Original Research

ASSESSMENT OF THE QUALITY OF LIFE OF BREAST CANCER PATIENTS AFTER ONE YEAR OF TREATMENT

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ABSTRACT

Introduction: *Breast cancer is the most commonly diagnosed malignancy and the leading cause of death among women worldwide. The incidence of breast cancer is on the rise in developing countries. Breast cancer patients not only experience physical pain from treatment but may also face mental crises, impaired social function, and impaired quality of life. However, there are not many studies on the quality of life (QoL) of post - treatment breast cancer patients. Therefore, we carried out the study "assessment the quality of life of breast cancer patients after one year of treatment" with aims to evaluate the quality of life of breast cancer patients after one year of treatment using the scales EQ-5D-5L and QLQ-BR23 and to find out related factors to the quality of life of these subjects.*

Methods: *A cross - sectional study was conducted on 100 breast cancer patients after one year of treatment at the Hue University of Medicine and Pharmacy Hospital to examine the quality of life using the scales EQ-5D-5L and QLQ-BR23 and to detect the associated factors.*

Results: *The mean quality of life score of breast cancer patients after one year of treatment on the EQ-5D-5L scale was 0.6436 ± 0.2098. By QLQ-BR23, the quality of life score on function was 74.75 ± 20.78 while the score on symptoms was 28.80 ± 12.79. The quality of life from both scales was found to be statistically significant related to social work participation, self - reported health, risk of depression, anxiety, and stress.*

Conclusions: *The quality of life of breast cancer patients in the study was at a moderate level. This suggests more supports to be done continuously after long - term post - diagnosing especially psychological and social aspects for these subjects.*

Keywords: *Quality of life, breast cancer, EQ-5D-5L, QLQ-BR23, post-treatment.*

I. INTRODUCTION

Breast cancer is the most common malignancy and is one of the leading causes of death among women in many countries around the world. According to GLOBOCAN 2020, there were nearly 2.3 million new cases of breast cancer worldwide, accounting for 11.7 % of all cancers [1]. In Vietnam, there are more than21,000 new cases per year and it is the fourth cause of death by cancer [2].

Today, medicine has made many advances in the early diagnosis and treatment of breast cancer to help prolong life, but after treatment, patients often face a lot of difficult problems. They not only experience physical pain due to the treatment consequences but also can face mental crises, psychological effects, impaired social functioning, leading to reducedquality of life [3].

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According to the study "Assessment of quality of life of female breast cancer patients treated at Thu Duc District Hospital" by Pham Dinh Hoang using the QLQ-BR23 scale, the quality of life score in functional areas was 56.3 points, the symptom field was 16.7. Thus, the quality of life in patients was not high [4]. Quality of life and its assessment are still relatively new concepts in the treatment and care of breast cancer patients in our country.

Currently, at Hue University of Medicine and Pharmacy Hospital, there have been several studies on breast cancer, but most of them focused on the aspects of treatment effectiveness, survival time, side effects of chemotherapy, etc… without many studies on the quality of life of breast cancer patients after treatment. From the above issues, we carried out the study "Assessment of the quality of life of breast cancer patients after one year of treatment" with aims: To evaluate the quality of life of breast cancer patients after one year of treatment at Hue University of Medicine and Pharmacy Hospital and to identify some correlative factors of the quality of life of breast cancer patients.

II. MATERIALS AND METHODS

2.1. Subjects and methods

A cross - sectional study was conducted on 100 breast cancer patients after more than one year of treatment at the hospital of Hue University of Medicine and Pharmacy byconvenientsampling method. The patients were explained about their disease by their doctor and voluntarily participate in the study.

2.2. Data collection and studytools

Data were collected by direct interview with breast cancer patients based on a set of questions designed with 3 parts:

Part 1: General information about research subjects

Part 2: Quality of life assessment scale EQ-5D-5L and QLQ-BR23

Part 3: Some factors related to the quality of life

Quality of life was assessed using the EQ-5D-5L and QLQ - BR23 scales.

- The EQ-5D-5L toolkit has been standardized and applied in Vietnam with Cronbach's alpha = 0.8. The EQ-5D-5L Toolkit evaluates the quality of life in five dimensions: mobility, self - care, usual activities, pain/discomfort, anxiety/depression, with 5 levels. Degree (1 = no problem to 5 = extreme problem). The compilation of five assessments in 5 different aspects can give the subject's health status [5].

