The Open Public Health Journal
DOI: 10.2174/0118749445317154240729053442, 2024, 17, e18749445317154
ISSN: 1874-9445

RESEARCH ARTICLE OPEN ACCESS

Determinants of Health-related Quality of Life in Breast Cancer Patients: A Comprehensive Study in Marrakech, Morocco

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Abstract:

Introduction: The assessment of quality of life (QoL) has become crucial for evaluating treatment effectiveness and prognosis in oncology, especially in the case of breast cancer, where patients are at a high risk of experiencing reduced QoL during active treatment. The objective of this study is to assess health-related quality of life and examine the socio-economic and clinical factors influencing it in breast cancer patients in the city of Marrakech, Morocco.

Methods: The study was conducted on 220 breast cancer patients at the Marrakech University Hospital in Morocco. Quality of life was evaluated using the European Organization for Research and Treatment of Cancer (EORTC) QLQ-C30 and the specific Breast Cancer questionnaire (EORTC-QLQ-BR23). Descriptive statistics, correlation analysis between socio-economic and clinical factors with QoL subscales, and linear regression were performed to analyze the data.

Results: The results indicated that the mean score for overall health was 60.4%. Social functioning had the highest score (85.8%), while emotional functioning had the lowest (70.4%). Among the symptom scales, the most concerning were fatigue, loss of appetite, pain, and financial difficulties. For QLQ-BR-23, the future perspective was the most affected domain (25.30%), as well as body image (13.79%). Symptom scale scores ranged from 20.4% to 61.6%, with the most concerning symptom being systemic treatment of side effects. The results showed that age (p= 0.011, β= -0.142), disease duration (p = 0.000, β= 0.624), and monthly income (p = 0.000, B= 0.233) significantly influenced quality of life. Body image was significantly associated with marital status (p= 0.049, β= -0.140) and type of surgery (p = 0.031, β= -0.149). Sexual pleasure was correlated with marital status (p = 0.037, β= 0.191) and radiotherapy treatment (p = 0.021, β= -0.223).

Conclusion: The study revealed that patients have concerns related to financial difficulties while coping with symptoms associated with their illness. Age, disease duration, and monthly income were found to be the factors influencing the quality of life. Furthermore, body image was affected, as was emotional well-being, emphasizing the importance of addressing psychological aspects in their care by healthcare professionals.

Keywords: Quality of life, Breast cancer, EORTC-QLQ-BR23, EORTC-QLQ-C30, Shapiro-Wilk test, Mann-Whitney tests.

Received: April 04, 2024
Revised: June 24, 2024
Accepted: July 05, 2024
Published: August 23, 2024

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Cite as: Belhaj Haddou M, Igarramen T, Khouchani M, Elkhoudri N. Determinants of Health-related Quality of Life in Breast Cancer Patients: A Comprehensive Study in Marrakech, Morocco. Open Public Health J, 2024; 17: e18749445317154. http://dx.doi.org/10.2174/0118749445317154240729053442

1. INTRODUCTION

Breast cancer is the leading cause of death among women worldwide, with 685,000 deaths recorded in 2020. Most of these deaths occur in low- and middle-income countries [1]. Successful management of breast cancer relies on early diagnosis, which must be linked to effective treatment. Treatment usually involves a multimodal protocol combining systemic treatment (chemotherapy, hormone therapy, and targeted therapy) and surgery for operable tumors, sometimes followed by radiotherapy to control disease in the breast, lymph nodes, and surrounding areas [2, 3]. This type of treatment has adverse effects on the patient's state of health, physically, psychologically, and socially [4]. Indeed, it is considered a traumatic experience because of its impact on self-image, linked to surgery, radiotherapy, or chemotherapy complications, such as hair loss, as well as the change in lifestyle and social relationships [5]. In addition, the psychological aspect is influenced by fatigue, depression, and anxiety [6], aggravated by the prolongation of physical symptoms, such as pain, vomiting, risk of infection, and insomnia. Added to this is the fear of cancer recurrence and death [7], impacting the patient's well-being and health-related quality of life [8]. This concept is becoming an essential criterion in oncology care, providing a multidisciplinary perspective that goes beyond the medical and therapeutic aspects and enabling the detection of patients' needs to ensure a better quality of life [9]. The World Health Organization explains “QoL as a subjective evaluation of one's perception of their reality relative to their goals as observed through the lens of their culture and value system”. It is a very vast and broad concept that can be influenced in complex ways by the subject's physical health, psychological state, level of independence, social relationships, and relationships to the essential elements of their environment [8].

