

Determinants of Quality of Life in Breast Cancer Survivors Receiving Hormonal Treatment in Northern Morocco

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Abstract

Purpose: The aim of this study was to evaluate the quality of life of breast cancer patients undergoing adjuvant hormonal therapy over a period of five years, while also exploring the factors that influence this quality.

Methods: A cross-sectional study was conducted at Two Medical Cancer Centers in Northern Morocco, involving 216 breast cancer survivors. The participants' quality of life was assessed using the Functional Assessment of Cancer Therapy questionnaire, specifically its endocrine subscale (FACT-ES).

Results: The results indicated that age significantly affected both overall quality of life and endocrine symptoms ($p = 0.0001$). Furthermore, education demonstrated a significant impact on physical and emotional well-being ($p = 0.009$ and $p = 0.0025$, respectively). Marital status was also found to have a significant effect on overall quality of life ($p = 0.001$) and endocrine symptoms ($p = 0.002$). Although no significant effect of place of residence on the total quality of life score (FACT-ES) was observed, rural women exhibited higher scores on physical and functional well-being compared to urban women (23 vs. 15 and 23 vs. 19, respectively). However, urban women had higher scores on social and emotional well-being (21 vs. 14 and 20 vs. 16, respectively). Among clinical characteristics, only menopausal status was found to influence general quality of life and endocrine symptoms ($p = 0.0001$).

Conclusion: This study highlights that quality of life in breast cancer survivors on hormone therapy is influenced by various factors, including age, education, marital status, and menopausal status. Healthcare professionals should be mindful of these factors to ensure appropriate care for vulnerable groups and improve the quality of life domains for breast cancer survivors.

Keywords: Quality of Life; Breast Cancer; Survivors; Hormonal Therapy; Determinants; Northern Morocco

Introduction

Breast cancer (BC) is the leading cause of disease among women worldwide, with over 2.2 million new cases and 685 thousand deaths reported in 2020 [1]. Morocco is no exception, with 11,747 new cases (38.9%) and 3,695 deaths (10.5%) recorded in the same year [2].

However, thanks to advancements in diagnostic methods and the development of new therapeutic techniques, BC is now considered one of the most treatable cancers. The 5-year survival rate has steadily improved, reaching 90% in 2020 in developed countries [1]. With an increasing number of long-term survivors, it is crucial to thoroughly assess their quality of life (QoL) and the factors that impact it.

Numerous studies have focused on identifying the key factors that influence the QoL of BC survivors [3,4]. These factors include sociodemographic characteristics, general health (clinical features), and treatment. However, most of these studies have primarily concentrated on women with breast cancer during various stages of the treatment process, rather than specifically during the adjuvant hormone therapy period [5-7].

In the Moroccan context, a recent study [8] conducted at the National Institute of Oncology in Rabat aimed to examine the impact of socioeconomic determinants on the QoL of women with BC two years after diagnosis. The study included 304 women and utilized the EORTC QLQ-C30 and EORTC QLQ-BR 23 as the data collection questionnaires. The findings of this study indicated that financial difficulties, discrimination, distance from home to the treatment center, occupational status, and medical coverage were correlated with QoL.

To the best of our knowledge, this present study is the first in Morocco to address the factors influencing the QoL of BC survivors undergoing five years of adjuvant hormonal treatment in the Northern Region (NR). The FACT-ES questionnaire was employed as the measurement tool for this investigation. The primary objective of this study was to assess the impact of socioeconomic and clinical factors on the QoL of BC survivors in the northern part of Morocco throughout the five years of hormonal treatment.

The implications of this study are of significant importance in clinical practice, as the understanding of these factors by oncology professionals can lead to appropriate management strategies for women who are at risk of experiencing a decline in QoL during this long-term treatment.

Materials and Methods

Study population

The current study is a cross-sectional analysis conducted on 216 breast cancer survivors who underwent hormonal treatment between the years 2015 and 2020. These participants were selected from the local cancer registry, which is situated at the focal point of each province within the Tangier-Tetouan-Al-Hoceima region. The registry contains demographic and clinical data for all newly diagnosed women with breast cancer.