- The QLQ Toolkit - BR23 has been authorized. The Vietnamese version of the questionnaire, the data analysis manual, and the reference data sheet were sent via email by EORTC. The questions are measured in 4 accending levels from 1 = "None" to 4 = "Very much". Converted linearly to a 100 - point scale according to the guidelines of the EORTC quality of life study group [6].

+ Raw score (RS) is the average score of questions with the same problem. RS = (Q1 + Q2 + … + Qn)/n

+ Normalized score is a raw score calculated on a scale of 100:

• Functional scales: Score = (1 - (RS -1)/3) x 100

• Symptom scales: Score = ((RS -1)/3) x 100

• Financial score: Score = ((RS -1)/3) x 100

• Global health status/QoL: Score = ((RS -1)/6) x 100

• Global health status and function problems: The higher the score, the better the function, which indicates good health.

• Symptom and financial problems: The higher the score, the more severe the symptoms, inferring to bad health and financial problems.

The research subjects have fully explained the purpose, confidentiality of the study, the time required to complete a questionnaire, and they voluntarily decided to participate in the study or not. Participants were interviewed directlyfor the data collection.

2.3. Data analysis

Using Epidata 3.1 software for data input and SPSS 20.0 software for data analysis. The results were described by frequency tables, ratios, and linear

regression models to determine some correlative factors.

2.4. Ethical issues

Patients were fully explained and voluntarily participate in the study. They can refuse at any time during the interview. All information was kept confidential, anonymously, and only used for research purposes.

III. RESULTS

3.1. Characteristics of research subjects

One hundred breast cancer patients were in our study group aged from 31 to 80 with a mean age of 52.5 ± 9.82. Their characteristics were demonstrated in table 1 about ethnicity, religion, educational level, occupation, and marital status.

Table 1: Demographic features of the study population

Variable		Frequency (n)	Percentage (%)
Ethnicity	Kinh	96	96
	Others	4	4
Religion	None	46	46
	Buddhism	49	49
	Christian	5	5
Education level	Illiteracy	2	2
	Can read and write	18	18
	Primary school	32	32
	Secondary school	30	30
	High school	11	11
	Post high school	7	7
Phân nhóm BMI	Married	74	74
	Single	2	2
	Separated/Divorced	2	2
	Widow	22	22
GDS - 15	Live alone	6	6
	Live with family	94	94

The subjects were dominantly Kinh people, accounting for 96%. Buddhist was the most common religion with 49%. Non - religious participants accounted for 46%. Patients were mainly at a lower level of education of which 82% were noted below high school level. The rate of widow/single/separated/divorced accounted for 26%. Most of the subjects lived with their families (94%).

3.2. Quality of life by EQ-5D-5L và QLQ-BR23

The mean score of QoL by EQ-5D-5L of breast cancer patients after 1 year of treatment at Hue University of Medicine and Pharmacy Hospital was 0.6436 (standard deviation: 0.2098). The five aspects of the EQ-5D-5L scale were demonstrated in Figure 1 including mobility, self - care, usual activities, pain/discomfort, and anxiety/depression. And the quality of life according to the QLQ-BR23 scale was shown in **Table 2**.

