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Quality of life and social support in breast cancer patient undergoing radiotherapy in Viet Nam

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ABSTRACT

Objectives: *This study aimed to evaluate QoL across clinical stages and surgical methods, and to examine changes in QoL over the treatment trajectory.* ***Methods:*** *A observational study was conducted on 200 breast cancer patients undergoing radiotherapy at two oncology hospital Ho Chi Minh City, Viet Nam. Data on demographics, clinical stage, and treatment modalities were collected. QoL was assessed at three time points (baseline, during treatment, post-treatment) using the ECORTC QLQ-C30.* ***Results:*** *QoL by surgical method showed no significant long-term differences: post-treatment scores were 70.1 (mastectomy), 72.0 (reconstructive), and 69.4 (breast-conserving).In QoL classification, the proportion of patients with high QoL increased from 24.5% at baseline to 45.5% post-treatment, while very low QoL decreased from 3.0% to 1.5%.* ***Conclusion:*** *Vietnamese breast cancer patients are typically diagnosed at younger ages and advanced stages, with socioeconomic and geographic disparities evident. QoL declines during treatment but improves significantly post-treatment, irrespective of clinical stage or surgical type. Early detection and comprehensive survivorship support are essential for improving both clinical outcomes and QoL.*

Keywords*: Breast cancer; Vietnam; Demographics; Clinical stage; Surgery; Radiotherapy; Quality of life*

INTRODUCTION

Breast cancer is the most commonly diagnosed malignancy among women, with 2.3 million new cases worldwide in 2020, accounting for one in four female cancer diagnoses [1]. Advances in multimodal treatment-including surgery, chemotherapy, and radiotherapy-have improved survival; however, treatment-related toxicities such as fatigue, body image disturbance, and psychological distress continue to compromise health-related quality of life (HRQoL) [2].

Social support has been shown to play a pivotal role in moderating these effects. Leung and colleagues demonstrated that women with stronger social support networks reported better HRQoL longitudinally after breast cancer diagnosis [3]. Similarly, Kroenke et al. showed that social networks and support mechanisms significantly influence QoL outcomes, highlighting the

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importance of family and community ties [4]. In Asian settings, Ban et al. found that fear of progression negatively impacted QoL, but this effect was mitigated when patients received adequate social support [5].

Evidence from low- and middle-income countries suggests that structural and cultural factors can exacerbate challenges in survivorship care. In Vietnam, Tran et al. reported that breast cancer patients experienced reduced QoL, particularly as a result of financial strain, fatigue, and psychological distress, underscoring the urgent need for supportive interventions[6]. Recent studies also highlight that social support enhances resilience and functions as a mediator for improved QoL [7]. Given the increasing burden of breast cancer in Vietnam and the limited focus on psychosocial dimensions of care, this study aimed to assess the quality of life of breast cancer patients undergoing radiotherapy and to examine the role of social support in shaping treatment outcomes.

METHODS

Study design and participants: This was a prospective observational study conducted among breast cancer patients were treated at Ho Chi Minh City Oncology No.1 (Binh Thanh District) and No.2 (Thu Duc City) with radiotherapy.

Inclusion criteria: Patients diagnosed with Stages IIA, IIB, IIIA, or IIIB breast cancer who were undergoing supportive treatment. Participants had to be in a stable stage of the disease, with no recurrence or metastasis to the bones or brain

Exclusion criteria: Patients with uncontrolled mental disorders or acute infections Pregnant or breastfeeding women. Patients were excluded to ensure independent questionnaire completion.

Study period*:* From August 15, 2023 to April 30, 2024.

Setting*:* Eligible participants were breast cancer patients diagnosed and treated at the Ho Chi Minh City Oncology Hospital No. 1 and 2.

Sample size: Calculated using the formula for estimating a single proportion:

$$n = Z^2_{(1-\alpha/2)} \frac{p(1-p)}{d^2}$$

Where: n: Minimum required sample size. α: Probability of type I error. $Z_{(1-\alpha/2}$: value of normal distribution (with 95% confidence, $Z_{(1-\alpha/2)} = 1.96$). p = 0.5 (50%) (desired value. d is the precision or tolerance, choose d = 0.07. The minimum sample size was 196. To increase reliability the research team recruited 200 participants.

Data collection instruments: Research instruments: A structured questionnaire was used to gather data which comprised two parts adapted from standardized and validated instruments.

Part I: Demographic information included age, sex, education, marital status, and employment, used to describe respondents.

