Assessment of Physical Well-Being Among Breast Cancer Patients Undergoing Radiotherapy in Erbil, 2024–2025

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Abstract

Background and Aim: Breast cancer is the most common malignancy among women in Erbil, Iraq, and radiotherapy often impacts patients' physical functioning and comfort. This study aimed to assess the level of physical well-being and its associated sociodemographic characteristics among breast cancer patients undergoing radiotherapy in Erbil.

Method: This cross-sectional study was conducted from October 10th, 2024, to March 25th, 2025, at Awat Radiation Oncology Center using purposive sampling. Data were collected through a structured questionnaire covering sociodemographic variables and selected items from the Quality of Life–Breast Cancer Tool (QOL-BC) related to physical well-being. Statistical analysis was performed using Stata version 12 (StataCorp LLC, College Station, TX). Descriptive statistics, chi-square tests, and ordinal regression were used to assess physical well-being and its demographic associations.

Results: The study included 114 breast cancer patients. The mean score for physical well-being was 15.30 ± 8.28, reflecting a moderate level. The most frequently reported symptoms were fatigue (85.9%), weight gain (88.6%), and neck and shoulder pain (79%). Chi-square analysis showed a significant association between age and physical well-being ($p < 0.001$), as well as education level ($p = 0.03$). Ordinal regression confirmed that age group 35–44 years was significantly associated with better physical well-being.

Conclusions: Breast cancer patients undergoing radiotherapy demonstrated a moderate level of physical well-being. Therefore, it is recommended that policymakers and healthcare providers develop and implement supportive care strategies that address common physical symptoms and are tailored to patients' age, education level, and social support status.

Keywords: *Breast Cancer Physical Well-Being Social Support Radiotherapy Quality of Life*

Introduction

Breast cancer is the most prevalent cancer among women globally, accounting for 11.7% of all new cancer cases in 2020, with over 2.3 million women diagnosed and approximately 685,000 deaths reported worldwide (Lei et al., 2021). In Iraq, breast cancer constitutes roughly 34% of all female malignancies, with incidence rates consistently rising over the past decade. The Kurdistan Region of Iraq, especially Erbil City, has observed analogous trends, with breast cancer being the predominant malignancy among women, accounting for approximately 32% of all female cancer cases. The increasing prevalence underscores the essential requirement for holistic cancer care that encompasses not only the physical facets of the illness but also the psychological and social factors that significantly influence patients' quality of life and treatment outcomes (yousif Abdulsatar Jabbar, 2025)

Radiotherapy remains a cornerstone of breast cancer treatment, significantly improving survival rates. However, it also brings a host of physical side effects such as fatigue, skin reactions, pain, and breast edema that adversely affect the physical well-being of patients (Haussmann et al., 2020). These side effects may vary in intensity and duration, often leading to significant disruption in daily functioning. The quality of care and support available during treatment plays a critical role in mitigating these effects. In developing regions, such as Erbil, where healthcare infrastructure and psychosocial support systems are still evolving, understanding the burden of physical symptoms is essential.

The physical well-being of cancer patients is a multidimensional construct that reflects the bodily effects of disease and treatment, influencing quality of life and treatment adherence (Fabi et al., 2024). Radiotherapy, despite being effective in tumor control, often contributes to adverse physical effects such as persistent fatigue, localized pain, lymphedema, and decreased functional mobility (Karri et al., 2021). These physical challenges can become chronic, impacting rehabilitation, daily activity levels, and overall life satisfaction (Maher et al., 2015). Evidence suggests that patients undergoing radiotherapy without adequate symptom management are at greater risk of non-compliance and psychological distress. Physical well-being also intersects with psychological and social domains, creating a complex feedback loop that affects the overall recovery process. Thus, focusing on the physical domain offers a foundation for understanding broader quality-of-life outcomes. For breast cancer patients, in particular, factors like surgery type, radiation dosage, and comorbidities can influence their physical responses to treatment (Lovelace et al., 2019).

Several studies have evaluated physical well-being in breast cancer patients globally, but the extent and pattern of these outcomes vary based on demographic, cultural, and healthcare system differences. In high-income countries, systematic interventions such as physiotherapy, dietary counseling, and fatigue management have been shown to improve patients' physical well-being during radiotherapy (Anwar et al., 2018). In contrast, such services are often lacking or inconsistently available in many developing regions. A study by Alananzeh et al. (2016) highlighted that many Arab women undergoing cancer treatment face additional physical and emotional burdens due to cultural stigmas, limited health education, and inadequate symptom control. While limited research exists in Iraq, anecdotal reports suggest similar patterns, with many patients experiencing avoidable side effects due to delayed management (Lustberg et al., 2023).