Quality of life (QoL) is a concept that aims to capture physical, mental, and spiritual well-being [8]. It is a subjective assessment of a population or individual regarding the positive and negative elements in their overall existence at a specific point in time, different from health-related quality of life, which explores the link between the two [8]. Several studies have attempted to assess it, especially in patients treated for breast cancer, on the one hand, its frequency and its improved prognosis over time, and on the other, the symbolic aspect of the organ affected [10]. The female breast is considered a noble organ, symbolizing beauty, femininity, and sovereignty [11]. However, damage to the breast leads to despair, low self-esteem [12], depression, anxiety, and dissatisfaction with body image [13]. The QoL of breast cancer patients has improved in recent years due to psychosocial interventions and better management of pathology-related symptoms [14]. As a result, improving women's mental and emotional state, as well as patients' acceptance of new health problems, can only be achieved through the assessment of quality of life [15], which must be an ongoing process throughout the care pathway.

Several tools have been developed to assess the quality of life of patients. The European Organization for Research and Treatment of Cancer (EORTC) has been able to develop valid, reliable, and commonly used questionnaires [16] with items specific to each type of cancer, such as the EORTC QLQ-C30 and QLQ-BR23 version 3.0, which assess not only the symptoms of breast cancer but also the physical and emotional aspects of the disease. Numerous publications have provided psychometric validation of the EORTC QLQ-C30 and QLQ-BR23 measures [17] from different languages, including Arabic [18] and Arabic dialects [19, 20]. The choice of using a standard tool in the present study, such as the EORTC QLQ-C30, is based on its validation in dialectal Arabic, minimizing cost-saving time and facilitating cross-cultural comparisons [21]. Studies have reported the importance of quality of life assessment for optimizing survivorship care and have shown that there are factors that positively or negatively influence physical and emotional functioning after cancer treatment [22, 23], and they have suggested psychosocial follow-up to maximize the quality of life of patients, especially in those who have undergone mastectomy [24]. This is the background to our study, aiming to analyze the factors influencing health-related quality of life in breast cancer patients in the city of Marrakech, Morocco.

2. MATERIALS AND METHODS

This is a cross-sectional, analytical study conducted between January and June, 2023, at the Onco-Hematology Centre and Ibn Tofail Hospital of the Mohammed VI University Centre in Marrakech. As a tertiary care center, the facility cares for a variety of patients with different cancer stages, ages, and clinical manifestations. The management of breast cancer patients is based on a predefined protocol for each stage of their care.

2.1. Target Population

Patients were recruited during follow-up, chemotherapy, or radiotherapy visits at Marrakech University Hospital. Study participants were recruited according to inclusion criteria, namely, age exceeding 18 years, with histologically confirmed breast cancer, diagnosed at least six months previously, and at any stage of the disease. Those who refused participation were excluded from the study.

2.2. Instruments Used

2.2.1. EORTC QLQ-C30

The European Organization for Research and Treatment of Cancer (EORTC) developed the EORTC QLQ-C30 in 1980 [25], a questionnaire designed to assess the quality of life of cancer patients. This questionnaire comprises 30 questions divided into five functional subscales assessing physical, role, cognitive, emotional, and social functioning. It also includes three symptom subscales: fatigue, pain, and nausea/vomiting. In addition, it includes six simple questions on dyspnea, loss of appetite, insomnia, constipation, diarrhea, and financial difficulties related to the disease. The overall health/quality of life scale consists of two items, each with four response options from 1 to 4. The items of this scale, however, have seven response options ranging from “very poor” to “excellent”, numbered from 1 to 7.

2.2.2. THE EORTC-BR23

The EORTC-BR23 was developed by Spranger *et al*. [26] specifically for breast cancer patients to be used in combination with EORTC-C30 and consists of 23 items: body image, sexual functioning, sexual enjoyment, future perspective, systemic therapy side effects, breast symptoms, arm symptoms, and upset by hair loss.

