Quality of life of patients treated for stage IV breast cancer. Multidimensional assessment and examination of determining factors

Juan Ignacio Arraras[1,2,3], Jose Juan Illarramendi[1,3], Ana Manterola[2,3], Uxue Zarandona[2,3], Berta Ibañez[4], Andrew Bottomley[5], Lucia Teijeira[1,3], Ignacio Visus[2,3], Susana de la Cruz[1,3], Marta Barrado[2,3], Ruth Vera[1,3]

[1]Medical Oncology Department, Hospital Universitario de Navarra, Pamplona, Spain
[2]Radiotherapeutic Oncology Department, Hospital Universitario de Navarra, Pamplona, Spain
[3]Institute for Health Research of Navarre (IdiSNA), Pamplona, Spain
[4]Methodology Unit, Navarrabiomed, RICAPPS, Spain
[5]Bottomley Consulting Group, Brussels, Belgium

Introduction: Metastatic breast cancer (MBC) can profoundly impact patients' lives. The health-related quality of life (HRQOL) of MBC metavivors remains a paramount concern. This study examined the multifaceted aspects of HRQOL in MBC metavivors.

Material and methods: Ninety-eight participants with over 4 years of metastatic disease were evaluated using the European Organisation for Research and Treatment of Cancer (EORTC) questionnaires QLQ-C30, QLQ-BR42 and QLQ-BM22 alongside the Assessment of Survivor Concerns (ASC) questionnaire.

Results: HRQOL scores were high (> 80/100 points) in some HRQOL areas, including role, cognitive and social functioning and breast symptoms. Moderate limitations (> 30 points) occurred in global QOL and financial impact (QLQ-C30); sexual functioning, sexual enjoyment, future perspective, breast satisfaction, upset by hair loss, skeletal symptoms, and weight gain (QLQ-BR42); and psychosocial aspects of QLQ-BM22. Worries were moderate in the two ASC factors (6.8 and 5.3) and the global scale (11.7). The multivariate model that best explains high risk of low global QOL included limiting comorbidity, financial impact, cancer worry and role functioning (R^2 = 0.692). Patients with only bone metastases showed higher cancer and health worries (ASC scale) than patients with soft tissues and visceral sites.

Conclusions: This study shows that MBC metavivors adapted well to their situation and underscores the persistent HRQOL challenges they face. In-depth analysis of the QLQ-C30 global score highlights the need to address not only medical aspects but also integrated psychosocial and economical support in MBC metavivor care. HRQOL variations across metastatic sites underscore the need to tailor interventions to address site-specific challenges.

Key words: neoplasm metastasis, breast neoplasms, metavivors, quality of life.

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Introduction

Metastatic breast cancer (MBC) is marked by the spread of cancer cells beyond the breast to other organs. Only 6–10% of breast cancers are initially diagnosed as metastatic (*de novo*) [1]. However, 20–30% of breast cancers initially diagnosed as nonmetastatic spread to other organs [2]. The main therapeutic goals in MBC are prolongation of life and maintenance of health-related quality of life (HRQOL) [3]. Medical advances have prolonged life (the ER/HER2+ group in the USA had the longest survival) [2]. Although the five-year life rate for MBC has increased, overall it is estimated at just 27% [4]. MBC might not adequately be considered as *survivors* as they will not *survive* this disease. The term '*metavivor*' has been created for patients living with MBC [5].

The importance of HRQOL assessment via patient-reported outcome measures (PROMs) has been highlighted [6]. Although several HRQOL studies on MBC have been performed [7], most HRQOL breast cancer research has focused on early stages of the disease.

More research is needed to understand the HRQOL of MBC patients, as their limitations, worries and priorities may be different from those of patients at early stages of the disease. In this regard, Cardoso *et al*. [8] stated that patients with MBC have greater needs in terms of psychological and financial support as well as access to services and information about how to deal with ongoing issues of anxiety, pain, and sleep disruption than patients in early stages.