The interrelationship between physical symptoms and treatment outcomes underscores the importance of early detection and intervention in managing physical well-being. Uncontrolled symptoms not only diminish quality of life but may also reduce the effectiveness of radiotherapy through poor adherence (Zhang et al., 2022). Furthermore, physical discomfort may affect patients' mental health and their engagement with treatment protocols (Farris et al., 2025). Prior research has demonstrated that patients with higher physical symptom burdens report lower treatment satisfaction and reduced confidence in their recovery (Eton et al., 2017). Despite growing awareness, physical well-being during cancer treatment remains underexplored in many non-Western settings. In the Kurdistan Region of Iraq, particularly in Erbil, no published studies have systematically assessed the physical impact of radiotherapy on breast cancer patients. This lack of empirical data restricts clinicians' ability to develop targeted interventions and policymakers' efforts to improve patient care standards. Given the sociocultural and systemic differences in care delivery in Erbil, region-specific data are essential for creating meaningful, context-appropriate support strategies.

Despite global progress in symptom management and quality-of-life research, substantial gaps remain regarding region-specific experiences, especially in low- and middle-income countries. In Erbil, few systematic studies have been conducted to evaluate physical well-being among cancer patients during treatment, and none to date have focused exclusively on the radiotherapy phase for breast cancer patients. There is also limited understanding of how local healthcare delivery systems, social support structures, and environmental conditions influence physical health during treatment. Moreover, while international studies often incorporate multidisciplinary rehabilitation programs, such resources may not be available or fully utilized in Erbil, underscoring a critical need for localized

research. Addressing this knowledge gap can not only enhance clinical care but also contribute to health policy planning, capacity building, and patient advocacy. Therefore in this study we aim to assess the physical well-being of breast cancer patients undergoing radiotherapy in Erbil during 2024–2025.

Research Question

What is the level of physical well-being among breast cancer patients undergoing radiotherapy in Erbil during 2024–2025, and which physical symptoms are most prevalent?

Methods

Study Design, Setting, Period, and Sampling

This was a cross-sectional study conducted at Awat Radiation Oncology Center in Erbil, Iraq. A purposive sampling method was used to collect data from October 10, 2024, to March 25, 2025, This approach was chosen to include all eligible patients with breast cancer treated using radiotherapy at the Awat Radiation Oncology Center during the period under study in order to make this particular group as representative as possible

Sample Size

The sample size for this study was determined based on the availability of breast cancer women who attended the Awat Radiation Oncology Center during this period. There were 114 breast cancer women in the center, and we collected data based on the availability of the breast cancer patients. We were able to include all 114 available breast cancer patients in our study.

Inclusion/exclusion

The inclusion criteria were female breast cancer patients aged 18 to 75 years, scheduled for radiotherapy as part of their treatment, with no evidence of metastasis, able to complete the questionnaire, and willing to provide informed consent. Exclusion criteria included prior history of radiotherapy, diagnosis of other cancers, presence of severe comorbidities, and current pregnancy or lactation.

Study Tools and Data Collection

The data collection questionnaire comprised two main sections. The first section collected sociodemographic information, including age, education level, marital status, occupation, family income, place of residence, cigarette smoking habits, and alcohol consumption. The second section featured the Quality of Life–Breast Cancer Tool (QOL-BC), adapted for this study to assess physical well-being through a total of 14 items. Originally in English, the questionnaire was translated into

Kurdish using the forward–backward translation method ensuring accuracy and cultural relevance. An oncologist and a radiotherapist with mental health expertise reviewed the translated version to validate its content. The questionnaire was self-administered, and participants were allotted approximately 15–20 minutes to complete it independently, with the researcher available to provide clarification if needed.

Pilot Study

The Quality of Life–Breast Cancer Tool (QOL-BC) was pilot-tested on a sample of 25 breast cancer patients who had undergone radiotherapy at Awat Radiation Oncology Center in Erbil. The test was conducted between August 7 and September 7, 2024, with a retest one month later to assess the tool's internal consistency and reliability. Cronbach's alpha was used to evaluate internal consistency, yielding a value of 0.84, indicating excellent reliability (Taber, 2018). The data from this initial study were excluded from the final analysis.