Calculation of the EORTC QLQ-C30 and QLQ-BR23 scores was carried out according to the calculation manual [27], with subscale scores transformed linearly from 0 to 100. High scores on the functioning and overall health/quality of life scales reflect good quality of life, while high scores on the symptoms scales indicate poor quality of life.

2.3. Data Collection

The questionnaire was self-completed by the patients, including sociodemographic, clinical, and therapeutic data. The information collected included data on patient identification (age, sex, geographical origin), social status (marital status, profession, socio-economic level, health insurance), as well as clinical status and treatment modalities. In addition, the questionnaires validated by the EORTC QLQ-C30 and QLQ-BR23 were used.

2.4. Statistical Analysis

Data were coded and analyzed using SPSS version 26 software, including the main steps used in this statistical analysis, such as descriptive statistics, normality test, Kruskal-Wallis, Mann-Whitney tests, and linear regression analysis.

2.4.1. Descriptive Analysis

Results for continuous variables are presented as means and standard deviations. Categorical variables are expressed as frequencies and percentages.

2.4.2. Normality Test

The Shapiro-Wilk test is used to check the distribution of continuous variables. If the data do not follow a normal distribution, non-parametric tests are used for analysis.

In the present case, the Kruskal-Wallis and Mann-Whitney tests were applied to assess significant differences between clinical and socio-demographic variables and the subscales of the quality of life questionnaire.

To determine predictors of postoperative quality of life, linear regression analysis was performed. Global health, physical, emotional, cognitive, and social functioning scores were considered as variables to be explained. Explanatory variables included age, level of education, type of treatment, medical history, onset of pathology, and type of surgery.

The Confidence Interval and Beta Coefficient (β) were calculated to assess the precision of the regression coefficient estimates and quantify the relative importance of each explanatory variable. Bibliographic management was carried out using ZOTERO software.

2.5. Ethical Considerations

The study received approval from the ethics committee of the Mohammed VI University Hospital of Marrakech, number 24/2022. Participation in the study was voluntary, and the data collected were analyzed and reported in strict confidence. Participants received detailed information about the study and were invited to take part after signing a consent form. Authorization for data collection was obtained from the hospital management.

3. RESULTS

3.1. Sample Characteristics

Two hundred thirty-five patients were invited to participate in the study. Fifteen patients declined to participate, while 220 participated. The mean age of the participants was 49 years, the most dominant age group being 40 to 49 (39.5%). Moreover, 69.5% were married, 55.5% were illiterate, and 69.1% lived with a partner. More than half the participants had between one and three children (58.2%). Nearly 81.4% did not work, so 76.4% had no monthly income. However, 72.7% were covered by the medical assistance scheme.

Regarding the onset of the disease, around 23% were between one and two years old, 29.1% were between six months and a year old, and 13.6% were more than five years old. Of the women included in the study, 72.3% had no associated pathology or family history of breast cancer, and 65% had no family history of cancer. Half the patients underwent mastectomy (52.3%), while 30% underwent conservative treatment. Only four patients underwent breast reconstruction.

The majority of patients received chemotherapy (84.5%). Those who received radiotherapy and hormonal therapy accounted for 55.9% and 50.9%, respectively (Table **1**).

3.2. Quality of Life Scale Scores

The mean score for overall health (QoL) was 60.4%. For the functional subscales of QOL-C30, the highest score was social functioning at 85.8%, followed by cognitive functioning at 76.6%, then physical at 72.4%, and lastly, role functioning at a rate of 71.7%, and the lowest score was emotional functioning with a rate of 70.4%. As for the symptom subscales, the highest score was for fatigue (31%), followed by pain (29.2%), and then lack of appetite (27.11%). The highest score was financial difficulties at 42.72% (Table **2**).

In the BR23 functional scale, the most affected functional scale was the future perspective, with a percentage of 25.30%, followed by body image at 13.79%. Among the 146 sexually active patients, 14.4% expressed the physical and physiological capacity to engage in normal sexual activity, and 12.8% were satisfied with this activity (sexual pleasure). Regarding symptom scales, they ranged from 20.4% to 61.6%, with the most concerning symptom being “systemic treatment of side effects” at a rate of 61.6%.