The inclusion criteria for this study encompassed women diagnosed with breast cancer at stages I to IV, who had undergone either mastectomy or conservative surgery, received chemotherapy and/or radiotherapy, and were currently undergoing adjuvant hormonal therapy such as Tamoxifen or AI. The study database initially consisted of 324 women, out of which 216 successfully provided responses to our questionnaire, yielding a response rate of 67%.

Quality of life was assessed using the FACT-B questionnaire, with its Endocrine Symptoms (ES) subscale [9,10]. The ES score was combined with the FACT-B score to obtain a global quality-of-life score called FACT-ES.

FACT-ES includes the following subscales: Physical Well-Being (PWB) (seven items), Social/Family Well-Being (SWB) (seven items), Emotional Well-Being (EWB) (six items), Functional Well-Being (FWB) (seven items) and the Endocrine (ES) subscale (19 items). FACT-ES has been translated and validated in several languages, including Arabic. Version 4 of FACT-ES in Arabic was used for this study. Participants' responses to the various items were assessed using a 5-point Likert scale (0 = not at all; 1 = a little; 2 = a little; 3 = quite a lot).

and 4 = a lot). A higher overall QoL score (FACT-ES) and higher scores for individual domains and ES indicate better QoL. Missing values were calculated as an average of observed items, if more than half of the items making up the subscale received the response suggested by its designer [9].

Data analysis

The data were analyzed using the Statistical Package for the Social Sciences version 21.0. Descriptive statistics such as frequency and percentage were utilized to analyze patients’ personal and disease information. To assess the differences in means, a one-way ANOVA or t tests where appropriate. Statistical significance was set at $p \leq 0.05$.

For the interpretation of group differences in QoL based on the FACT scales, the minimum important difference (MID) is estimated to be between 3 to 8 points [11,12]. As recommended by the FACT developer [13], a difference of two or more points is considered meaningful for the subscales.

Results

Sociodemographic and clinical data

With regard to the socio-demographic characteristics of our sample, the majority of patients (72%) were aged 45 and over. More than half (59%) were married. A significant proportion (64.4%) had no formal education.

In terms of clinical characteristics, 68% of patients were classified as stage II of cancer, and almost half were postmenopausal (49.5%).

For treatment modalities, a large proportion of the sample (75%) had undergone mastectomy, and 76% had received a combination of radiotherapy and chemotherapy. In addition, 48% of patients had been on hormonal therapy for more than two years. The most commonly used drug was tamoxifen, in 56% of participants.

Table 1 and 2 present the detailed demographic and clinical characteristics of the sample.

Characteristics	N	%
Age		
< 45 years	61	28.2
≥ 45 years	155	71.8
Education level		
Illiterate	139	64.3
Primary	33	15.3
Secondary	35	16.2
University	9	4.2
Marital status		
Single	61	28.2
Married	127	58.8
Divorced	12	5.6
Widowed	16	7.4
Number of children		
No children	74	34.2
One child	14	6.5

Two children	28	13.0
Three children and more	100	46.3
Job		
Housewife	206	95.4
Employee	10	4.6
Economic level		
Low	65	30.1
Medium	149	69.0
High	2	.9
Insurance type		
CNOPS	18	8.3
CNSS	8	3.7
RAMED	189	87.5
Others	1	.5
Provenance		
Rural	88	40.7
Urban	128	59.3

Table 1: Sociodemographic and clinical characteristics.

Characteristics	N	%
Stage of cancer		
Stage I	5	2.3
Stage II	147	68.1
Stage III and IV	64	29.6
Type Hormone		
Tamoxifen	123	56.9
IA	93	43.1
Menopausal status		
Pre-menopause	35	16.2
Menopause	107	49.5
Menopausal due to treatment	74	34.3
Type surgery		
Mastectomy	163	75.5
Conservative	53	24.5
Previous treatment		
Chemotherapy	37	17.1
Radiotherapy	14	6.5
Chemotherapy + radiotherapy	165	76.4

Table 2: Clinical characteristics.

Table 3 shows the means and standard deviations of the FACT-ES subscales. The subscales with the lowest averages are: physical well-being (19.02 ± 4.25), social/family well-being (18.93 ± 3.65) and emotional well-being (18.88 ± 2.50).