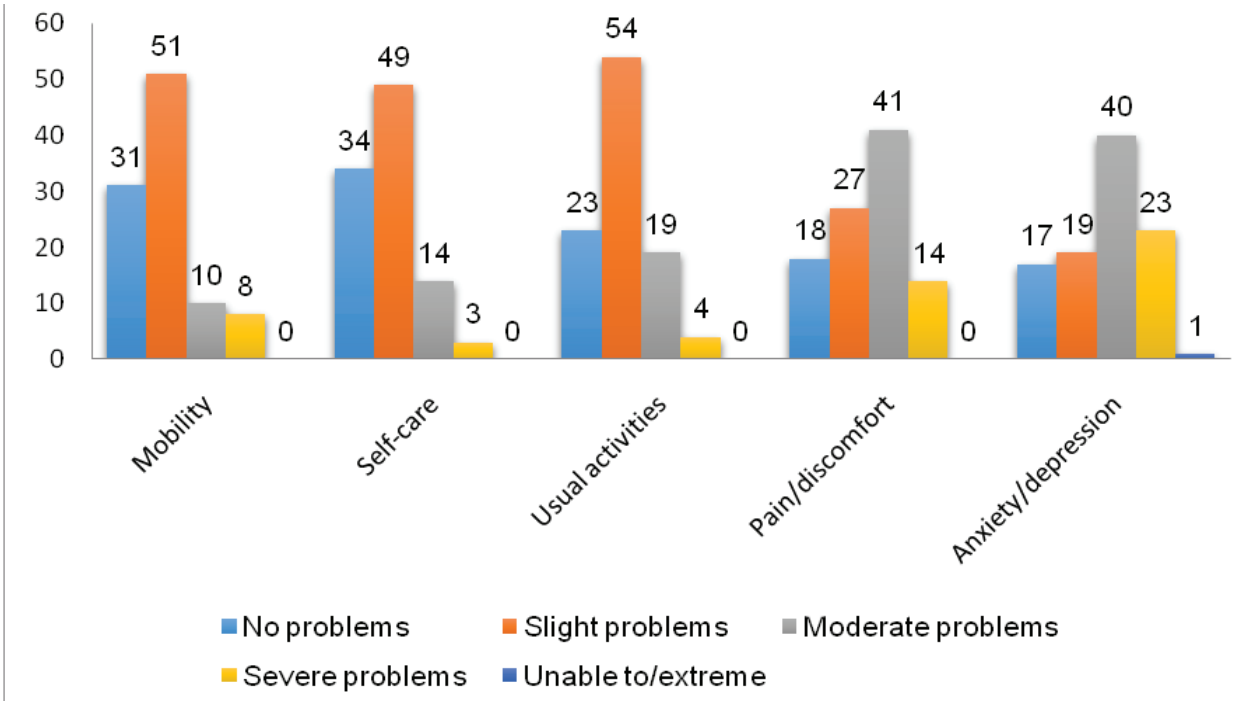

Figure 1: Five aspects of EQ-5D-5L scale of breast cancer patients after 1 year of treatment

In the three aspects of mobility, self - care, and usual activities, less severe levels of difficulty were noted at a high percentage, of which slightly difficulty level was at the highest rate.

In the other 2 aspects of pain/discomfort and anxiety/depression, the moderate problem was reported at the top level with 41% and 40% respectively.

Table 2: Quality of life according to the QLQ-BR23 scale

	Average	SD
Functional scales		
Body image	62.17	21.56
Sexual functioning	31.67	36.51
Sexual enjoyment	30.00	34.97
Future perspective	36.00	34.71
Overall functional score	74.75	20.78
Symptom scales/items		
Systemic therapy side effects	37.38	13.82
Arm symptoms	23.78	21.54
Breast symptoms	15.42	15.56
Overall symptom score	28.80	12.79

The QoL score of functions according to QLQ-BR23 was 74.75 ± 20.78 including the highest score of body image at 62.17. The QoL score on symptoms according to QLQ-BR23 was 28.80 ± 12.79, highest score was found in systemic therapy side effects at 37.38.

The linear regression model was used to analyze the association of QoL by QLQ BR23 & EQ-5D-5L

and several factors. The QoL by QLQ-BR23 and its correlated factors were presented in Tables 3 and 4. The QoL by EQ-5D-5L and its related factors were presented in table 5. Exercising, participation in social activities were common correlated factors to QoL measured by either EQ-5D-5L or QLQ-BR23.

Table 3: Linear regression model between functional score of QoL according to the QLQ BR23 scale and several related factors

Characteristics	Regression coefficient B	95% confidence interval		P
Constant	147.647	119.039	176.256	< 0.001
Marital status (vs married)				
Widow/single/divorce/separated	- 1.200	- 9.743	7.342	0.781
Chronic disease (compared to no disease)				
Yes	- 17.351	- 24.792	- 9.910	< 0.001
Self-assessment of health status (compared to well-being)				
Unwell	- 2.446	- 9.978	5.085	0.520
Exercising (vs doing exercise)				
No	- 11.768	- 20.120	- 3.417	0.006
Participation in social work (vs participation)				
No participation	- 13.720	- 22.104	- 5.336	0.002
Meeting family, relatives, neighbors (vs meeting)				
No	- 1.306	- 8.471	5.859	0.718