Table 1. Sample characteristics (n=220) frequency and percentage.

Variables	Modalities	Frequency/ Percentage N=220
Age In Years	30 -39 Years	29 (13.2)
	40 And 49 Years	87 (39.5)
	50 And 59 Years	68 (30.9)
	60 Years And More	36 (16.4)
Marital Status	Single	20 (9.1)
	Married	153 (69.5)
	Divorced	27 (12.3)
	Widowed	20 (9.1)
Number Of Children	No Children	40 (18.2)
	1 And 3 Children	128 (58.2)
	4 Or More Children	52 (23.6)
Level Of Education	Illiterate	111 (50.5)
	Primary School	54 (24.5)
	Secondary School	9 (4.1)
	University Graduate	46 (20.9)
Habitat	Urβan	114 (51.8)
	Rural	106 (48.2)
Live Alone	Lives Alone	68 (30.9)
	In Compagny	152 (69.1)
Work	Yes	41 (18.6)
	No	179 (81.4)
Monthly Income	No Income	168 (76.4)
	Less Than 2500 Dh	9 (4.1)
	2500dh And 4999dh	27 (12.3)
	5000 And 7499 Dh	2 (0.9)
	7500 Dh And More	14 (6.9)
Health Coverage	No Health Coverage	16 (7.3)
	CNSS	15 (6.8)
	CNOPS	28 (12.7)
	RAMED	160 (72.7)
	PRIVE	1 (0.5)
Onset of Disease	Less Than 6 Months	23 (10.5)
	6 Months And One Year	64 (29.1)
	One Year And Two Years	52 (23.6)
	2 Years And 5 Years	51 (23.2)
	5 Years and more	30 (13.6)
Other Pathologies Associated	Yes	61 (27.7)
	No	159 (72.3)
Family ATCD Of Breast Cancer	Yes	74 (27.7)
	No	159 (72.3)
Family ATCD Of Cancer	Yes	77 (35)
	No	143 (65)
Type Of Surgery	Mastectomy	115 (52.3)
	Part Of The Breast	66 (30)
	No Surgery	39 (17.7)
Artificial Breast	Yes	4 (1.8)
	No	216 (98.2)
Chemotherapy	Yes	186 (84.5)
	No	34 (15.5)
Radiotherapy	Yes	123 (55.9)
	No	97 (44.1)
Hormonotherapy	Yes	108 (49.1)
	No	112 (50.9)

Table 2. The mean scores of the subscales of the quality of life EORTC-QLQ-C30 and EORTC-QLQ-BR23.

Functioning Subscales EORTC-QLQ-C30								
-	**Global Health Status**	**Physical Functioning**	**Role Functioning**	**Emotional Functioning**	**Cognitive Functioning**	**Social Functioning**	-	-
Mean (SD)	60.4 (25.0)	72.4 (26.9)	71.7 (30.5)	70.4 (29.9)	76.6 (28.5)	85.8 (28.1)	-	-
Range	0.0 - 100.0	0.0 - 100.0	0.0 - 116.7	0.0 - 100.0	0.0 - 100.0	0.0 - 100.0	-	-
Symptom Scales EORTC-QLQ-C30								
-	**Fatigue**	**Nausea and Vomiting**	**Pain**	**Dyspnea**	**Insomnia**	**Appetite Loss**	**Constipation**	-
Mean (SD)	31.0 (28.1)	21.8 (30.5)	29.2 (30.1)	21.6 (30.5)	21.2 (31.3)	27.1 (33.5)	22.6 (33.1)	-
Range	0.0 - 100.0	0.0 - 100.0	0.0 - 100.0	0.0 - 100.0	0.0 - 100.0	0.0 - 100.0	-	-
Symptom Scales EORTC-QLQ-BR23								
-	**Body Image**	**Sexual Functioning**	**Sexual Enjoyment**	**Future Perspective**	**Systemic Therapy Side Effects**	**Breast Symptoms**	**Arm Symptoms**	**Upset βy Hair Loss**
Missing	**1**	**74**	**74**	-	-	-	-	**34**
Mean (SD)	86.1 (21.8)	14.4 (16.6)	12.8 (19.7)	74.7 (30.1)	28.3 (18.5)	21.4 (18.2)	20.4 (20.0)	61.6 (41.9)
Range	33.3 - 100.0	0.0 - 50.0	0.0 - 66.7	33.3 - 100.0	0.0 - 66.7	0.0 - 66.7	0.0 - 66.7	0.0 - 100.0