FACT	Mean ± SD ¹	Median (IQR) ²
PWB	19.02 ± 4.25	16 (18)
SWB	18.93 ± 3.65	21 (11)
EWB	18.88 ± 2.50	20 (9)
FWB	21.04 ± 2.68	20 (10)
ES	46.48 ± 8.80	39 (28)
FACT ES	124.37 ± 9.18	120 (39)

Table 3: Mean ± SD, median, and IQR of FACT-ES scores.

1: Mean - standard deviation; 2: Median (interquartile range); FACT=Functional Assessment of Cancer Treatment; IQR: Inter-Quartile Range; PWB: Physical Well-Being; SWB: Social/Family Well-Being; EWB: Emotional Well-Being; FWB: Functional Well-Being; FACT-ES Score=PWB+SWB+EWB+FWB +ES; ES: Endocrine Symptom Subscale.

Effect of age on the FACT-ES subscales

Based on the findings presented in table 4, a significant effect of age on the general QoL scale (FACT-ES) and endocrine symptom (ES) was observed (p=0.0001). However, no statistically significant difference was detected between the two age groups in relation to the other domains of QoL (p > 0.05).

FACT dimensions	< 45 years	≥ 45 years	t tests ³	P-value*
PWB	19.14 ± 4.13 ¹ 16.75 (12) ²	18.98 ± 4.31 ¹ 16.64 (18) ²	0.259	0.796
SWB	18.57 ± 3.84 ¹ 18 (10) ²	19.07 ± 3.57 ¹ 20.72 (11) ²	-0.900	0.369
EWB	18.67 ± 2.48 ¹ 19 (9) ²	18.97 ± 2.51 ¹ 19.65 (9) ²	-0.798	0.426
FWB	21.13 ± 2.77 ¹ 20.40 (10) ²	21.01 ± 2.66 ¹ 20.13 (10) ²	0.290	0.772
ES	39.63 ± 2.36 ¹ 39.34 (12) ²	49.17 ± 8.95 ¹ 53.08 (28) ²	-8.193	0.0001
FACT ES	117.16 ± 4.03 ¹ 117.25 (23) ²	127.21 ± 9.09 ¹ 130.06 (37) ²	-8.301	0.0001

Table 4: Significant effects of age on the FACT-ES subscales.

1: Mean-standard deviation; 2: Median (interquartile range); 3: t tests; *: The difference is significant at ≤ 0.05.

Effect of education on the FACT ES subscales

Table 5 reveals that level of education has a significant impact on various aspects of overall QoL (p = 0.0001). Specifically, physical well-being (p = 0.009), emotional well-being (p = 0.025) and ES (p = 0.0001). In addition, a marginal effect was observed on functional well-being (p = 0.048). Illiterate women obtained higher scores for physical, functional and emotional well-being than women with a higher level of education (university).

FACT dimensions	Illiterate	Primary	Secondary	University	One way ANOVA ³	P-value*
PWB	19.37 ± 4.19 ¹ 16.80 (13) ²	18.96 ± 4.01 ¹ 16.63 (10) ²	18.88 ± 4.52 ¹ 16.80 (16) ²	14.44 ± 2.55 ¹ 15.16 (8) ²	3.952	0.009
SWB	18.83 ± 3.63 ¹ 20.52 (11) ²	19.21 ± 4.00 ¹ 21.09 (10) ²	18.77 ± 3.46 ¹ 19.33 (10) ²	20 ± 3.74 ¹ 21 (10) ²	0.37	0.773
EWB	18.73 ± 2.54 ¹ 19.30 (9) ²	18.75 ± 2.37 ¹ 19.22 (7) ²	19 ± 2.46 ¹ 19.62 (9) ²	21.33 ± 1.22 ¹ 21.25 (3) ²	3.18	0.025
FWB	21.23 ± 2.61 ¹ 20.52 (10) ²	20.87 ± 2.59 ¹ 20.22 (9) ²	21.08 ± 3.09 ¹ 20 (10) ²	18.66 ± 1.11 ¹ 18.80 (3) ²	2.67	0.048
ES	48.64 ± 8.99 ¹ 53.18 (26) ²	41.84 ± 5.62 ¹ 40.33(26) ²	42.91 ± 7.92 ¹ 40.14 (25) ²	44 ± 7.95 ¹ 43.7 (21) ²	8.86	0.0001
FACT ES	126.81 ± 9.10 ¹ 130 (35) ²	119.66 ± 6.3 ¹ 118 (35) ²	120.65 ± 8.2 ¹ 118 (37) ²	118.44 ± 9.6 ¹ 116 (26) ²	10.55	0.0001

Table 5: Significant effects of education on FACT ES subscales.