Several HRQOL core areas in MBC have been identified by an international group of experts [9] (and are in line with those of other studies) [10]. These include physical, cognitive, role functioning, financial toxicity and emotional dimensions such as uncertainty about the future, fear of cancer progression and body image. Although overall HRQOL was good in a study of MBC patients with metastases for ≥ 5 years, limitations were observed in emotional reactions such as significant anxiety, depression, hopelessness, and apprehension about the disease [11]. Social-related areas (e.g. support from others, social isolation, and sexual functioning) and medical aspects (e.g. disease symptoms, treatment toxicities and comorbidities) were also considered to play a key role in MBC. When assessing HRQOL in MBC patients, it is recommended to use of a general and disease-specific HRQOL instrument to capture key HRQOL areas [12].

Identifying HRQOL determinants can help improve the patients' situation. HRQOL in MBC has been related to age and limiting comorbidity [13].

Bone metastasis is common in MBC patients (up to 70%) and significantly affects HRQOL through complications such as pain and limitations in physical activity [14]. Understanding and managing the effects on HRQOL is an important aspect of MBC treatment.

In this comprehensive study we explore the multidimensional facets of HRQOL in MBC metavivors (≥ 4 years with metastatic disease) using an array of PROMs designed to capture the physical, emotional and social dimensions of their experiences. We also investigate the relationship between HRQOL and clinical and demographic determinants in MBC metavivors and examine how the different metastasis sites (especially bone) affect HRQOL.

By combining these perspectives, we aim to provide a comprehensive understanding of the HRQOL challenges faced by MBC metavivors and identify potential areas for intervention and support.

Material and methods

Study design

This prospective cohort study, designed to assess HRQOL in MBC, included individuals treated at the Medical and Radiation Oncology Departments of the Hospital Universitario de Navarra between March 2021 and September 2023.

Participant recruitment

Via a consecutive sampling strategy, MBC patients were invited to participate by their treating oncologists. Prospective participants were provided oral and written information about the study and those expressing an interest signed the informed consent form during their consultation or after several days of consideration.

Inclusion criteria: Patients were included if diagnosed with stage IV breast cancer at least 48 months previously regardless of whether the diagnosis was *de novo* or relapse. They may have undergone one or more lines of treatment since their diagnosis of metastatic disease. Participants included patients receiving or who had received endocrine therapy (ET), chemotherapy (CT), targeted therapy (TT) or surgical interventions such as mastectomy or breast-conserving surgery with axillary evaluation, e.g. sentinel node biopsy, axillary node dissection or no surgery based on clinical discretion. These diverse modalities of surgery and adjuvant treatment were incorporated to capture unselected real-world data.

Exclusion criteria: Patients were excluded if they displayed a cognitive state that impeded HRQOL assessment or had a life expectancy of less than three months, a performance status below 50 on the Karnofsky scale [15], or a history of another primary tumour.

Of 110 women with metastatic breast cancer invited to participate, 98 (89%) were ultimately evaluated. Reasons for not completing questionnaires were administrative failure such as changes to programmed interview dates (4 cases), unavailability of treating oncologists to attend consultations (5 cases), and participant refusal (3 cases). These 98 patients completed the QLQ-C30, QLQ-BR42 and ASC questionnaires. Fifty-two women also completed the QLQ-BM22. All questionnaires had over 70% of their items answered.

Measures

Treating physicians assessed demographic and clinical characteristics at the first visit, including limiting comorbidity (Charlson Comorbidity Index) [16], performance status (Karnofsky Performance Scale) [15] and symptoms (pain, fatigue, dyspnoea) (NCI CTCAE scale version 5.0.) [17].

All patients completed EORTC (European Organisation for Research and Treatment of Cancer) Quality of Life questionnaires QLQ-C30 (Quality of Life core questionnaire) [18] and QLQ-BR42 (Breast cancer module) [19], the latter of which is an updated version of QLQ-B23. Patients with concurrent or prior bone metastases also completed EORTC QLQ-BM22 (Bone metastases module) [20].

Table S1 shows the main features of these questionnaires. QLQ-C30 evaluates areas common to various tumour sites and their treatments (physical, psychological, role and social functioning, and disease/treatment-related symptoms). QLQ-BR42 evaluates aspects specifically related to breast cancer, such as body image and breast satisfaction, as well as the impact of treatment modalities such as surgery, systemic therapy and radiotherapy (RT). QLQ-BM22 evaluates painful sites and characteristics, functional interference and psychosocial aspects.

In Spanish breast cancer patients, the questionnaires QLQ-C30 and QLQ-BR23 presented high reliability (Cronbach's alpha > 0.7 for most scales), good validity (differences between groups detected according to demographic and clinical variables), and strong responsiveness to change [21, 22].