3.3. Association between Socioeconomic Variables and Quality of Life Scale and Subscale Scores

Results revealed significant p-values for correlations. The score of the emotional functioning subscale shows a significant correlation with place of residence ($p = 0.045$). In addition, the level of cognitive and social functioning is strongly influenced by the initial stage of the disease, with p-values of 0.037 and 0.019, respectively.

The body image score was closely associated with living alone ($p = 0.008$) and hormone therapy ($p = 0.033$). In addition, the breast symptom score was associated with several variables, namely, housing (p = 0.045), work ($p = 0.035$), and comorbidities ($p = 0.044$). Patients on hormone therapy also showed a significant association with body image score ($p = 0.033$). Sexual function was found to be influenced by factors, such as age and cohabitation status in this population, with a p-value of 0.04.

A regression analysis revealed statistically significant associations between various factors and the quality of life of breast cancer patients. Specifically, marital status was related to overall quality of life with a coefficient of β= -0.142; $p = 0.001$, while housing presented a coefficient of β = -0.115; $p = 0.004$, and women living alone obtained a coefficient of β= -0.115; $p = 0.034$. Added to this was age, with a p-value of 0.002, β= -0.142, in addition to pathology duration, β=0.624; $p = 0.000$. Regarding physical functioning, statistically significant differences appeared with habitat (β= -0.183 and $p = 0.025$) and marital status (β= 0.154 and $p = 0.038$). The lack of appetite score was correlated with marital status (β= 0.183; $p = 0.011$) and habitat (β= 0.246; $p = 0.003$). Finally, financial difficulties correlated with living alone (β= -0.142; $p = 0.039$), disease onset (β= -0.169; p = 0.020), and chemotherapy (β= 0.192; $p = 0.011$) (Table **3**).

Table 3. Linear regression model for the subscales of the quality of life in EORTC-QLQ-C30.

Scales	**PF**		**RF**		**Dys**		**Ins**		**App. L**		**NV**		**QOL**	
-	**β**	***p***	**β**	***p***	**β**	***p***	**β**	***p***	**β**	***p***	**β**	***p***	**β**	***p***
-	0.001	-	0.000	-	0.789	-	0.923	-	0.569	-	0.824	-	0.497	
(Constante)	0.023	0.763	0.024	0.757	-0.050	0.526	-0.098	0.215	-0.091	0.241	-0.024	0.759	0.186	0.002
Age in years (ref:<50)	-0.080	0.257	-0.130	0.070	0.112	0.121	0.086	0.234	0.183	0.011	0.070	0.330	-0.142	0.011
Marital status (ref:Married)	0.154	0.038	0.101	0.179	-0.198	0.010	-0.051	0.505	-0.096	0.203	-0.046	0.546	0.041	0.481
Work (ref: Yes)	0.003	0.964	0.022	0.765	0.055	0.455	-0.018	0.806	-0.047	0.518	0.036	0.625	0.071	0.207
Monthly incoma (ref: No)	0.041	0.600	0.015	0.853	0.047	0.561	0.087	0.285	0.070	0.380	0.014	0.864	0.235	0.000
Duration of disease (ref: >2)	0.223	0.003	0.140	0.066	-0.080	0.296	-0.098	0.198	-0.166	0.028	-0.055	0.471	0.624	0.000
Surgery (ref: No surgery)	0.062	0.500	0.096	0.311	0.037	0.699	-0.076	0.426	0.025	0.791	-0.138	0.145	-0.010	0.896
Chimiotherapy (ref : No)	-0.058	0.472	-0.048	0.554	-0.059	0.473	-0.015	0.861	0.007	0.929	0.044	0.592	0.080	0.207
Radiotherapy (ref : No)	-0.087	0.230	-0.080	0.276	0.101	0.175	0.042	0.575	0.079	0.276	0.041	0.576	-0.086	0.131

Abbreviations: *Role functioning : RF; Physical functioning: PF; Quality of life: QOL; Nausea and Vomiting : NV appetite loss: AL; Insomnia: Ins; Dyspnea: Dys.

