

RESEARCH ARTICLE

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Quality of Life and Its Associated Factors Among Breast Cancer Women in Iraq: A Cross-Sectional Study

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Abstract

Introduction: Breast cancer is the most prevalent cancer among women worldwide, and advancements in detection and treatment have improved survival rates. Evaluating breast cancer patients' quality of life is essential for effective healthcare planning. This study aims to assess the level of quality of life and its associated factors, including sociodemographic, clinical, coping skills, and psychological factors among breast cancer women in Iraq. **Methods:** A cross-sectional study was conducted among 244 breast cancer women in The Medical City Teaching Oncology Hospital, Baghdad, Iraq, from August 2023 to October 2023. QOL, coping skills, and psychological factors were assessed using the European Organization for Research and Treatment of Cancer (EORTC) Quality of Life Group Core-30 (QLQ-C30), BRIEF COPE-28, and Hospital Anxiety and Depression Scale (HADS) scale, respectively. Sociodemographic and clinical characteristics were also assessed. The associations between the association factors and quality of life were assessed using multiple linear regression. **Result:** The mean (SD) quality of life scores for global, functional, and symptom domains were (53.24 ± 16.80, 46.23 ± 25.16, and 53.82 ± 22.10), respectively. Multiple linear regression analysis revealed significant factors influencing global quality of life were age, marital status, disease duration, hormonal therapy, passive coping, and anxiety. Age, disease duration, passive coping, and anxiety were significant factors for the functional domain. The symptom domain was notably affected by menstrual status, mastectomy, passive coping, and depression. **Conclusion:** These results provide crucial insights for developing targeted interventions to enhance the quality of life for breast cancer patients in Iraq.

Keywords: QOL- Breast Cancer- Associated factors

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Introduction

Breast cancer (BC) is the most common cancer among women globally [1], with over 100 countries citing it as the leading cause of cancer deaths [2]. BC is the second most frequently diagnosed cancer globally and the leading cancer among women, accounting for 11.6% of total cases in 2022. Furthermore, it is the fourth leading cause of cancer deaths worldwide, contributing to 6.9% of all cancer deaths [3]. Specifically, for women, BC remains the top cause of cancer-related mortality, surpassing cervical and lung cancers [4]. However, regional disparities in incidence and mortality are evident. For instance, high-income regions report high incidence rates. Nevertheless, they experience lower mortality rates due to effective screening programs, early detection initiatives, and advanced treatment options. In contrast, low- and middle-income regions, while having lower incidence rates, face disproportionately high mortality [5].

BC is the most common cancer among women in Iraq accounting for 34.1% of all cancer cases from 2000 to

2019. The Age-Standardized Incidence Rate (ASIR) of BC for Iraq was 37.88 per 100,000 women during this period, with a notable upward trend. By 2015–2019, the ASIR had risen to 46.39 per 100,000 women, marking a significant increase with an average annual percentage change of 3.19%. Likewise, BC is also the leading cause of cancer-related deaths among women in Iraq, contributing to 22.6% of all cancer-related mortality in 2019, with a mortality rate of 6.22 per 100,000 women [6]. Despite efforts, significant challenges remain in combating this persistent disease. Early detection is still the best way to contain it [7]. Even after diagnosis and treatment, BC survivors frequently endure long-term physical, social, emotional, and psychological health challenges, persisting for decades post-treatment [8].

BC treatment impacts women's quality of life (QOL) across the above modalities [9], leading to decreased QOL [10]. Furthermore, several factors influence QOL in BC patients, including sociodemographic, clinical characteristics, socioeconomic status, psychosocial challenges, and financial considerations [11].

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As a result, assessing QOL is crucial for evaluating and predicting cancer treatment outcomes prominence in healthcare, as patients often experience a decline in QOL during treatment [12]. It provides insights into the daily lives of patients undergoing BC therapy [13]. So, clinical cancer trials prioritize quality of life as a paramount objective, which is a prognostic factor in evaluating treatment options for cancer patients [14]. Assessing QOL is also crucial in determining the status of BC patients, given the prevalence of the disease [7].

Additionally, there is a significant scarcity of data concerning the QOL among Iraqi women diagnosed with breast cancer, which complicates the ability of clinicians to innovate and implement new interventions and treatment strategies [15]. This dearth of information contributes to challenges in comprehensively addressing the needs of Iraqi BC women, particularly considering deficiencies in cancer care infrastructure and limited treatment options available in the country. The research highlighted by Mustafa et al. [2] emphasizes the urgent need to understand and manage the factors influencing quality of life in these patients, including sociodemographic, clinical, and psychological variables. These factors collectively contribute to the overall QOL outcomes observed among Iraqi women undergoing treatment for breast cancer. Therefore, the present study aims to assess the level of QOL and its associated factors, including socio-demographic, clinical, coping skills, and psychological factors in BC women in Iraq.