Patients also completed the Assessment of Survivor Concerns (ASC) questionnaire [23], which assesses two main dimensions, i.e. cancer worry (fear of cancer recurrence, new diagnoses and diagnostic tests) and health worry (worry about general health and death), and provides a global worries score.

Data collection procedures

In line with ethical guidelines and regulatory oversight, data were collected with informed consent from participating patients, who completed the questionnaires once at their consultations (rather than by phone or mail to reduce the risk of missing data). To avoid burdening patients with extra sessions, these comprehensive assessments were conducted at longer sessions on days scheduled for habitual consultations.

Ethical approval for the study protocol, obtained on 2 September 2019 from the Regional Ethics Committee for Biomedical Research of Navarra, ensured compliance with Declaration of Helsinki principles (project number 2019/57).

Statistical analysis

Descriptive statistics comprising means with standard deviations and frequencies with percentages were used to succinctly characterise the sample and quantify the ques-

Table 1. Descriptive characteristics of the total sample (*N* = 98)

Variables	
Age (years), mean (range)	65.1 (44–83)
Cohabitation, *n* (%)	
Alone	14 (14.3)
Partner and/or children	75 (76.5)
Other persons	9 (9.2)
Moment of diagnoses – *de novo*, *n* (%)	4 (4.1)
Moment of metastases – relapse, *n* (%)	94 (95.9)
Time with metastases (months), mean (range)	60.5 (48-151)
Present metastasis sites, *n* (%)	
Bone	22 (22.4)
Soft tissues	28 (25.5)
Visceral	53 (54.1)
Previous metastasis sites, *n* (%)	
Bone	39 (39.8)
Soft tissues	8 (8.2)
Visceral	9 (9.2)
HER2+ – yes, *n* (%)	27 (27.6)
HR(+) – yes, *n* (%)	55 (56.1)
TNBC – yes, *n* (%)	25 (25.5)
Breast surgery, *n* (%)	
Conservative	59 (60.2)
Mastectomy	37 (37.8)
Axillary surgery, *n* (%)	
No	2 (2.0)
ALND	40 (40.8)
SLNB	54 (55.1)
Present treatment, *n* (%)	
Chemotherapy – yes	9 (9.1)
Radiotherapy – yes	37 (37.8)
Endocrine treatment – yes	60 (61.2)
Targeted therapy	30 (30.6)
Symptoms: > 2 grade presented, *n* (%)	
Fatigue	28 (28.6)
Pain	29 (29.6)
Dyspnoea	16 (16.3)
Limiting comorbidity – yes, *n* (%)	18 (18.4)
Performance status, mean (SD)	74.5 (11.2)

SLNB – sentinel node biopsy, ALND – axillary node dissection, TNBC – triple negative breast cancer, HR(+) – hormone receptor-positive

tionnaire scores. Questionnaires with under 70% of items answered were excluded from the analysis. To identify which patient characteristics were related to low global quality of life (QOL), univariate logistic regression analyses were performed with the categorised scores as the response variable. A threshold score of < 59 (median value, similar to the EORTC Reference value for MBC (57.6) [24]) indicated low global QOL. Explanatory variables for these analyses were age, cohabitation, time with metastatic disease, HER2+ (positive for human epidermal growth factor receptor 2), HR(+) (positive for hormone receptor), TNBC (triple-negative breast cancer), limiting comorbidity, performance status, symptoms (grade 0–1 vs. >2, which included pain, fatigue and dyspnoea), breast and axillary surgery modality, present treatment (chemotherapy CT, endocrine treatment ET, targeted therapy TT, radiotherapy RT and number of treatment lines), and QLQ-C30, QLQ-BR42 and ASC areas. To complement these analyses, we also fitted multivariate logistic regression models using the backward regression method and included areas found to be statistically significant by univariate logistic regression. The univariate logistic analyses were replicated for the subgroup of patients with HR(+) BC subtype (the largest one) to determine whether the findings were general or specific to this group.