Table 4. Linear regression model for the subscales of the quality of life in EORTC-QLQ-BR23.

-	Up. HL		Sys. The		Body Image		Fut. Per		Sex. F		Sex. E		Ars. sym		Breast. Sym	
(Constante)	**β**	***p***	**β**	***p***	**β**	***p***	**β**	***p***	**β**	***p***	**β**	***p***	**β**	***p***	**β**	***p***
-	0.574	-	0.154	-	0.058	-	0.379	-	0.998	-	0.826	-	0.363	-	0.189	
Age in years (ref:<50)	-0.012	0.889	-0.091	0.233	-0.054	0.482	0.077	0.328	-0.039	0.668	0.061	0.510	0.000	0.999	-0.047	0.545
Marital status (ref:Married)	-0.036	0.644	0.094	0.181	-0.140	0.049	-0.046	0.523	0.081	0.325	-0.052	0.535	0.167	0.019	0.233	0.001
Work (ref: Yes)	0.145	0.071	-0.048	0.514	0.127	0.090	-0.016	0.833	0.078	0.380	0.191	0.037	-0.011	0.883	-0.053	0.479
Monthly incoma (ref: No)	0.015	0.853	0.055	0.439	0.050	0.484	0.031	0.670	-0.088	0.290	0.028	0.743	-0.065	0.362	-0.084	0.242
Duration of disease (ref: >2)	-0.022	0.797	0.059	0.456	0.116	0.146	-0.089	0.272	0.162	0.093	-0.082	0.406	-0.094	0.238	-0.076	0.344
Surgery (ref: No surgery)	0.016	0.844	-0.431	0.667	-0.149	0.031	0.041	0.967	-0.073	0.942	0.541	0.126	-0.233	0.818	0.145	0885
Chimiotherapy (ref : NO)	0.137	0.189	0.128	0.167	-0.004	0.964	-0.077	0.418	0.060	0.473	0.161	0.152	-0.098	0.293	-0.014	0.882
Radiotherapy (ref : NO)	-0.080	0.376	-0.003	0.970	0.106	0.192	0.035	0.671	-0.095	0.254	-0.223	0.021	0.060	0.458	-0.010	0.901
Hormonotherapy (ref : NO)	-0.069	0.380	0.043	0.552	-0.071	0.327	0.019	0.796	-0.083	0.361	-0.083	0.372	0.038	0.603	0.065	0.375

Abbreviations: *Upset by hair loss: UpHl; Systemic therapy: Sys.The; Future perspective: Fut. Per; Sexual functioning: Sex. F. Sexual enjoyment: Sex.E; Arm symptoms: Ars.Sym; Breast symptoms: breast.symp.

Furthermore, the analysis revealed significant associations of BR23 scores, namely sexual pleasure, in relation to radiotherapy treatment (β= -0.223; *p* = 0.021). In addition, body image was closely associated with marital status (β= -0.140; *p* = 0.049) and type of surgery (β= -0.149; *p* = 0.031). Arm symptoms correlated with marital status (β= 0.167; *p* = 0.019), while breast symptoms correlated with marital status (β= 0.233; *p* = 0.001) (Table **4**).

4. DISCUSSION

The assessment of the quality of life of breast cancer patients is gaining increasing importance in medical research. It allows for a more holistic approach to breast cancer management. Indeed, this measurement takes into account the physical, emotional, and psychosocial impact of the disease and its treatment on the daily lives of patients. It is in this context that the aim of this study was set.

The results demonstrated that the general health and quality of life score was 60.4%, similar to studies carried out in Morocco (68.5%) [22] and Ethiopia (65.6%) [28]. A higher score was described for Emirati women (74.73%) [29]. This rate found in these studies is higher than the mean score described in the EORTC QL-C30 reference, which averages 61.8% (SD = 24.6) [30].

In terms of functional scales, Moroccan women showed strong results in all five functional scales, with mean scores ranging from 70.4% in emotional functioning to 85.8% in social functioning. This generally indicates a satisfactory level of functional health. It should be noted that the results of the present study are consistent with those of a study by Fakir *et al*. conducted nationwide in Morocco.