1: Mean-standard deviation; 2: Median (interquartile range); 3: One-way ANOVA; *: The difference is significant at ≤ 0.05.

Effect of marital status on FACT-ES subscales

Table 6 illustrates the significant influence of marital status on different aspects of the overall QoL score (FACT-ES). The most significant effects are observed on physical well-being (p = 0.031) and functional well-being (p = 0.012), as well as an even more pronounced effect on ES (p = 0.002). Married women scored higher on social and emotional well-being, while single and divorced participants showed lower scores on overall QoL.

FACT dimensions	Single	Married	Divorced	Widowed	One way ANOVA ³	P-value*
PWB	20.39 ± 4.09 ¹ 22.50 (11) ²	18.45 ± 4.22 ¹ 16.41 (18) ²	18.75 ± 4.35 ¹ 16.66 (12) ²	18.56 ± 4.30 ¹ 17.71 (11) ²	3.015	0.031
SWB	17.83 ± 3.69 ¹ 15.79 (11) ²	19.36 ± 3.58 ¹ 21.06 (10) ²	19.58 ± 3.65 ¹ 21 (9) ²	19.18 ± 3.46 ¹ 20.60 (9) ²	2.626	0.051
EWB	18.19 ± 2.46 ¹ 17.52 (9) ²	19.17 ± 2.43 ¹ 19.86 (9) ²	18.41 ± 2.39 ¹ 18.50 (6) ²	19.62 ± 2.84 ¹ 20.66 (9) ²	2.771	0.043
FWB	21.96 ± 2.65 ¹ 22.76 (10) ²	20.60 ± 2.60 ¹ 19.69 (10) ²	20.75 ± 2.83 ¹ 20 (8) ²	21.25 ± 2.64 ¹ 20.40 (8) ²	3.737	0.012
ES	45.19 ± 9.22 ¹ 44.56 (25) ²	46.48 ± 8.34 ¹ 42.58 (27) ²	42.91 ± 7.78 ¹ 41.10 (21) ²	54.00 ± 8.02 ¹ 56.66 (24) ²	5.275	0.002
FACT ES	123.59 ± 9.75 ¹ 118.92 (37) ²	124.08 ± 8.69 ¹ 120.78 (37) ²	120.41 ± 6.68 ¹ 118.50 (22) ²	132.62 ± 8.52 ¹ 136 (24) ²	5.567	0.001

Table 6: Significant effects of marital status on FACT-ES subscales

1: Mean-standard deviation; 2: Median (interquartile range); 3: One-way ANOVA; *: The difference is significant at ≤ 0.05.

Effect of provenance on FACT-ES subscales

Table 7 reveals that while the total QoL score (FACT-ES) was not significantly affected by place of residence, most of its dimensions, including physical, social, emotional, and functional well-being, were influenced by where individuals lived ($P < 0.05$). Notably, the impact of place of residence on emotional and social well-being was particularly noteworthy, with a marginal effect on ES ($p = 0.050$). Specifically, the findings indicate that women residing in rural areas obtained higher scores in physical and functional well-being compared to their urban counterparts (23 vs. 15) and (23 vs. 19) respectively. Conversely, urban women reported higher scores in social and emotional well-being (21 vs. 14) and (20 vs. 16) respectively.

FACT dimensions	Rural	Urban	t tests ³	P-value*
PWB	23.80 ± 1.42 ¹ 24.01 (10) ²	15.74 ± 1.61 ¹ 15.75 (17) ²	37.791	0.0001
SWB	14.97 ± 0.75 ¹ 14.95 (4) ²	21.64 ± 1.98 ¹ 21.97 (10) ²	-30.019	0.0001
EWB	16.18 ± 0.96 ¹ 16.27 (4) ²	20.75 ± 1.18 ¹ 20.70 (7) ²	-29.981	0.0002
FWB	23.90 ± 1.078 ¹ 23.73 (5) ²	19.07 ± 1.36 ¹ 19.03 (10) ²	27.821	0.0001
ES	45.06 ± 9.024 ¹ 40.96 (27) ²	47.45 ± 8.54 ¹ 47.2 (27) ²	-1.969	0.050
FACT ES	123.94 ± 9.48 ¹ 119.31 (35) ²	124.67 ± 9 ¹ 125 (39) ²	-0.572	0.568

Table 7: Significant effects of Provenance on FACT ES subscales.