To determine the extent to which QOL results differed by metastasis site, we compared HRQOL scores (from QLQ-C30, QLQ-BR42 and ASC) among patients with three different sites, i.e. bones, soft tissues and visceral. The Kruskal-Wallis test was used to assess differences among these three groups and the Mann-Whitney *U* test was used to compare pairs of groups when significant differences were found. Patients in the bone-metastasis group had only those sites either at or before their QOL assessment. The criteria of Cocks *et al*. [25] were used to interpret differences between the three metastasis-site groups in the QLQ-C30, with differences categorised as trivial, small, medium or large.

Results

Background characteristics

Table 1 shows the descriptive characteristics of the total cohort. The mean age of the total sample at HRQOL assessment was 65.1 years. Most women cohabitated with their partners and/or children. Diagnosis of metastatic disease often followed cancer relapse. The mean duration of metastases, the predominant site for which was visceral, was 60.5 months. Roughly 27% of participants exhibited the HER2+ factor.

Also at HRQOL assessment, endocrine treatment was the most prevalent therapeutic modality (61.2%) and all patients were menopausal. At least one limiting comorbidity was observed in 18.4% of patients. Performance status was high, with a mean score of 74.5 ± 11.2 (Table 1).

Quality of life

HRQOL scores were high in many QOL areas (Table 2). However, moderate limitations (> 30 points) occurred in two QLQ-C30 areas (global QOL and financial impact), seven QLQ-BR42 areas (sexual functioning, sexual enjoyment, future perspective, breast satisfaction, upset by hair loss, skeletal symptoms and weight gain), and the QLQ-BM22 area that measures psychosocial aspects.

Slight limitations (20–29 points) were observed in physical and emotional functioning, fatigue, pain, and sleep disturbance (QLQ-C30); systemic-chemotherapy side effects and hand/feet symptoms/neuropathy (QLQ-BR42); and painful sites, pain characteristics, and functional interfer-

Table 2. Quality of life scores of the sample

QLQ-C30 (*n* = 98)	Mean (SD)	QLQ-BR42 (*n* = 98)	Mean (SD)
Physical functioning[a]	74.1 (23.2)	Body image[a]	88.0 (23.3)
Role functioning[a]	83.8 (25.1)	Sexual functioning[a]	18.1 (19.1)
Emotional functioning[a]	76.9 (22.2)	Sexual enjoyment[a]	44.9 (25.8)
Cognitive functioning[a]	86.6 (20.4)	Future perspective[a]	67.3 (33.3)
Social functioning[a]	88.3 (19.3)	Breast satisfaction[a]	59.5 (30.3)
Global[a]	61.0 (18.4)	Breast symptoms[b]	11.1 (17.1)
Fatigue[b]	29.1 (24.2)	Arm symptoms[b]	21.5 (25.8)
Nausea and vomiting[b]	1.9 (8.3)	Systemic chemotherapy side effects[b]	20.1 (15.5)
Pain[b]	24.7 (26.5)	Upset by hair loss[b]	30.7 (39.1)
Dyspnoea[b]	14.6 (23.9)	Hand/feet symptoms/neuropathy[b]	25.5 (27.3)
Sleep disturbance[b]	29.9 (32.6)	Musculo-skeletal[b]	44.6 (33.9)
Appetite loss[b]	8.2 (20.9)	Endocrine symptoms[b]	18.5 (16–9)
Constipation[b]	13.9 (28.5)	Vaginal symptoms[b]	0 (0)
Diarrhoea[b]	5.8 (17.9)	Weight gain[b]	45.2 (32.6)
Financial impact[b]	47.9 (38.1)		
Summary	83.2(12.7)		
QLQ-BM22 (*n* = 52)	**Mean (SD)**	**ASC (*n* = 98)**	**Mean (SD)**
Painful sites[b]	20.3 (19.8)	Cancer worry[c]	6.8 (2.3)
Pain characteristics[b]	23.5 (16.9)	Health worry[d]	5.3 (1.9)
Functional interference[a]	74.7 (19.2)	Global worries[e]	11.7 (3.9)
Psychosocial aspects[a]	61.6 (23.6)		

[a]*Scores range from 0 to 100, with higher scores representing higher functional levels.*
[b]*Scores range from 0 to 100, with higher scores representing more severe symptoms.*
[c]*Scores range from 3 to 12 (exploring fear of cancer recurrence), with higher scores representing higher levels of fear.*
[d]*Scores range from 2 to 8 (exploring worry about health in general), with higher scores representing higher levels of worries.*
[e]*Scores range from 5 to 20, with higher scores representing higher levels of worries.*

ence (QLQ-BM22). Worries were moderately reported in both ASC factors (6.8 and 5.3) and the global ASC scale (11.7).