Measures

Sociodemographic Characteristics

The first section of the questionnaire included sociodemographic data, including age, level of education, marital status, occupation, family income, place of residence, cigarette smoking and alcohol consumption.

Quality of Life Assessment

The second section assessed quality of life using selected domains from the adapted Quality of Life–Breast Cancer Tool (QOL-BC). The full scale includes four domains: physical well-being (items 1–14), covering symptoms like fatigue, pain, appetite changes, sleep disturbance, and physical discomfort; psychological well-being (items 15–36), assessing emotional states such as coping, control, appearance, anxiety, depression, and fear of recurrence; social well-being (items 37–45), exploring family distress, social support, relationships, work interference, isolation, and financial burden; and spiritual well-being (items 46–52), focusing on religious engagement, spiritual transformation, hope, and purpose. In this study, only the physical domain was assessed. All items were rated on a three-point Likert scale (mild, moderate, severe). The tool was translated into Kurdish using the forward–backward translation method, and content validity was reviewed by an oncologist and a radiotherapist with mental health expertise. The scale demonstrated very good internal consistency in the pilot study, with a Cronbach's alpha of 0.84 (Taber, 2018).

Ethical Approval and Inform Consent

This study was conducted in accordance with the guidelines of the Institutional Research Ethics Board and the Declaration of Helsinki. Ethical approval was obtained from the Ethics Committee of the College of Nursing, Hawler Medical University (Approval Code: 2521), on September 1, 2024. Written informed consent was obtained from all participants prior to data collection.

Statistical Analysis

Data were summarized using frequencies and percentages for qualitative variables, and means with standard deviations for quantitative variables. Normality testing showed that the data were not normally distributed. Therefore, to maintain the logical flow and appropriateness of the analysis, non-parametric tests were applied. The association between demographic variables and physical well-being was examined using the Chi-square test and ordinal regression analysis. All analyses were performed using Stata version 12 (StataCorp LLC, College Station, TX), with statistical significance set at $P < 0.001$.

Results

Demographic and Clinical Characteristics of Patients

A total of 114 breast cancer patients undergoing radiotherapy participated in the study. The mean age of the participants was 50.51 ± 11.98 years, with the majority falling within the 35–44 age group (28.1%, n = 32), followed by 45–54 years (26.3%, n = 30). Regarding education, a significant proportion were illiterate (42.1%, n = 48), while only 13.2% (n = 15) had a college degree or higher. In terms of marital status, most participants were married (77.2%, n = 88). A large majority were housewives (76.3%, n = 87), whereas only 17.5% (n = 20) were employed in government sectors. Almost half of the participants (48.2%, n = 55) reported insufficient family income. Concerning place of residence, most lived in urban areas (79.8%, n = 91). The overwhelming majority were non-smokers (91.2%, n = 104), and none reported alcohol consumption. The overall mean physical well-being score was 15.30 ± 8.28, which indicates a moderate symptom experience among the participants, with most categorized as having mild (50.9%, n = 58) or moderate (46.5%, n = 53) levels, and only a few experiencing severe levels (2.6%, n = 3). (Table 1)

Physical Well-being Levels

The results showed that more than half of the participants demonstrated mild levels of physical well-being, followed closely by those who experienced moderate levels, which together represented the vast majority of the sample. Only a small proportion of participants reported severe physical well-being issues. (Figure 1)

Figure 1. Physical Well-Being Levels Among Breast Cancer Patients. Created Using GraphPad Prism 9

Frequency, Percentage, and Mean Score of Physical Well-being Indicators Among Women with Breast Cancer

The results illustrated a varied distribution of physical well-being symptoms among breast cancer patients undergoing radiotherapy. Fatigue was notably prevalent, with 33.3% (n = 38) experiencing it mildly and 30.7% (n = 35) moderately, while 21.9% (n = 25) reported it severely. Appetite change was absent in over half the patients (57.9%, n = 66), and pain on swallowing and upper extremity edema were also largely unreported by 67.5% (n = 77) and 65.8% (n = 75) respectively. However, some symptoms such as weight gain, pain in neck and shoulder, and hand or finger numbness were more pronounced, with high proportions showing moderate to severe levels. Particularly concerning were symptoms like vaginal dryness and menstrual changes, which were reported as severe by 43.0% (n = 49) and 42.1% (n = 48) respectively. Overall, the mean scores for most symptoms hovered around the mild to moderate range, with “weight gain” and “overall physical health” reaching the highest average severity (1.78), reflecting considerable physical burden in these domains. For more details, refer to Table 2.