1: Mean-standard deviation; 2: Median (interquartile range); 3: t tests. *: The difference is significant at ≤ 0.05 .

Effect of menopausal status

According to the results presented in table 8, statistical analysis revealed significant effects of menopausal status on total QoL score (FACT-ES) and ES ($p = 0.0001$). Thus, menopausal women presented higher scores on general QoL. However, no significant differences were observed between the three groups for the other dimensions of QoL.

FACT dimensions	Pre-menopause	Menopause	Menopausal due to traitement	One way ANOVA ³	P-value*
PWB	19.05 ± 4.6 ¹ 16.80 (16) ²	18.66 ± 4.21 ¹ 16.50 (18) ²	19.54 ± 4.14 ¹ 16.928 (11) ²	0.928	0.397
SWB	19.08 ± 3.87 ¹ 20.66 (10) ²	19.28 ± 3.50 ¹ 21.06 (11) ²	18.35 ± 3.73 ¹ 16.62 (10) ²	1.457	0.235
EWB	19 ± 2.42 ¹ 19.8 (8) ²	19.12 ± 2.45 ¹ 19.78 (9) ²	18.50 ± 2.59 ¹ 18 (9) ²	1.394	0.250
FWB	20.91 ± 2.84 ¹ 20.66 (8) ²	20.88 ± 2.57 ¹ 19.95 (9) ²	21.33 ± 2.79 ¹ 21.40 (10) ²	0.661	0.517
ES	39.77 ± 2.76 ¹ 39.36 (12) ²	53.1 ± 7.35 ¹ 55.30 (25) ²	40.06 ± 4.28 ¹ 39.23 (24) ²	135.266	0.0001
FACT ES	117.82 ± 5 ¹ 117.40 (26) ²	131.06 ± 7.84 ¹ 132.7 (37) ²	117.79 ± 4.18 ¹ 117.56 (23) ²	116.782	0.0001

Table 8: Significant effects of menopausal status on FACT ES subscales

1: Mean-standard deviation; 2: Median (interquartile range); 3: One-way ANOVA. *: The difference is significant at ≤ 0.05 .

Effect of treatment type on FACT-ES subscales

Based on the information presented in table 9, the type of prior treatment did not have a significant impact on the QoL. However, it is worth noting that women who exclusively received radiation therapy demonstrated relatively high scores in terms of social and emotional well-being, and less burden on (ES).

FACT Dimensions	Chemotherapy	Radiotherapy	Chemotherapy+ radiotherapy	One way ANOVA ³	P-value*
PWB	18.89 ± 4.59 ¹ 16.60 (16) ²	17.42 ± 4.75 ¹ 16.33 (17) ²	19.19 ± 4.13 ¹ 16.71 (12) ²	1.133	0.324
SWB	18.62 ± 3.60 ¹ 19.33 (11) ²	20.35 ± 3.89 ¹ 22.22 (10) ²	18.87 ± 3.64 ¹ 20.45 (10) ²	1.218	0.298
EWB	18.75 ± 2.72 ¹ 19.09 (9) ²	19.64 ± 2.06 ¹ 20.25 (6) ²	18.85 ± 2.48 ¹ 19.39 (9) ²	0.700	0.498
FWB	21 ± 2.91 ¹ 20 (10) ²	20.50 ± 1.91 ¹ 19.88 (6) ²	21.10 ± 2.69 ¹ 20.26 (10) ²	0.329	0.720
ES	44.62 ± 8.55 ¹ 42.23 (23) ²	48.64 ± 9.09 ¹ 52.50 (25) ²	46.71 ± 8.81 ¹ 42.41 (27) ²	1.309	0.272
FACT ES	121.89 ± 9.10 ¹ 119.25 (32) ²	126.57 ± 10.37 ¹ 128 (35) ²	124.74 ± 9.05 ¹ 120.91 (35) ²	1.902	0.152

Table 9: Significant effects of treatment type on FACT-ES subscales

1: Mean-standard deviation; 2: Median (interquartile range); 3: One-way ANOVA. *: The difference is significant at ≤ 0.05.