Clinical characteristics associated with higher risk of low global QOL (QLQ-C30 global score ≤ 59 points) were limiting comorbidity and lower performance status. Older age was associated with low global QOL (though not significantly: $p = 0.141$). Eight QLQ-C30, three QLQ-BR42 and two ASC areas (cancer worry and global) were identified as risk factors for low HRQOL, while low QOL scores and a high level of worries indicated low global QOL (Tables S2 and S3). The multivariate model that best explains a high risk of low global QOL includes limiting comorbidity and high scores on financial impact (QLQ-C30) and cancer worry (ASC) as risk factors, and a high score on role functioning (QLQ-C30) as a protective factor ($R^2 = 0.692$; see Table 3).

The results of the univariate logistic regression analyses performed with the HR(+) patient subgroup showed few differences from those of the global sample: eight fewer areas were related to a higher risk of low global QOL, whereas two new areas – age and sexual functioning – were found to be statistically significant (Tables S4 and S5). In the HR(+) subgroup OR was 0.91 vs 0.97 in the global sample for age, and OR = 0.93 vs 0.97 for sexual functioning.

Group comparisons based on metastasis sites (bone, soft tissues and visceral) showed statistically significant differences in two QLQ-C30 areas and all ASC areas but in no QLQ-BR42 area, though the magnitude of Cohen's d for some of its items appears to be substantial (see results for QLQ-C30 in Table 4 and for QLQ-BR42 and ASC in Table 5). More precisely, regarding QLQ-C30 areas, with a small magnitude of difference (Cohen's $d = 0.55$), patients with a soft tissue site reported greater appetite loss than those with a visceral site, while, with a medium magnitude of difference (Cohen's d above 0.85) in both cases, patients with a bone site showed lower levels of financial impact symptoms than those with the other two sites.

No significant differences were found regarding QLQ-BR42 areas, though Cohen's d indicated a lower level of sexual

Table 3. Multivariate logistic regression model for risk of low QLQ-C30 global score

	OR (95%)	*p*-value	R^2
Limiting comorbidity	26.04 (2.56–264.98)	0.006	0.692
Role functioning (QLQ-C30)	0.89 (0.83–0.95)	0.001	
Financial impact (QLQ-C30)	1.04 (1.01–1.06)	0.003	
Cancer worry (ASC)	1.47 (1.02–2.14)	0.041	

Table 4. Quality of life comparisons of the three metastasis site groups for QLQ-C30 scores

	G1 Bone (*n* = 13), mean (SD)	G2 Soft tissue (*n* = 34), mean (SD)	G3 Visceral (*n* = 51), mean (SD)	Cohen's d between groups			*p*-value
				G1–G2	G1–G3	G2–G3	
Physical functioning[a]	70.8 (22.1)	77.1 (16.7)	73.1 (27.1)	0.32	0.09	0.18	ns
Role functioning[a]	82.1 (17.3)	86.8 (20.8)	82.5 (30.6)	0.25	0.02	0.16	ns
Emotional functioning[a]	84.6 (13.9)	75.2 (21.9)	76.1 (23.9)	0.51	0.43	0.03	ns
Cognitive functioning[a]	94.9 (8.1)	87.7 (17.6)	83.7 (22.7)	0.52	0.65	0.19	ns
Social functioning[a]	91.2 (14.7)	91.2 (13.1)	85.6 (23.3)	0.00	0.28	0.29	ns
Global[a]	54.5 (17.5)	63.7 (16.7)	60.8 (19.6)	0.53	0.33	0.16	ns
Fatigue[b]	24.8 (19.8)	27.5 (19.8)	31.2 (27.8)	0.13	0.26	0.15	ns
Nausea and vomiting[b]	0 (0)	1.9 (6.9)	2.3 (10.1)	0.38	0.32	0.05	ns
Pain[b]	21.8 (23.9)	18.1 (22.9)	29.7 (28.5)	0.15	0.30	0.45	ns
Dyspnoea[b]	7.7 (14.6)	19.6 (26.1)	13.1 (24.1)	0.56	0.27	0.26	ns
Sleep disturbance[b]	25.6 (36.4)	33.3 (32.8)	28.8 (31.9)	0.22	0.09	0.13	ns
Appetite loss[b]	7.7 (14.6)	15.9 (30.9)	3.3 (10.1)	0.33	0.35	0.55	0.009
Constipation[b]	10.3 (21.0)	12.7 (14.5)	15.7 (30.8)	0.09	0.20	0.10	ns
Diarrhoea[b]	5.1 (12.5)	4.9 (14.4)	6.5 (21.1)	0.01	0.08	0.08	ns
Financial impact[b]	23.1 (25.1)	53.9 (41.8)	50.3 (36.1)	0.89	0.87	0.07	0.038
Summary[a]	86.2 (9.9)	83.4 (9.9)	82.3 (14.9)	0.28	0.30	0.08	ns