Part II: The EORTC QLQ-C30 questionnaire was developed by the EORTC Quality of Life Group, which was formed over 30 years ago. This group comprised experts in the field of quality of life, aiming to create measures of HRQOL (Health-Related Quality of Life) that could be utilized in all cancer clinical trials.

The QLQ-C30 questionnaire is used to assess general health as well as physical, emotional, and social assessment. It contains 30 questions divided into: five functional scales: physical function (5 questions), active role play (2 questions), emotional function (4

questions), cognitive function (2 questions) and social function (2 questions). Three symptoms: fatigue (3 questions), nausea (2 questions) and pain (2 questions) - 6 single questions assessing the intensity of the following symptoms: difficulty breathing, insomnia, anorexia, constipation, diarrhoea, and financial problems. And the last two questions are the overall health assessment. There is a four-degree scale in the answers to the questions in the questionnaire (never 1, sometimes 2, often 3, very often 4). Each item is rated on a four-point Likert scale (1 = "not at all" to 4 = "very much"), except for global health status (1 = "very poor" to 7 = "excellent"). Raw scores were linearly transformed to a 0–100 scale, following the EORTC Scoring Manual.

Validated Vietnamese translations provided by the EORTC were used in this study. Data derived from these instruments were used to constructwhich evaluated QoL according to clinical stage, surgical method, and changes across treatment phases. The scale demonstrated acceptable internal consistency in this study (Cronbach's α=0.84).

To facilitate interpretation, transformed global QoL scores were classified as follows: Very low < 25, Low: 25-50, Average: 50-70, High: 70-85. Very high > 85.

The QoL was assessed at all three times.

First Time: when the patients begin the radiotherapy for the first time.

Second Time: when the patients have finished after 16 times use radiotherapy.

Third Time: After 2 months of treatment

Data analysis: Data were entered, coded, and cleaned using SPSS version 25.0. Descriptive statistics summarized demographic characteristics and Quality-of-life.cComparative tests (ANOVA, t-tests) were conducted to assess differences by stage, surgery, and treatment phase.

Ethics considerations: The research protocol was reviewed and approved by the Ethical Committees of Trinity University in Asia and the Oncology Hospital in Vietnam, ensuring that the study adheres to ethical standards and principles for research involving human subjects. Confidentiality of all participant information is strictly maintained.Dataissecurelystored,accessible only to authorized research personnel, and anonymized for reporting purposes to prevent any potential identification of individual patients. Participation in the study is entirely voluntary, with patients having the right to withdraw at any stage if they feel uncomfortable, without affecting their ongoing treatment or care.

RESULTS

Table 1. Demographic characteristics of breast cancer patients in Vietnam (n = 200)

	Level	Frequency	Percent (%)
Age	21-40	42	21
	41-59	158	79
Occupation	Intellectual labor	46	23
	Manual labor	58	29
	Housewife	83	41,5
	Retired	13	6.5

	Level	Frequency	Percent (%)
Marital Status	Married	149	74.5
	Others	51	25.5
Educational Level	Primary school	52	26.0
	Junior school	61	30.5
	High school	39	19.5
	Vocational	4	2.0
	College and above	44	22.0
Residence	City	36	18
	Countryside	164	82.0
Religion	Buddhism	110	55.0
	Catholism	18	9.0
	No religion	72	36.0
Income	Under 5 millions	118	59.0
	5- 10 millions	59	29.5
	11-20 millions	15	7.5
	Over 20 millions	8	4.0

Most patients were aged 41–59 years (79%), 41.5% were housewwives and 74.5% were married. More than 80% lived in rural areas and 59% had a monthly income under 5 million VND.

Table 2. Clinical characteristics of breast cancer patients in Vietnam (n = 200)

	Level	Frequency	Percent (%)
Clinical Stage	Stage IIA	76	38.0
	Stage IIB	58	29.0
	Stage IIIA	40	20.0
	Stage IIIB	26	13.0
Treatment Method	RT	103	51.5
	CRT	97	48.5
Surgical Method	Mastectomy	169	84.5
	Reconstructive	25	12.5
	Breast-conserving	6	3.0

	Level	Frequency	Percent (%)
Radiotherapy Method	3D	102	51.0
	IMRT	98	49.0
Comorbidities	Diabetes	14	7.0
	Cardiovascular	17	8.5
	Musculoskeletal	27	13.5
	Other diseases	36	18.0
	No Disease	106	53.0