Effect of surgery type on FACT-ES subscales

Based on the findings presented in table 10, no significant differences were observed across all subscales. However, it is worth noting that patients who underwent mastectomy reported a relatively low burden of (ES).

FACT Dimensions	Mastectomy	Conservative	t tests ³	P-value*
PWB	19.11 ± 4.29 ¹ 16.74 (18) ²	18.75 ± 4.18 ¹ 16.45 (11) ²	0.536	0.592
SWB	18.95 ± 3.69 ¹ 20.52 (11) ²	18.84 ± 3.55 ¹ 19.52 (10) ²	0.186	0.852
EWB	18.96 ± 2.44 ¹ 19.53 (9) ²	18.66 ± 2.67 ¹ 19.33 (9) ²	0.764	0.446
FWB	21.06 ± 2.72 ¹ 20.33 (10) ²	21 ± 2.60 ¹ 20.20 (9) ²	0.144	0.886
ES	46.74 ± 8.89 ¹ 42.31 (28) ²	45.67 ± 8.54 ¹ 41.87 (23) ²	0.763	0.446
FACT ES	124.84 ± 9.06 ¹ 120.83 (37) ²	122.94 ± 9.50 ¹ 119.57 (35) ²	1.208	0.192

Table 10: Significant effects of type of surgery on FACT-ES subscales.

1: Mean-standard deviation; 2: Median (interquartile range); 3: t tests. *: The difference is significant at ≤ 0.05.

Discussion

The assessment of QoL and its determinants in BC survivors has garnered the interest of numerous researchers across multiple countries [6,14,15]. However, studies focusing on the QoL of BC survivors undergoing hormone therapy are scarce, and there is a notable absence of such studies in the African context. To the best of our knowledge, no study has been conducted in this regard.

This study aims to explore and evaluate the sociodemographic and clinical factors that influence the QoL of BC survivors in Northern Morocco during the five years of hormone treatment. The findings from this research could have significant clinical implications in the field of oncology care, enabling the appropriate management of vulnerable cases at risk of QoL deterioration during this long-term treatment.

The results of this study revealed that age, education, marital status, origin, and menopausal status exerted an impact on the QoL of BC survivors undergoing hormone therapy. The influence of age on QoL has been examined in various studies. However, the relationship has not been explicitly explained in most of these studies, and the results have often been contradictory [16-18]. These discrepancies could be attributed to differences in sample sizes or the use of diverse questionnaires in the studies. For instance, some authors found that QoL tends to deteriorate in older BC patients compared to younger women [5,19,20]. Other studies have reported the opposite, indicating that younger age is a significant risk factor for poor QoL, and patients in the older age group exhibited better QoL [21]. Furthermore, some results have shown that age only affects certain dimensions of QoL, such as the physical and emotional roles [7,22]. Due to the substantial disparity in the existing literature, further research is necessary to provide a clearer explanation in this regard.

The present study revealed that young age (less than 45 years) is associated with lower overall QoL. These findings contradict some previous studies which found that younger patients generally had better QoL across various parameters [23,24]. Our results can be explained by the fact that younger women tend to voice complaints and pay more attention to adverse effects compared to older women [25].

Interestingly, our study found that age did not have a significant effect on physical well-being, which is inconsistent with previous research indicating a positive relationship between younger age and better physical functioning [26].

Regarding social well-being, our study observed relatively lower scores among young participants compared to older women, which aligns with the results of a recent Moroccan study highlighting a good quality of social life among older individuals [16]. However, this finding contradicts some other studies that found a strong association between young age and better social well-being [27]. One possible explanation for our results is that older women tend to live in more stable social conditions compared to younger women, who may experience divorce and difficulties with spouses who do not accept their illness [28].

In terms of psychological and emotional problems, our study did not find any association between age and emotional well-being. The literature presents contradictory results, as some studies reported more pronounced depressive syndromes in younger patients [29], while others found that older women had more emotional difficulties than younger women [19,20]. Given the inconsistency of these results, further research is needed to clarify the influence of age on the psychological QoL of BC survivors, particularly among Moroccan patients.