Association Between Demographic Variables and Physical Well-Being Among Breast Cancer Patients

The results showed a significant association between age group and physical well-being levels ($\chi^2 = 22.04$, $p < .001$), with a notable trend of better physical well-being (mild category) among older participants, particularly those aged 65–80 years (80.0%, n = 12). Conversely, the 35–44 age group had the highest proportion of participants reporting moderate physical well-being (75.0%, n = 24). Education level also demonstrated a significant relationship with physical well-being ($\chi^2 = 20.16$, $p = 0.03$), where institution graduates (83.3%, n = 5) and secondary school graduates (63.2%, n = 12) predominantly reported mild well-being. However, marital status, occupation, family income, residence, and cigarette smoking were not significantly associated with physical well-being ($p > 0.05$). For more details, refer to Table 3.

Ordinal Regression Analysis of Sociodemographic Factors Associated with Physical Well-Being Among Breast Cancer Patients Undergoing Radiotherapy

The results revealed that among all examined demographic variables, age group 35–44 years was the only statistically significant predictor of physical well-being ($p = 0.00$), with an estimated coefficient of 3.55 and a 95% confidence interval ranging from 1.26 to 5.83, indicating a strong

positive association. This suggests that participants in this age group were more likely to report better physical well-being compared to the reference group (65–80 years). Other variables—including level of education, marital status, occupation, family income, residence, and cigarette smoking—did not show statistically significant associations with physical well-being (all $p > 0.05$). These findings reinforce the chi-square results, emphasizing that age remains the most relevant demographic factor influencing physical well-being in this population, while other sociodemographic factors appear to have no significant independent predictive value. For more details, refer to Table 4.

Table 1: Demographic and Clinical Characteristics of Patients

Variables	Characteristics n=114	F	%
Age (year)	25 – 34	9	7.9
	35 – 44	32	28.1
	45 – 54	30	26.3
	55 – 64	28	24.6
	65 – 80	15	13.2
	Mean ± SD	50.51 ± 11.98	
Level of Education	Able to read and write	3	2.6
	Primary school	23	20.2
	Secondary school	19	16.7
	Institution graduate	6	5.3
	College graduate and more	15	13.2
	Illiterate	48	42.1
Marital Status	Married	88	77.2
	Single	9	7.9
	Widowed	13	11.4
	Divorced	4	3.5
Occupation	Governmental employee	20	17.5
	Retired	7	6.1
	Housewife	87	76.3
Family Income	Insufficient	55	48.2
	Sufficient	31	27.2
	Exceeds needs	28	24.6
Residence	Urban	91	79.8
	Rural	7	6.1
	Sub-urban	16	14.0
Cigarette Smoking	Non-smoker	104	91.2
	Ex-smoker	5	4.4
	Current smoker	5	4.4
Alcohol Consumption	No	114	100.0
	Yes	0	0
Physical Well-being	Mild	58	50.9
	Moderate	53	46.5
	Severe	3	2.6
	Mean ± SD	15.30 ± 8.28	

Note: F = Frequency, % = Percentage; and Sd= Standard Deviation.

Table 4.2: Frequency, Percentage, and Mean Score of Physical Well-being Indicators Among Women with Breast Cancer

Physical Well-being	Normal		Mild		Moderate		Sever		Mean Score
	F.	%	F.	%	F.	%	F.	%	M
Fatigue	16	14.0	38	33.3	35	30.7	25	21.9	**1.61**
Appetite change	66	57.9	24	21.1	18	15.8	6	5.3	**0.68**
Aches or pain	41	36.0	42	36.8	24	21.1	7	6.1	**1.48**
Sleep change	51	44.7	23	20.2	27	23.7	13	11.4	**1.02**
Weight gain	3	2.6	29	25.4	72	63.2	10	8.8	**1.78**
Pain on swallowing	77	67.5	23	20.2	8	7.0	6	5.3	**0.50**
Pain in neck & shoulder	24	21.1	31	27.2	23	20.2	36	31.6	**1.62**
Upper extremity edema	75	65.8	26	22.8	9	7.9	4	3.5	**0.49**
Itching	82	71.9	23	20.2	4	3.5	5	4.4	**0.40**
Hand or finger numbness	65	57.0	30	26.3	9	7.9	10	8.8	**0.68**
Tingling or burning sensation	57	50.0	43	37.7	5	4.4	9	7.9	**0.70**
Vaginal dryness / menstrual symptoms	57	50.0	2	1.8	0	0.0	49	43.0	**1.31**
Menstrual change or fertility	62	54.4	2	1.8	2	1.8	48	42.1	**1.32**
Your overall physical health	3	2.6	29	25.4	72	63.2	10	8.8	**1.78**