Chronic diseases, not exercising, not participating in social work activities were factors that reduce the functional score of QoL

Table 4: Linear regression model between The QoL score on symptoms according to the QLQ BR23 and some related factors

Characteristics	Regression coefficient B	95% confidence interval		P
Constant	- 35.86	- 54.923	- 16.248	< 0.001
Depression (compared to no risk)				
At risk	1.679	- 3.115	6.473	0.488
Anxiety (vs no risk)				
At risk	7.784	3.098	12.470	0.001
Stress (vs no risk)				
At risk	8.920	4,588	13.251	< 0.001
Acute symptoms (vs asymptomatic)				
Symptomatic	1.310	- 2.686	5.305	0.517
Chronic disease (vs no comorbidity)				
Co - morbidity	4.475	0.204	8.746	0.040

Self - assessment of health status (compared to well - being)				
Unwell	4.318	0.208	8.429	0.040
Exercising (vs exercise)				
None	4.608	0.252	8.963	0.038
Participation in social work (vs participation)				
None	4.366	0.037	8.695	0.048
Living situation (compared to living with family)				
Live alone	5.161	- 2.374	12.696	0.177

Patients with co - morbidity, at risk of anxiety, at risk of stress, not exercising, not participating in social work activities, self - assessing their poor health status were factors that increase symptom scores of quality of life.

Table 5: Linear regression model between The QoL score according to the EQ-5D-5L and some related factors

Characteristics	Regression coefficient B	95% confidence interval		P
Constant	1.777	1.331	2.222	< 0.001
Self - assessment of health status (compared to well - being)				
Unwell	- 0.130	- 0.202	- 0.059	< 0.001
Participation in social work (vs participation)				
None	- 0.120	- 0.186	- 0.055	< 0.001
Marital status (vs living with husband)				
Widow/single/divorce/separated	- 0.129	- 0.215	- 0.043	0.004
Depression (compared to the no - risk group)				
At risk	- 0.111	- 0.185	- 0.037	0.004
Living situation (compared to living with family)				
To live alone	- 0.041	- 0.189	0.107	0.584
Stress (compared to the no - risk group)				
At risk	- 0.075	- 0.151	0.001	0.054
Chronic disease (vs no comorbidity)				
Co - morbidity	- 0.051	- 0.126	0.023	0.172
Exercising (versus exercise)				
None	- 0.079	- 0.156	- 0.001	0.047

Not exercising, risk of depression, no participation in social work activities, unwell at self-assess of their health status, widow/single/separated/divorced was associated to the reduction of functional score of quality of life.

IV. DISCUSSION

The quality of life in breast cancer patients after more than one year of treatment at Hue University of Medicine and Pharmacy Hospital was 0.6436, similar to the study by Mathias Lidgren at Karolinska Solna University Hospital (0.696) [7]. According to figure 1, patients were more difficult in two aspects: pain/discomfort (82%), and anxiety/depression (83%). Compared with the Ethiopian QoL study of breast cancer patients using the EQ-5D-5L scale, the two most common problems were also pain/discomfort (54.7%) and anxiety/depression (40.3%) [8]. The similarity in these two issues may be due to physical pain and side effects of the treatment, and their worries about their health. However, there was a difference in the pain/discomfort level between the two studies, specifically, the Vietnamese have a higher level of pain/discomfort. It may come from the difference in disease stage, method of treatment, human characteristics between Asia and Africa, and the different interviewing time during or after the treatment.

For the quality of life according to the QLQ-BR23 scale, the functional score was 74.75 ± 20.78 including body image was 62.17; sexual function was 31.67; sexual enjoyment was 30.00; future perspective was 36.00. Our study results were similar to the author Pham Dinh Hoang in Ho Chi Minh City in 2019 and the study of Selamawit Gebrehiwot Sibhat in 2019 [4]. It may be explained that patients diagnosed with breast cancer suffer from many psychological and physical problems. During the treatment, most patients just want to focus on the treatment and to get recovery quickly, so they don't care so much about other issues such as sex. The sexual health of breast cancer patients is much worse than that of patients without breast cancer [9]. Furthermore, women with breast cancer not only have to deal with the shock of their appearance but also to cope with the fear of being ignored by their partner and losing their femininity. The QoL on symptom score according to QLQ-BR23 was 28.80 ± 12.79: for systemic side effects was 37.38 points, brachial symptoms were 23.78 points, breast symptoms were 15, 42 points. Though cancer treatment is aimed at providing the best possible chance of recovery, the best treatments still induce side effects even long-term ones. Therefore, the problem of persisting symptoms after treatment is unavoidable.