The predominant clinical stage was IIA (38%), followed by IIB (29%). Mastectomy was the most common surgical method (84.5%). Approximately half of patients received radiotherapy (51.5%) and half received chemoradiotherapy (48.5%)

Table 3. Quality-of-life scores by clinical stage among breast cancer patients undergoing radiotherapy in Vietnam (n = 200)

	Clinical stage	N	Mean	SD	SE
1. QoL T1	Stage IIA	76	68.3	18.1	2.07
	Stage IIB	58	64.9	19.5	2.56
	Stage IIIA	40	67.1	18.2	2.88
	Stage IIIB	26	61.2	22.5	4.41
2. QoL T2	Stage IIA	76	61	18.6	2.14
	Stage IIB	58	59.8	21.2	2.78
	Stage IIIA	40	58.8	19.2	3.04
	Stage IIIB	26	59.6	16.9	3.32
3. QoL T3	Stage IIA	76	71.4	13.9	1.59
	Stage IIB	58	69.5	17.4	2.29
	Stage IIIA	40	69.8	19.6	3.1
	Stage IIIB	26	69.6	14.3	2.81

At baseline (QoL T1), patients with stage IIIB had the lowest mean quality-of-life score (61.2 ± 22.5), whereas those in earlier stages (IIA, IIB, IIIA) had higher scores ranging from 64.9 to 68.3. During treatment (QoL T2), QoL scores slightly decreased across all stages, but the differences between groups became less pronounced (ranging from 58.8 to 61.0). After treatment (QoL T3), QoL scores improved in all stages, ranging from 69.5 to 71.4, with no substantial differences observed among clinical stages

Table 4. Quality-of-life scores by surgical method among breast cancer patients undergoing radiotherapy in Vietnam (n = 200)

	Surgical method	N	Mean	SD	SE
1. QoL T1	Mastectomy	169	66.2	19.62	1.51
	Reconstructive	25	65.7	17.89	3.58
	Breast-conserving	6	68.1	8.19	3.34
2. QoL T2	Mastectomy	169	60.3	19.27	1.48
	Reconstructive	25	58	20.48	4.1
	Breast-Conserving	6	59.7	12.27	5.01
3. QoL T3	Mastectomy	169	70.1	16.45	1.27
	Reconstructive	25	72	15.38	3.08
	Breast-Conserving	6	69.4	12.55	5.12

At baseline (QoL T1), the mean quality-of-life scores of patients undergoing mastectomy (66.2 ± 19.6) were similar to those of reconstructive surgery (65.7 ± 17.9) and breast-conserving surgery (68.1 ± 8.2). During treatment (QoL T2), QoL scores declined across all surgical groups, ranging from 58.0 to 60.3, with no substantial differences among them. After treatment (QoL T3), QoL scores improved in all groups, with the highest values observed in the reconstructive group (72.0 ± 15.4), followed by the breast-conserving (69.4 ± 12.6) and mastectomy (70.1 ± 16.5) groups. Overall, differences in QoL by surgical method were not clinically significant.

Table 5. Characteristics of breast cancer patients in Vietnam (n = 200)

QOL classification	QoL 1		QoL2		QoL3	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Very low	6	3.0%	8	4.0%	3	1.5
Low	49	24.5%	80	40%	32	16
Average	74	37%	55	27.5%	63	31.5
High	49	24.5%	44	22%	91	45.5
Very high	22	11%	13	6.5%	11	5.5

The proportion of patients with high QoL increased from 24.5% at baseline to 45.5% post-treatment, while very low QoL declined from 3.0% to 1.5%.

DISCUSSION

The majority of patients in this study were aged 41–59 years (79%), married (74.5%), and housewives (41.5%). Most resided in rural areas (82%) and reported monthly incomes below 5 million VND (59%). These findings are consistent with previous Vietnamese studies showing that women are typically diagnosed at a younger age than their Western counterparts [8, 9].The median age of diagnosis in Vietnam is approximately 50 years, compared with 62 years in the United States [10],and similar to other Asian countries where breast cancer presents 10–15 years earlier [11].

The relatively young age at diagnosis may be attributed to genetic predisposition and lifestyle factors unique to Asian populations. Meanwhile, the predominance of rural and low-income patients highlights barriers in access to screening and timely treatment, as also documented in Vietnamese reports on healthcare disparities [12, 13]. Public health campaigns and subsidized screening programs targeting rural and low-income women are urgently needed to reduce diagnostic delays.