Materials and Methods

Study design

A cross-sectional survey was conducted among women with BC at The Medical City Oncology Hospital in Baghdad, Iraq, from August 1, 2023, to October 1, 2023. It was chosen because it was the largest oncology hospital in Iraq and received referrals from all parts of Iraq. A convenient sampling technique was chosen in this study. The sample size for the study was calculated using the single mean formula to estimate the level of QOL among women with BC [16]. Based on the standard deviation for the mean of the global QOL score, which was 15.2 [17], with a precision of 2 and 95% confidence, the calculated sample size was 222. However, after considering the 20% non-response rate, the sample size calculated was 245. The inclusion criteria for the study include women aged 18 to 70 years, those who had been diagnosed with breast cancer between 6 to 24 months before the interview, participants who were proficient in reading and understanding Arabic.

Study Instruments

The study instruments include a questionnaire to collect sociodemographic and clinical data, a Brief COPE-28 scale to assess coping strategies, a Hospital Anxiety and Depression Scale (HADS) to assess the psychological level, and an EORTC QLQ-C30 questionnaire to assess QOL.

The sociodemographic variable includes (age, marital status, level of education, employment status, financial perception, number of children). Moreover, clinical

data were obtained from the medical records. Clinical characteristic variables include history of chronic disease, menopausal status, family history of BC, duration of BC diagnosis, stage of disease, affected breast(s), metastasis breast cancer, number of metastatic sites, duration since of surgery, mastectomy operation, breast reconstruction, Chemotherapy treatment line, hormonal therapy.

The Brief COPE-28 scale, developed by Carver, [18], was used to assess the coping strategies of BC women. This scale comprises 14 subscales that evaluate specific coping behaviors, with scores ranging from 2 to 8 [19]. Studies have validated its reliability in Arab populations, reporting Cronbach's alpha coefficients ranging from 0.74 to 0.85 [20].

The Hospital Anxiety and Depression Scale (HADS), was adapted from Zigmond & Snaith, [21]. to assess the psychological levels of BC women. This self-report scale comprises 14 items on a 4-point Likert scale (range 0–3), with seven items each for anxiety and depression subscales, each subscale score ranging from 0 to 21. Anxiety and depression values were calculated using cut-off scores [22]. Studies consistently demonstrate the robust internal consistency of HADS, validating its reliability in clinical practice, including applications in Arab populations [23]. The Cronbach's α for the HADS anxiety subscale was 0.83 at time 1 and 0.87 at time 2, while for the depression subscale, it was 0.77 at time 1 and 0.80 at time 2. These results indicate adequate internal consistency among patients for both HADS subscales at both time points.

The QOL of BC patients was assessed using the EORTC QLQ-C30 questionnaire comprising 30 items. The questionnaire comprises functional domains (physical, role, emotional, cognitive, and social functioning), global health status/QOL, and symptom scales (fatigue, nausea and vomiting, pain, dyspnea, insomnia, appetite loss, constipation, diarrhea, and financial difficulties). Most items are rated on a four-point Likert scale and linear transformation below to standardize the raw score so that scores range from 0 to 100. A high scale score for the functional scale means a high/healthy level of functioning, a high score for the global health status/QOL means a high QOL, but a high score for a symptom scale/item indicates a high level of symptomatology/ problems [24].

It has been translated into over 60 languages and validated in various cultural contexts, including Arabic translations in Iraq [25].

Data collection and procedures

Written informed consent was obtained, and data were collected through face-to-face interviews, with clinical details extracted from medical records. The supervisor trained data collectors to ensure quality, and the principal investigator monitored the process.

Statistical Methods

Data analyses were performed using SPSS version 26.0. Descriptive statistics were performed, including measures of central tendency (mean, standard deviation), frequency, and percentage of categorical variables. Simple and multiple linear regressions were conducted

on all independent variables. Variables with a p-value <0.025 were selected for inclusion in multivariate analysis. Multiple linear regression used forward selection to identify factors associated with QOL. The basic assumptions for linear regressions, particularly the normality of residuals, were verified. The beta regression coefficient, t-value, and p-value were specified for each dependent variable. Statistical significance was set at a p-value ≤ 0.05 .