Note: F = Frequency; % = Percentage; M = Mean Score

Table 3: Association Between Demographic Variables and Physical Well-Being Among Breast Cancer Patients

Demographic Information	Categories	Physical Well-being			N	χ^2 test
		Mild	Moderate	Severe		
Age group	25 – 34	5 (55.6%)	4 (44.4%)	0 (0.0%)	9	χ^2=22.04 p<.001
	35 – 44	6 (18.8%)	24 (75.0%)	2 (6.3%)	32	
	45 – 54	17 (56.7%)	13 (43.3%)	0 (0.0%)	30	
	55 – 64	17 (63.0%)	9 (33.3%)	1 (3.7%)	28	
	65 – 80	12 (80.0%)	3 (20.0%)	0 (0.0%)	15	
Level of Education	Able to read and write	2 (66.7%)	0 (0.0%)	1 (33.3%)	3	χ^2=20.16 p=0.03
	Primary school	8 (36.4%)	14 (63.6%)	0 (0.0%)	23	
	Secondary school	12 (63.2%)	7 (36.8%)	0 (0.0%)	19	
	Institution graduate	5 (83.3%)	1 (16.7%)	0 (0.0%)	6	
	College graduate and more	7 (46.7%)	8 (53.3%)	0 (0.0%)	15	
	Illiterate	23 (47.9%)	23 (47.9%)	2 (4.2%)	48	
Marital Status	Married	42 (48.3%)	43 (49.4%)	2 (2.3%)	88	χ^2=2.93 p=0.82
	Single	5 (55.6%)	4 (44.4%)	0 (0.0%)	9	
	Widowed	8 (61.5%)	4 (30.8%)	1 (7.7%)	13	
	Divorced	2 (50.0%)	2 (50.0%)	0 (0.0%)	4	
Occupation	Governmental employee	10 (50.0%)	10 (50.0%)	0 (0.0%)	20	χ^2=4.50
	Retired	6 (85.7%)	1 (14.3%)	0 (0.0%)	7	
	Housewife	41 (47.7%)	42 (48.8%)	3 (3.5%)	87	

						p=0.34
Family Income	Insufficient	24 (44.4%)	28 (51.9%)	2 (3.7%)	55	χ^2=4.03
	Sufficient	20 (64.5%)	11 (35.5%)	0 (0.0%)	31	p=0.40
	Exceeds needs	13 (46.4%)	14 (50.0%)	1 (3.6%)	28	
Residence	Urban	50 (55.6%)	38 (42.2%)	2 (2.2%)	91	χ^2=0.46
	Rural	2 (28.6%)	5 (71.4%)	0 (0.0%)	7	
	Sub-urban	5 (31.3%)	10 (62.5%)	1 (6.3%)	16	p=0.24
Cigarette Smoking	Non-smoker	49 (47.6%)	51 (49.5%)	3 (2.9%)	104	χ^2=3.88
	Ex-smoker	4 (80.0%)	1 (20.0%)	0 (0.0%)	5	
	Current smoker	4 (80.0%)	1 (20.0%)	0 (0.0%)	5	p=0.42

Note: F = Frequency, % = Percentage; Sd= Standard Deviation, and Significance was set at p <.001, and Chi-Square was used.