Regarding the impact of marital status on QoL, our study revealed a significant effect of this variable on overall QoL. Married women had higher scores on social and emotional well-being, while single participants had higher scores on physical and functional well-being. Despite limited research directly examining the influence of marital status on QoL, existing studies have consistently found a positive effect of living with a partner or parent on QoL [30,31].

In terms of education level, our study found a significant effect on the overall QoL score, including physical well-being, emotional well-being, and ES. Women with a higher educational level reported higher emotional well-being compared to illiterate participants. However, illiterate participants had higher scores for physical well-being, functional well-being, and overall QoL. Conversely the findings of a study that reported high QoL scores among educated women (at least elementary school) [5]. Some studies found no impact of educational level on QoL [32]. Notably, a recent study reported a marginal effect of educational level on physical functioning [7]. The discrepancy in results may be attributed to the cultural differences among the study populations.

Regarding the impact of provenance on QoL, our study revealed that women living in rural areas reported significantly higher levels of the physical and functional dimension. This could be attributed to the “positive attitude” adopted by these rural women as a coping strategy for their disease [33]. Additionally, the nature of rural life, characterized by healthy eating and a calm, clean natural environment, may contribute to these higher levels, despite challenges in accessing healthcare services [34]. Surprisingly, urban survivors exhibited higher psychosocial well-being than women in rural areas, contradicting the expectation that strong social ties in rural communities would have a positive impact. This could be due to the availability of social integration opportunities in cities through various organizations and associations specializing in holistic care for women in oncology, including therapeutic follow-up, psychological support, and assistance in social integration [35].

In addition to socio-demographic characteristics, our study also examined the influence of certain clinical determinants on QoL. Menopausal status was found to have a significant effect on the overall QoL score, with menopausal women showing higher scores in the FACT-ES and ES dimensions compared to other status categories. However, no significant differences were observed for the other dimensions of QoL. These findings contradict some previous studies. Imran, *et al.* (2019) demonstrated that pre-menopausal women had better scores on the general health scale and most functional scales, particularly physical functioning. Similarly, Assogba, *et al.* (2020) found that postmenopausal women had lower QoL scores in terms of overall health status, role functioning, and social functioning.

Regarding the impact of previous treatment on QoL, our study did not find a significant effect on FACT-ES subscales, which contradicts the results of a recent study conducted in Egypt that showed significant differences in QoL based on different lines of treatment (hormone therapy, chemotherapy, and radiation therapy) [37]. This conflicting result could be attributed to variations in methodologies and scales used.

In relation to the impact of the type of surgery on QoL, our analyses did not find a significant effect. These results are in line with some studies suggesting that the type of surgery does not have a significant impact on participants' QoL [38]. However, they are inconsistent with findings from other studies that showed higher QoL scores among women who underwent conservative breast surgery compared to those who underwent total mastectomy [31]. Further studies are needed to clarify the specific effects of surgery on QoL in breast cancer survivors, particularly in relation to hormone therapy.

Limitation of the Study

This study has some limitations, the most important limitations are linked to the descriptive and cross-sectional nature of the study, as some factors were collected retrospectively, which may have influenced the results obtained. Moreover, the sample was relatively small, so the results cannot be generalized to the entire Moroccan population. Despite its limitations, the conclusions drawn from this research may help to improve the QoL of breast cancer survivors undergoing hormonal therapy. It may pave the way for finding optimal patient-centered interventions, while taking into account the determinants of QoL.

Conclusion

In conclusion, our study findings highlight that socio-demographic characteristics such as age, educational level, marital status and place of origin have a significant effect on the QoL of BC survivors undergoing hormone therapy. compared with clinical characteristics,

only menopausal status was identified as an influencing factor. The conclusions drawn from this work may have important implications that can help healthcare professionals provide personalized care to patients during endocrine therapy.

Further prospective research on the quality-of-life trajectory of breast cancer patients in other Moroccan oncology hospitals, with a larger sample size, could add further data to the Moroccan oncology nursing literature.

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Conflict of Interest

The authors declare no competing interests.

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