Results

Out of 261 eligible participants, 244 completed the questionnaires, resulting in a response rate of 93.48%. The primary reasons for dropout included time constraints, survey fatigue, lack of interest or perceived relevance, and emotional distress. Table 1 demonstrates the results for sociodemographic characteristics. The mean age of the participants was 49.31 years. The majority were married or cohabiting 82.4%, 67.2% had a low level of education, and 76.6% were unemployed.

Table 2 reported the clinical, QOL, coping Skills, and psychological characteristics of BC Women. Fifty-three percent had been diagnosed BC for over 12 months, and 84.4% had experienced a menstrual interruption. Eighty-nine per cent were in stages I and II of BC, with 96.3% having unilateral BC. Additionally, 90.6% had undergone a mastectomy, 52.9% were receiving hormonal therapy, and 51.6% were undergoing both chemotherapy and radiation. The mean score with a standard deviation for global QOL, functional, and symptoms were 53.24 (16.80), 46.23 (25.16), and 53.82 (22.10), respectively. In terms of coping skills, the mean (SD) for active coping, passive coping, and seeking support was 5.96 (1.31), 4.00 (1.10), and 7.58 (0.84), respectively.

Table 3 showed the regression analysis findings

Table 1. Descriptive of Sociodemographic Characteristics of BC Women (n=244).

Characteristics	n (%)	Mean (SD)
Sociodemographic Characteristics		
Age (years)		49.31 (9.08)
Marital status		
Single	43 (17.6)	
Married or cohabiting	201 (82.4)	
Education level		
Low education	164 (67.2)	
High education	80 (32.8)	
Employed status		
Employed (or retired)	57 (23.4)	
Unemployed	187 (76.6)	
Financial perception		
Not enough	178 (73.0)	
Enough	66 (27.0)	
Number of children		
0 - 3	115 (47.1)	
>3	129 (52.9)	

Table 2. Clinical, QOL, Coping Skills, and Psychological Characteristics of BC Women (n=244).

Characteristics	n (%)	Mean (SD)
Duration of BC diagnosis		
≤ 12 months	113 (46.3)	
> 12 months	131 (53.7)	
Menstrual status		
Menstrual interruption	206 (84.4)	
No interruption	38 (15.6)	
Stage of disease		
Stage (I and II)	219 (89.8)	
Stage (III and IV)	25 (10.2)	
Affected breast		
Unilateral	235 (96.3)	
Bilateral	9 (3.7)	
Family history of BC		
Yes	108 (44.3)	
No	136 (55.7)	
History of chronic disease		
Yes	104 (42.6)	
No	140 (57.4)	
Type of surgery		
Mastectomy	221 (90.6)	
Lumpectomy	23 (9.4)	
Duration since of surgery		
At least six months	55 (22.5)	
More than six months	189 (77.5)	
Metastatic BC		
Yes	39 (16.0)	
No	205 (84.0)	
Breast reconstruction		
Yes	11 (4.5)	
No	233 (95.5)	
Hormonal therapy		
Yes	129 (52.9)	
No	115 (47.1)	
Chemotherapy treatment line		
Chemotherapy only	118 (48.4)	
Chemotherapy + radiation	126 (51.6)	
EORTC QLQ-C30		
Global QOL		53.24 (16.80)
Functional		46.23 (25.16)
Symptoms		53.82 (22.10)
Brief COPE-28		
Active coping		5.96 (1.31)
Passive coping		4.00 (1.10)
Seeking support		7.58 (0.84)
The Hospital Anxiety and Depression Scale (HADS)		
Anxiety		
Yes	99 (40.6)	
No	145 (59.4)	
Depression		
Yes	106 (43.4)	
No	138 (56.6)	

Table 3. Regression Analysis Findings on Factors Associated with QLQ-C30 in BC Women (n=244)

