.054), Psychological (p=0.346), Social (p=0.212), and Environmental (p=0.071) domains. These results suggest that educational attainment did not significantly influence QoL outcomes within our sample during this period. The existing literature on the impact of education on QoL in breast cancer patients presents mixed findings. A systematic review found that eight out of nine studies reported a positive association between higher education and improved health-related QoL, suggesting that education may enhance well-being. However, one study within the review indicated that patients with primary education or less had better QoL than those with higher education, highlighting the complexity of this relationship (Martínez-Miranda P[15], 2021; Ngo NT,16 2023). Furthermore, research has shown that patient education interventions can significantly improve QoL, particularly in emotional well-being and fatigue management (Shahraki N et al.[17] 2019). The lack of significant differences in our study may be attributed to factors such as sample size, cultural influences, or the nature of educational resources provided. These findings underscore the need for further research to optimize educational interventions and enhance QoL across diverse breast cancer patient populations.

Our study evaluated Quality of Life (QoL) across four domains—Physical, Psychological, Social, and Environmental—at three time points: preoperative, postoperative, and three months post-chemotherapy. We observed significant improvements in the Physical (mean increase: 19.89 to 68.21, p = 0.001) and Social (25.92 to 45.25, p = 0.001) domains. However, the Psychological domain declined (23.33 to 15.50, p = 0.001), while the Environmental domain remained stable (26.38 to 25.78, p = 0.803). These trends are consistent with studies that report post-treatment declines in physical and emotional functioning (El Haidari R et al.[18] 2023) and worsened global health post-chemotherapy (Konieczny M et al.[19] 2025). Conversely, some studies highlight improvements in cognitive function despite overall QoL declines postoperatively (Dell'Antônio-Pereira L et al.[20] 2017). These discrepancies emphasize the complex interplay of demographics, treatment regimens, and support systems in shaping QoL outcomes, underlining the need for personalized interventions that address both physical and psychological challenges.

Our study evaluated Quality of Life (QoL) across different age groups three months post-chemotherapy and found no statistically significant differences in the Physical (p = 0.067), Psychological (p = 0.158), Social (p = 0.587), and Environmental (p = 0.266) domains. This contrasts with other studies that report age-related QoL variations in breast cancer patients. For example, Park BW et al.[21] (2011) found lower QoL in women aged 50 years and older, which was influenced more by factors such as education, employment, and activity levels rather than age alone. Similarly, Marschner N et al.[22] (2019) observed greater declines in body image, endocrine symptoms, and fatigue among premenopausal patients over three years post-treatment. The absence of significant age-related differences in our study may be due to factors such as sample size, cultural influences, or the timing of assessments. These findings underscore the need for personalized survivorship care plans that address the diverse physical, psychological, and social needs of breast cancer patients across different age groups.

Our study evaluated Quality of Life (QoL) in breast cancer patients three months post-chemotherapy, comparing urban and rural residents across the Physical, Psychological, Social, and Environmental domains, with no statistically significant differences observed. This contrasts with studies such as Reid-Arndt SA et al. (2010) and Unger-Saldaña K et al.[23] (2023), which reported lower QoL in rural patients, attributed to stigma and limited healthcare access. Additionally, El Battioui F et al.[24] (2023) found that urban patients had better global health status, while some research suggests that rural survivors benefit from stronger community support and more active lifestyles. The lack of significant differences in our study may be influenced by factors such as sample size, regional healthcare access, or cultural context. These findings underscore the importance of developing tailored survivorship care plans that address the unique social and environmental contexts of breast cancer patients in both urban and rural settings.

In our study, we evaluated Quality of Life (QoL) across different religious groups three months post-chemotherapy and found no statistically significant differences in the Physical ($p = 0.708$), Psychological ($p = 0.737$), Social ($p = 0.914$), and Environmental ($p = 0.624$) domains. These results suggest that religious affiliation did not significantly influence QoL outcomes in our sample. However, existing literature suggests that spirituality and religious engagement can have a notable impact on QoL in cancer patients. For instance, Sharif SP et al.[25] (2021) highlighted how spirituality fosters hope, thereby improving QoL among Malay women with breast cancer. Similarly, Balboni TA et al.[26] (2007) reported that spiritual support in advanced cancer patients was linked to better QoL and treatment outcomes. Ursaru M et al.[27] (2014) found that breast cancer patients with higher religiosity experienced better QoL outcomes. These findings emphasize the importance of spiritual engagement rather than mere religious affiliation. The lack of significant differences in our study may be attributed to factors such as sample homogeneity, measurement tools, or cultural influences, underscoring the complexity of how spirituality affects QoL.

6. Conclusion

Demographic Insights: Middle-aged, rural, and married women are predominant in this early breast cancer study population, with a significant proportion having low educational attainment.

Quality of Life Changes: Quality of life improved in the physical and social domains post-chemotherapy, while the psychological domain showed a decline, and the environmental domain showed minimal change.

Factors Affecting QOL: Marital status had a significant impact on the physical and social aspects of quality of life, while age, religion, residence, and education level did not significantly affect QOL post-chemotherapy.

Implications for Care: Interventions targeting psychological well-being and social support may be particularly beneficial for early breast cancer patients, especially those in rural areas or with lower educational levels.

7. Conflict of Interest

None.

8. Source of Interest

None.

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