Our study revealed an average score of 76.6% for patients' cognitive functioning, suggesting that they have a good ability to understand and manage information related to their medical condition. This cognitive ability can have a significant impact on their willingness and confidence, as patients with better cognitive functioning are more likely to understand the details of their treatment, follow medical recommendations, and actively participate in decisions concerning their health.

The social function presented the best-performing scale in this study, identical to a study carried out among 250 women in the United Arab Emirates [29], in contrast to the study carried out in Ethiopia, reflecting insufficient social support for the patients [28], perhaps due to the strength of family, friendship and community ties among the Arab population and especially among Moroccans.

Emotional functioning is the most affected in this study, which is consistent with a study done in Bahrain [31] and Iran [32]. Indeed, the diagnosis of cancer causes a number of emotions, such as fear, anxiety, distress [33], uncertainty in the face of a stressful process of treatment follow-up, imprecise prognosis, management of adverse effects, and possible relapse [34]. Therefore, it seems important to consider psychotherapeutic approaches and effective support to relieve these women emotionally, as reported in a study that beauty care interventions can reduce psychological distress and enable a higher quality of life and self-esteem [35].

As for the symptom scale of the EORTC questionnaire, QLQ C30, the highest score was financial difficulties, demonstrating that women have financial problems linked to cancer. This is due, of course, to the high cost of treatment for this pathology as well as medical coverage, which does not cover all benefits. Morocco is generally classified as a middle-income country by the World Bank [36]. In their responses, patients expressed the greatest complaints about fatigue (31%), pain (29.2%), and loss of appetite (27.1%). This is in line with studies carried out in Morocco, Iran, Ethiopia, and Saudi Arabia. Indeed, the literature supports these findings [22, 28, 32, 37]. The appearance of these symptoms may be justified by the adverse effects of chemotherapy [38]. Despite the perception of cancer as a serious, life-threatening disease, the majority of patients rated their cancer-related functions as good on the BR23 scale, and despite the state of their health, 74.7% were optimistic about their future, which is concordant with the study done in Saudi Arabia [39]. However, only 40.5% expressed the opposite in the study done in Morocco [22]. This must be taken into consideration while raising awareness among women with cancer in order to maintain these satisfactory results. The body image score was affected in Moroccan patients, a result similar to a qualitative study carried out on eighteen women who had breast cancer in Italy, which deduced that the experience of breast cancer is a pathology, with therapy that damages the body through scarring and weight gain, had a negative impact on their relationship with their body, emotions, and thoughts [5]. In addition, it has been shown that distress linked to body image perception is closely related to mental disorders, principally anxiety-depression syndrome [40]. Another study on 354 breast cancer survivors in China reported that body image plays a more important role in mental well-being [41].

In the present study, body image was significantly more influential in married women (p = 0.033) than in unmarried women, which may be explained by the fact that married women may feel additional pressure to maintain a physical appearance that corresponds to the cultural and social expectations associated with marriage. With this in mind, the American Society of Clinical Oncology has developed guidelines to guide clinicians in supporting the restoration of self-esteem in their breast cancer patients. These guidelines address various physical enhancement options, such as breast prostheses and specialized bras, and highlight the help available to women in finding wigs, scarves, and other products to mitigate treatment-related body changes [42]. As far as sexual function is concerned, it is impaired in the population studied. This is in line with other studies, which suggest that the sexual quality of life of women with breast cancer is considerably altered, with a decrease in the frequency of sexual activity, the appearance of depressive symptoms, and a loss of sexual desire [43, 44].

This increase is linked to several factors, including the spouse's negative reaction to the disease, altered body image, as well as depression and anxiety [45]. This altered sex life is largely attributed to the effects of the disease itself and its treatments, which can negatively impact the symbolism of femininity and motherhood. Consequently, it is essential that healthcare professionals openly address the issue of sexuality with breast cancer patients and their partners, as this can have a significant impact on their overall quality of life [46].