Variable	Simple linear regression			Multiple linear regression		
	b (95%CI)	t-statistic	P value	Adjusted b (97.5%CI)	t-statistic	P value
Factor associated with the Global domain of QOL						
Age (years)	0.47 (0.20, 0.73)	4.06	≤0.001	0.33 (0.14, 0.53)	3.38	≤0.001
Marital status						
Single						
Married or cohabiting	4.88 (-1.46, 11.22)	1.73	0.084	8.16(3.49, 12.89)	3.44	≤0.001
Duration of BC diagnosis						
≤ 12months						
> 12months	12.63(8.69, 16.58)	6.3	≤0.001	9.17 (5.22, 13.12)	5.24	≤0.001
Hormonal therapy						
Yes						
No	2.63 (-1.60, 6.8)	1.22	0.22	5.42(1.81, 9.09)	2.96	0.003
Active coping	3.71 (2.15, 5.26)	4.7	≤0.001			
Passive coping	-5.81(-7.58, -4.03)	-6.44	≤0.001	-3.24 (-5.12, -1.35)	-3.9	≤0.001
Anxiety	-1.45(-1.75, -1.14)	-9.36	≤0.001	-1.06 (-1.42, -0.71)	-6.8	≤0.001
Depression	-1.53(-1.99-, -1.07-)	-7.54	≤0.001			
Factor associated with the functional domain of QOL						
Age (years)	0.03 (-0.36, 0.44)	0.21	0.831	-0.45 (-0.76, -0.13)	-3.21	0.002
Duration of BC diagnosis						
≤ 12months						
> 12months	12.64 (5.57, 19.71)	4.03	0.01	6.64 (0.94, 12.35)	4.62	≤0.001
Active coping	6.36 (3.74, 8.99)	5.46	≤0.001			
Passive coping	-9.14(-12.16, -6.12)	-6.83	≤0.001	-4.53 (-7.23, -1.84)	-3.553	≤0.001
Anxiety	-2.50 (-2.99, -2.01)	-11.48	≤0.001	-1.80 (-2.48, -1.11)	-5.95	≤0.001
Depression	-2.73 (-3.39, -2.08)	-9.45	≤0.001			
Factor associated with the symptom's domain of QOL						
Financial perception						
Not enough	-7.42 (-14.54, 0.30)	-2.35	0.019			
Enough						
Duration of BC diagnosis						
≤ 12months						
> 12months	8.4	-3.01	0.003			
Menstrual status						
Menstrual interruption	5.57 (-3.21, 14.35)	1.43	0.154	-7.33 (-14.49, -0.18)	-2.31	0.022
Continuing menstruation						
Type of surgery						
Mastectomy	-15.40(-26.12, 4.69)	-3.24	≤0.001	9.05 (0.16, 17.94)	2.29	0.023
Lumpectomy						
Active coping	-6.10 (-8.38, -3.82)	-6.04	≤0.001			
Passive coping	7.79 (5.13, 10.46)	6.59	≤0.001	3.69 (1.13, 6.25)	3.25	≤0.001
Anxiety	1.70 (0.22, 0.18)	8.05	≤0.001			
Depression	2.21 (1.62, 0.80)	8.46	≤0.001	1.18 (0.38, 1.98)	3.32	≤0.001

on factors associated with QOL in BC women. The regression analyses identified several factors associated with the QOL in BC patients. In the global QOL domain, simple linear regression analyses found that age, duration of diagnosis, active and passive coping strategies, anxiety, and depression were significant. Multiple linear regression further identified age, marital status, disease

duration, hormonal therapy, passive coping, and anxiety as significant factors.

For the functional domain of QOL, simple regression highlighted the duration of BC diagnosis, active and passive coping, anxiety, and depression as significant. Multiple regression analysis refined this to age, duration of BC diagnosis, passive coping, and anxiety.

In the symptom domain, simple regression analyses indicated that financial perception, disease duration, type of surgery, active and passive coping, and depression were significant. Multiple regression analysis revealed that menses status, type of surgery, passive coping, and depression were crucial factors

Discussion

The study found a mean global QOL score of 53.24, which falls within the average range [26]. Notably, this score was higher than those reported in studies from Iraq, Kuwait, and Saudi Arabia but lower than that reported in the UAE, Iran, and Malaysia [2, 27-30]. The variation in QOL scores provides essential insights into the relative well-being of BC patients [31]. This study underscores the role of contextual factors in shaping patient experiences. It suggests that such research can guide strategies to improve QOL and promote more equitable healthcare practices across different regions [32].

Our finding reported a functional score of 46.23, reflecting the cumulative impact of cancer, its treatments, financial constraints, social isolation due to stigma, and the advanced stages of cancer, all contributing to significant functional decline. Comparative studies from Iraq and Saudi Arabia also showed low functional domain scores. The findings suggest that factors like patient age, social dynamics, and physical health are likely to influence global health scores [33, 34].

Patients in the study often experienced higher levels of untreated or poorly managed symptoms due to treatment side effects, late-stage diagnosis, and inadequate palliative care, leading to elevated functional symptom scores. This pattern is consistent with findings from BC patients in Iraq, who reported high levels of fatigue, pain, and insomnia [7]. Similar results have been observed in other Arabian countries, such as Kuwait [35], and in European countries, such as the UK and Sweden [36], [37].