Through linear regression analysis, exercise improves the quality of life of breast cancer patients on the QLQ-BR23 and EQ-5D-5L scales. A study in 2016 by Fatemeh Shobeiri in Iran showed that exercise intervention was positively associated with both functional and symptomatic aspects of quality of life. At the same time, research by Thais R. S. Paulo in Brazil in 2019 also demonstrated the benefits of an exercise program to improve the quality of life of breast cancer patients[10]. In contrast, sedentary behavior was associated with poorer quality of life in breast cancer patients [11]. Physical activity and exercise contribute to reducing the risk of breast cancer progression and recurrence and reducing breast cancer mortality [3]. Our results were consistent with studies and evidence on the effects of exercise on the quality of life of breast cancer patients.

In addition, breast cancer patients who did not participate in social work activities have a lower quality of life than those who did. Patients who self - assessed their health at an unhealthy level have a lower quality of life than those who self - evaluate at the healthy level on the QLQ-BR23 and EQ-5D-5L scales. Research by Doan Vuong Diem Khanh in Hue in 2016 also showed that when participating in social work activities such as going to church, going to pagodas, participating in clubs, unions, and associations, the quality of life on both physical and mental aspects was better than those who did not [12]. Participating in social work activities allows them to exchange, chat and share, which will contribute to reducing stress, anxiety, and sadness about the disease. Therefore, patients who participate in these activities can improve their health leading to higher quality of life scores than those who do not participate. It can be seen that, when the patient feels unwell, not only the physical health causes (from the effects of breast

cancer symptoms and accompanying diseases) but also affects the mental and psychological health of the patient. This makes the patient more worried, thinking more about health and disease. Therefore, affecting the quality of life in a negative direction.

Chronic disease is an important determinant of quality of life. The results of our study also showed that patients with comorbidities have a reduced quality of life score compared to those who did not have comorbidity. According to the results of a study by Daniel Sat-Muñoz in Mexico in 2011, it was found that breast cancer patients with comorbidities were affected by side effects of breast cancer treatment higher than patients without comorbidities [13]. Similarly, Juan Xia's study in China in 2018 also found that the group of patients with chronic diseases had a higher symptom score of quality of life leading to lower QoL [14]. Thus, patients are not only affected by breast cancer but also by their chronic diseases, which degrade the patient's health and at the same time aggravate both QoL on symptoms and functions of breast cancer according to the QLQ-BR23 scale.

Widow/singleness/divorce/separation was negatively associated with aspects of psychological health, social relationships, and quality of life [7]. In contrast, the group of married breast cancer patients living with their husbands was found to have a better quality of life than the group of single/divorced/widowed breast cancer patients. This can be explained by the spiritual and emotional support and the husband's role in life and health care. Therefore, the group of widowed/single/divorced/separated breast cancer patients had a lower quality of life than the group of breast cancer patients living with their husbands.

Additionally, when multivariate linear analysis of quality of life score on the EQ-5D-5L scale found that the group of breast cancer patients at risk of depression had a lower quality of life score than the group without risk depression. On the QLQ-BR23 scale, an association between anxiety, stress, and QoL score on symptoms was found. Breast cancer patients may experience anxiety and depression due to coping with pain, treatment regimens, financial burdens, and disruption to work and life for themselves and their families. Research by Pham Minh Khue in Hai Phong in 2020 found an association between depression and quality of life in lung cancer patients on the same EQ-5D-5L scale [15]. Research by Akel, R in the US in 2017, depression, anxiety, and stress are factors that adversely affect the quality of life of breast cancer patients [16]. Therefore, early detection and intervention of depression, anxiety, and stress can help improve the quality of life for patients.

V. CONCLUSION

The quality of life of breast cancer patients according to the QLQ-BR23 and EQ-5D-5L scales was at an average level. There was a statistically significant correlation between doing exercise, social work participation, self - assessment of health, risk of depression, anxiety, stress, and quality of life of study subjects.

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