As for factors influencing health-related quality of life in breast cancer patients, age was found to be significant for overall quality of life and sexual pleasure, a result similar to a study finding that younger women had less involvement in social and sexual functions, as well as decreased sexual pleasure and more modest future expectations [47]. This observation contrasts with a previous study conducted in Morocco, where age was associated with aspects, such as body image, sexual pleasure, side effects of systemic therapy, and hair loss [22]. This variation in results could be partly due to the higher proportion of younger women in our study sample, but it also highlights the complexity of the relationship between age and quality of life in breast cancer patients. According to the linear regression model, there is a significant positive relationship between quality of life and duration of pathology, which is consistent with the study carried out in Morocco on 1463 patients, which demonstrated a significant improvement in quality of life in breast cancer survivors after one year's follow-up [10]. Indeed, as time goes by and treatments are completed, side effects may lessen, which may contribute to improved quality of life [48]. Furthermore, adaptation to the disease and return to normal life may also contribute to this improvement. It appears that married women have a slightly better quality of life than unmarried women, and this statistically significant difference is also confirmed in several studies carried out in Morocco [10, 22, 49]. This can be explained by the fact that married women may have good emotional and financial support, as well as more comprehensive medical care, which could contribute to better outcomes [50]. Furthermore, it is important to emphasize that women occupy a central place within the family, and their quality of life has a significant impact not only on their own survival but also on the stability and cohesion of the family structure [16]. Thus, the influence of marriage on the quality of life of women with breast cancer extends beyond their individual well-being, also affecting family dynamics and unity, underlining the importance of family support in the care of breast cancer patients.

In addition, a study on 324 women with breast cancer in Poland revealed that quality of life decreased with age and that age was significantly related to physical, social, and sexual functioning, body image, occurrence of pain, and lack of appetite [15]. Quality of life is positively influenced by age, as most of the scientific literature has shown that older age implies a higher quality of life. This can be explained by the fact that older survivors are less concerned about their physical appearance, less stressed, have fewer financial problems, fewer side effects, and less possible infertility [47]. Studies have reported that women under 50 have a better quality of life because they have a greater social role and general support [37]. However, other researchers, such as Scotté *et al.*, have a different perspective, suggesting that older cancer patients face unique age-related challenges, including comorbidities and special circumstances that may influence their quality of life in distinct ways compared with younger patients [51].

Yet, there was no significant relationship between the type of surgery and treatment and overall quality of life. However, in Mexico, a study on 183 women with breast cancer demonstrated that the type of surgery was positively correlated with the overall quality of life [47]. In thirty Brazilian women with breast cancer treated with radiotherapy, radiotherapy treatment adversely affected the HRQ of breast cancer patients [52]. This may be justified by patients' poor understanding of these issues. Therefore, this aspect needs to be considered in our population, and the use of breast-conserving therapy should be encouraged, which has several advantages, such as improved body image, good quality of life, and psychosocial well-being [53].

CONCLUSION

The findings of this study have revealed that patients express concerns related to financial difficulties while also coping with symptoms associated with their condition, such as fatigue, loss of appetite, and pain. It has also been observed that age, duration of illness, and monthly income are factors influencing the quality of life. Furthermore, the body image of patients is affected, along with their emotional well-being, thus underscoring the importance of addressing psychological aspects in their healthcare by healthcare professionals.

AUTHORS' CONTRIBUTION

It is hereby acknowledged that all authors have accepted responsibility for the manuscript's content and consented to its submission. They have meticulously reviewed all results and unanimously approved the final version of the manuscript.

LIST OF ABBREVIATIONS

QoL = quality of life
EORTC = European Organization for Research and Treatment of Cancer
RF = Role Functioning
PF = Physical Functioning
NV = Nausea and Vomiting
AL = Appetite Loss

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The research protocol of this study was approved by the Ethics Committee of the Faculty of Medicine and Pharmacy of Marrakech, Morocco on the 5th of January, 2023 (no. 24/2022).

HUMAN AND ANIMAL RIGHTS

All procedures performed in studies involving human participants were in accordance with the ethical standards of institutional and/or research committee and with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

Participants received detailed information about the study and were invited to take part after signing a consent form.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of the article is available in the article itself.

FUNDING

None.

CONFLICT OF INTEREST

The authors declared no conflict of interest, financial or otherwise.

ACKNOWLEDGEMENTS

Declared none.

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