The study also reveals that global QOL increased with increasing age among BC women in Iraq, suggesting that older women report better overall QOL due to additionally accumulated life experiences with age, which help them manage stress and adapt to their condition more effectively. This finding is consistent with other studies showing higher QOL scores in older patients [38]. However, the functional domain of QOL decreases with age, indicating that older women experience more difficulties with functional activities [30]. Additionally, married women tended to have better global QOL than single women, likely due to more vital social support, a finding also supported by studies in Iraq and Malaysia [30, 39].

This study highlighted a positive relationship between the duration of BC diagnosis and global and functional QOL. This suggests that a longer time since diagnosis is associated with better perceived QOL. These findings align with other studies showing that patients reported improved QOL and functional status as time progressed [40, 41]. This is possibly due to a more established care routine as the duration of BC increased. Patients also have more time to adapt and manage their condition effectively.

Additionally, the study noted that BC women who did not undergo hormonal therapy had better global QOL scores compared to those who did, supporting findings that hormonal therapy, while effective, is often associated with lower QOL and negative impacts on social well-being and sexual life [42].

Managing symptoms in women with BC is complex due to potential additive effects, according to Irvin et al. [43]. This study found that women with menstrual interruption had lower symptom-related QOL scores, likely due to physiological changes, psychological impact, treatment side effects, and disruptions in daily life. Anti-neoplastic therapies, particularly those involving cytotoxic agents, can cause long-term menstrual disruption [44]. Additionally, Hassan et al. [39] mentioned that mastectomy is an appropriate BC therapeutic option in Iraq, but it significantly impacts women's QOL. Despite physical recovery, many women experience emotional distress from feelings of mutilation, leading to lower symptom-related QOL scores.

Furthermore, this study reported that BC women with passive coping strategies had decreased global and functional BC and increased symptoms QOL. This decrease could be attributed to the impact of passive coping strategies on the emotions, thoughts, and daily behaviors of BC women. A Malaysian study by Dewi et al. [45] indicated that coping mechanisms significantly impact the QOL of BC patients. The better the patient's coping skills, the higher the cancer patient's QOL. Denial of the facts can lead to more severe problems, complicating treatment and worsening the disease, impeding QOL improvement. Passive strategies substantially impact patients' lives and impair their daily functioning. Multiple studies show that one's choice of coping strategy may depend on the stage of treatment and time from diagnosis [46]. This is further seen in an Iranian study by Khalili et al. [29], which found that using passive strategies was associated with more physical health symptoms and pain, affecting relationships, enjoyment of life, and mood.

Over one-third of BC patients experience psychiatric disorders, with anxiety and depression being the most significant comorbidities affecting BC [47]. Anxiety negatively impacts both global and functional QOL, while depression is associated with more severe symptoms and lower QOL. This is consistent with research showing that psychological factors, such as anxiety and depression, contribute to a decline in QOL and overall health [48]. Increased anxiety and heightened perception of treatment side effects correlate with lower physical symptom levels, further diminishing QOL. A systematic review by Haidari et al. [49], including studies from Iraq, underscores the significant adverse effects of psychological factors and sleep disturbances on QOL in BC patients.

Limitations of study

The study's cross-sectional nature provides only a snapshot of the participants' experiences, limiting the ability to assess changes over time or causality between factors and QOL. Additionally, the use of convenience sampling may have introduced selection bias, potentially affecting the representativeness of the sample. Therefore,

Further research, including qualitative methods, is needed to address these limitations and gain deeper insights into the QOL and coping mechanisms of BC patients in Iraq.

Conclusion and recommendations

This study offers comprehensive insights into the factors influencing the QOL among women with BC, encompassing age, marital status, duration of BC, mastectomy, hormonal therapy coping skills, and psychological factors. It highlights the need for tailored interventions addressing physical symptoms, psychological distress, social support, and economic challenges to enhance overall patient outcomes. Future research should continue to explore these factors to optimize supportive care strategies and improve QOL in BC survivors globally.

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Author Contribution Statement

All authors contributed equally in this study.

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Data availability

The datasets analyzed during the current study are not publicly available due to ethical restrictions. but are available from the corresponding author on reasonable request.

Approval

This study was approved by Ethics Committee Universiti Sains Malaysia (USM/JEPeM/KK/23030229), and the Iraqi Ministry of Health. Informed consent was obtained from all subjects involved in the study.

Competing interests

The authors declare no competing interests.

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