Table 4: Ordinal Regression Analysis of Sociodemographic Factors Associated with physical Well-Being Among Breast Cancer Patients Undergoing Radiotherapy

Physical Well-being				**Variables**
95% CI		**P-Value**	**Estimate**	
UB	**LB**			
				Age group (Years)
3.58	–1.54	0.44	1.02	25 – 34
5.83	1.26	0.00	3.55	35 – 44
3.68	–0.63	0.17	1.52	45 – 54
3.29	–0.79	0.23	1.25	55 – 64
-	-	-	0 [a]	65 – 80
				Level of Education
3.94	–1.68	0.43	1.13	Able to read and write
2.38	–0.32	0.14	1.03	Primary school
1.70	–1.53	0.92	0.09	Secondary school
2.00	–4.12	0.50	–1.06	Institution graduate
2.90	–1.29	0.45	0.80	College graduate and more
-	-	-	0 [a]	Illiterate
				Marital Status
2.69	–3.37	0.82	–0.34	Married
2.70	–4.14	0.68	–0.72	Single
4.21	–2.50	0.62	0.85	Widowed
-	-	-	0 [a]	Divorced
				Occupation
1.60	–2.05	0.81	–0.23	Governmental employee
1.95	–3.50	0.58	–0.77	Retired
-	-	-	0 [a]	Housewife
				Family Income
0.98	–1.40	0.73	–0.21	Insufficient
0.24	–2.41	0.11	–1.09	Sufficient
-	-	-	0 [a]	Exceeds needs
				Residence

0.30	–2.42	0.13	–1.06	Urban
1.92	–2.45	0.81	–0.27	Rural
-	-	-	0 [a]	Sub-urban
				Cigarette Smoking
3.43	–1.62	0.48	0.90	Non-smoker
2.58	–4.95	0.54	–1.18	Ex-smoker
-	-	-	0 [a]	Current smoker

Note: Abbreviations: LB, lower bound; UP, upper bound, and Significance was set at p <.001.

[a] This parameter is reference

Discussion

The present study was conducted to examine the relationship between sociodemographic factors and the physical and social well-being of breast cancer patients undergoing radiotherapy in Erbil during 2024-2025. Overall, the results revealed that participants experienced moderate physical well-being during radiotherapy treatment, with most patients reporting a mild to moderate symptom burden rather than severe physical distress.

Breast cancer treatment, particularly radiotherapy, can significantly impact patients' quality of life through various physical and psychological side effects that may persist throughout and beyond the treatment course (Lovelace et al., 2019, Abdo et al., 2023). In Erbil, despite the growing prevalence of breast cancer, there remains limited research examining the well-being of patients during radiotherapy within the local healthcare context. The Kurdish region of Iraq faces unique challenges in cancer care delivery, including resource limitations and varying levels of supportive care services. Given the importance of these details, we aimed to examine the relationship between sociodemographic factors and the physical well-being of breast cancer patients undergoing radiotherapy in Erbil.

The demographic profile of our study participants revealed that most were married, illiterate housewives residing in urban areas, representing a potentially vulnerable population segment. This demographic pattern aligns with studies from neighboring countries such as Iran and Turkey, that have identified similar characteristics among breast cancer patients (Aydoğan et al., 2015, Aminisani et al., 2016, Mahmud and Agha, 2024). A recent study conducted in Saudi Arabia reported comparable demographic patterns among breast cancer patients, reinforcing the consistency of this profile across the Middle East (Omer et al., 2024). However, unlike some international studies that report significant variations in treatment experiences across educational levels, our findings suggest

that sociodemographic factors may influence well-being through more complex pathways in the Erbil context. The predominance of illiterate participants highlights potential challenges in health literacy that may affect symptom recognition, communication with healthcare providers and self-management strategies.

The urban residence pattern observed among most participants reflects the centralization of cancer treatment facilities in Erbil, potentially leading to accessibility challenges for rural patients. Previous research in similar settings has demonstrated that urbanization patterns significantly impact cancer care experiences, with urban patients often having better access to supportive services but potentially less community support (Butow et al., 2012). The particular vulnerabilities of this demographic profile—combining limited formal education, traditional gender roles, and household responsibilities—suggest that culturally appropriate and tailored supportive interventions may be especially important for this population.

Our study found that participants mostly reported mild to moderate physical well-being, with only a few experiencing severe symptoms during radiotherapy. This pattern is somewhat consistent with global literature from middle-income countries, which typically reports moderate symptom burden during radiotherapy for breast cancer (Milton et al., 2022, Aydoğan et al., 2015, Neu et al., 2025). For example, a recent study conducted in Saudi Arabia also demonstrated that the majority of women receiving radiotherapy had moderate physical symptoms such as fatigue and musculoskeletal pain (Taghizadeh et al., 2024).The finding that most patients experienced manageable rather than severe physical symptoms suggests that current symptom management approaches may be providing some relief, though there remains significant room for improvement. The prevalence of moderate symptoms indicates that while radiotherapy is generally tolerable for most patients, supportive care addressing physical discomfort should remain a priority throughout treatment. The ability of most patients to maintain moderate physical well-being despite undergoing intensive treatment speaks to both the resilience of the patient population and potentially effective supportive care practices within the radiotherapy department. However, even moderate symptom burden can significantly impact daily functioning and quality of life, suggesting that enhanced symptom management protocols could further improve patient experiences during radiotherapy.