Clinically stage IIA (38%) and IIB (29%) were most common presentations. Mastectomy was the predominant surgical approach (84.5%), while breast-conserving surgery (BCS) accounted for less than 5%. This pattern mirrors earlier studies in Vietnam, where late-stage diagnosis remains common due to limited awareness and poor screening coverage [12, 13]. In contrast, Western countries report higher rates of stage I diagnosis owing to organized mammography programs [10]. Similarly, while BCS is standard for early-stage breast cancer in Europe and North America,mastectomy remains dominant in Vietnam, consistent with hospital-based data [9, 10]. The high rate of mastectomy in our study reflects both late clinical stage and limited radiotherapy access. Cultural beliefs about mastectomy as a more “definitive” treatment may also contribute [13]. Expansion of early detection programs and radiotherapy capacity is essential to promote wider adoption of BCS in Vietnam.

Patients with stage IIIB reported the lowest baseline QoL (61.2), compared with stage IIA (68.3) and IIB (64.9). During treatment, QoL declined across groups (average ~59.6) but improved post-treatment (> 69 across stages). Similar findings were reported in Vietnam, where advanced disease predicted lower functional and emotional scores [15, 16], while international studies from China and Korea confirmed that late-stage disease is associated with poorer QoL outcomes [17, 18]. A systematic review further emphasized that advanced stage is consistently linked to greater psychological distress and functional impairment[19]. The temporary decline during treatment is attributable to radiotherapy-related toxicities, while post-treatment improvement reflects recovery and adaptation. Early supportive care should be integrated into oncology practice, particularly for advanced-stage patients, to reduce QoL deterioration during treatment.

Post-treatment QoL scores were similar across surgical groups: 70.1 (mastectomy), 72.0 (reconstructive), and 69.4 (BCS). Although reconstructive patients reported slightly higher scores, differences were not clinically significant.

This observation is consistent with Vietnamese studies indicating that surgical type is not a strong determinant of long-term QoL [15, 16]. Internationally, Korean and European studies found no major

differences between mastectomy and BCS in the long term [20, 21], though body image and sexual functioning differed temporarily. A systematic review confirmed that reconstructive procedures may improve self-image early but that overall QoL converges across surgery types [22]. Comprehensive survivorship care should focus on body image counseling and psychosocial support for all patients, regardless of surgical method.

Our study documented significant QoL changes during the treatment trajectory. At baseline, 24.5% of patients reported high QoL; this decreased to 22% during treatment, while low QoL increased to 40%. After treatment, high QoL rose to 45.5%, while very low QoL declined to 1.5%. Vietnamese studies confirmed similar trajectories, with QoL declining during treatment and improving afterward [15, 16]. Chinese and Korean cohorts also reported nadirs during active therapy and recovery within 6–12 months [17, 18], and systematic reviews highlighted that although temporary declines are common, most patients regain or surpass baseline QoL levels after treatment [19]. Improvement in QoL following treatment completion can be attributed to the alleviation of radiotherapy-induced side effects, reduced fatigue, and psychosocial adaptation. Nonetheless, persistent issues such as fatigue, insomnia, and sexual dysfunction may continue to affect survivorship outcomes. Therefore, comprehensive survivorship programs should integrate rehabilitation, fatigue management, and psychosocial interventions to sustain QoL recovery and address long-term sequelae. In particular, early supportive care during active treatment could mitigate temporary QoL deterioration and facilitate smoother transitions into survivorship.

STRENGTHS AND LIMITATIONS:

This study was conducted in two major oncology hospitals in Ho Chi Minh City, which may limit the generalizability of the findings to rural or northern populations. The absence of multivariate adjustment restricts the ability to infer causal relationships between clinical and sociodemographic factors and quality of life outcomes. Although the EORTC QLQ-C30 provides a comprehensive measure of multidimensional QoL, it does not specifically capture body image or sexual functioning, which are particularly relevant to breast cancer research. Moreover, self-reported data are inherently prone to recall and social-desirability biases. The study's prospective design and use of a validated instrument enhance the reliability and applicability of the results.

CONCLUSION

In this cohort of 200 Vietnamese breast cancer patients, most were younger, rural, and of low income, with late-stage diagnosis and mastectomy as the predominant surgical approach. QoL declined during radiotherapy but improved post-treatment across all groups. Clinical stage and surgical method did not determine long-term QoL outcomes. These findings highlight the importance of early detection, equitable access to care, and comprehensive survivorship programs to improve both clinical outcomes and patient-reported QoL.

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