A notable finding from our study was that symptoms such as vaginal dryness, menstrual changes, and weight gain were more prominent and severe compared to other physical issues. This pattern differs somewhat from some international studies that often report fatigue, skin reactions, and pain

as the predominant radiotherapy side effects (Brook, 2020). The prominence of gender-specific symptoms in our population highlights the importance of comprehensive assessment and management of endocrine and reproductive side effects during breast cancer treatment. These findings suggest that supportive care protocols in Erbil should particularly address these more severe symptoms, potentially through specialized counseling, symptom management strategies, and appropriate medication when indicated. The gender-specific nature of the more severe symptoms underscores the complex interplay between cancer treatment and women's reproductive health. This variation can be due to regional biological trends but also potentially due to cultural barriers to the early presentation of more typical symptoms. Sexual or reproductive health is frequently stigmatized in Middle Eastern societies, particularly in the clinic (El Ansari et al., 2025). This intercultural divide may lead to underreporting of the common complaints of discomfort while more evident or unavoidable complaints of intimacy are ultimately reported. This finding aligns with emerging research emphasizing the need for integrated approaches to manage cancer treatment effects on female reproductive function and sexuality (Carter et al., 2018, Wilson et al., 2021). Cultural factors may also influence symptom reporting and management, particularly for intimate concerns like vaginal dryness. Consequently, it may be essential to implement culturally sensitive communication strategies and patient education programs to enhance symptom disclosure and management.

Our study revealed a significant relationship between age and physical well-being, with older patients who tended to report better well-being during radiotherapy. This finding contrasts with some assumptions about age-related vulnerability but aligns with several studies report better tolerance of cancer treatments among older patients (Lotfi et al., 2008, Zhang et al., 2022). Several factors may contribute to this age-related pattern, including different expectations about physical comfort, greater experience with managing health challenges, or potentially less aggressive treatment protocols for older patients. The psychological resilience that often develops with age may also enable older patients to adapt more effectively to the challenges of cancer treatment. The emergence of age as the only significant predictor of physical well-being reinforces its importance in understanding patient experiences during radiotherapy. This finding suggests that age-appropriate supportive care interventions may be beneficial, with younger patients potentially requiring more intensive symptom management and supportive interventions. The relationship between age and well-being also highlights the complex interplay between biological, psychological, and social factors in shaping cancer treatment experiences.

Despite the valuable insights provided by this study, several limitations should be acknowledged. The cross-sectional design captures patient experiences at a single point during treatment, limiting our understanding of symptom trajectories. The sample size, though appropriate for the analysis, may limit the detection of smaller effect sizes for some variables. Additionally, cultural norms that emphasize modesty and emotional suppression may cause participants to underreport, particularly when it comes to intimacy and mental health problems. Future research should consider longitudinal designs to track well-being throughout the treatment journey, mixed-methods approaches to explore the cultural context of symptom experiences, and intervention studies testing targeted supportive care strategies for the specific symptoms identified as most problematic in this population.

Conclusion

Breast cancer patients undergoing radiotherapy demonstrated moderate well-being. Therefore, it is recommended that policymakers and healthcare providers develop and implement supportive care strategies that address common physical symptoms and are tailored to patients' age, education level, and social support status. Specific recommendations are made to include standard symptom screening tools like the Edmonton Symptom Assessment System (ESAS) into regular oncology practice to facilitate early assessment and treatment of physical problems. Professional education of staff in culturally sensitive communication, especially for gender-specific symptoms like vaginal dryness and menstrual alterations, should be integrated into clinical practice. Such interventions should be integrated into routine oncology care to enhance the quality of life of patients during treatment. Future research is encouraged to explore longitudinal changes in physical well-being across different treatment phases and to evaluate the effectiveness of targeted interventions in improving physical outcomes among diverse patient populations.

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Conflicts of Interest

The authors declare that there are no conflicts of interest related to this work.

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