[a]Scores range from 0 to 100, with higher scores representing higher functional levels.
[b]Scores range from 0 to 100, with higher scores representing more severe symptoms.

Table 5. Quality of life comparisons of the three metastasis site groups for QLQ-BR42 and ASC questionnaires

	G1 Bone (*n* = 13), mean (SD)	G2 Soft tissue (*n* = 34), mean (SD)	G3 Visceral (*n* = 51), mean (SD)	Cohen's d between groups			*p*-value
				G1–G2	G1–G3	G2–G3	
QLQ-BR42							
Body image[a]	86.5 (19.7)	87.0 (21.4)	89.1 (25.5)	0.02	0.11	0.09	ns
Sexual functioning[a]	7.4 (12.1)	22.5 (22.0)	18.9 (18.1)	0.84	0.75	0.18	ns
Sexual enjoyment[a]	33.3 (18.2)	46.7 (28.1)	44.4 (25.9)	0.56	0.49	0.08	ns
Future perspective[a]	64.1 (37.7)	71.6 (31.9)	65.4 (34.6)	0.21	0.03	0.18	ns
Breast satisfaction[a]	70.8 (11.8)	56.3 (36.4)	59.1 (28.7)	0.54	0.53	0.10	ns
Breast symptoms[b]	12.1 (24.4)	9.3 (12.9)	12.5 (17.7)	0.14	0.02	0.14	ns
Arm symptoms[b]	22.2 (22.2)	18.3 (19.3)	23.6 (30.5)	0.18	0.05	0.21	ns
Systemic chemotherapy side effects[b]	22.1 (12.7)	17.1 (12.1)	21.7 (17.8)	0.41	0.03	0.30	ns
Upset by hair loss[b]	ND£	42.4 (42.4)	33.3 (39.4)	ND£	ND£	0.22	ns
Hand/Feet symptoms/neuropathy[b]	38.5 (23.5)	25.7 (27.3)	22.7 (27.8)	0.50	0.61	0.11	ns
Musculo-skeletal[b]	51.1 (27.3)	41.0 38.4)	45.6 (26.7)	0.30	0.20	0.14	ns
Endocrine symptoms[b]	18.3 (17.4)	20.0 (14.0)	17.6 (18.8)	0.11	0.04	0.15	ns
Vaginal symptoms[b]	ND£	14.3 (26.2)	23.3 (41.7)	ND£	ND£	0.25	ns
Weight gain[b]	45.8 (24.8)	42.7 (37.9)	46.7 (30.9)	0.10	0.03	0.13	ns
ASC							
Cancer worry[c]	8.5 (2.1)	6.0 (2.2)	6.8 (2.2)	1.16	0.74	0.41	0.043
Health worry[d]	6.0 (1.8)	4.6 (1.7)	5.6 (1.9)	0.80	0.21	0.55	0.029
Global worries[e]	14.6 (3.4)	10.3 (3.1)	12.1 (3.6)	1.24	0.71	0.54	0.050

ND – no data
[a]Scores range from 0 to 100, with higher scores representing higher functional levels.
[b]Scores range from 0 to 100, with higher scores representing more severe symptoms.
[c]Scores range from 3 to 12 (exploring fear of cancer recurrence), with higher scores representing higher levels of fear.
[d]Scores range from 2 to 8 (exploring worry about health in general), with higher scores representing higher levels of worries.
[e]Scores range from 5 to 20, with higher scores representing higher levels of worries.
G1–G2, G1–G3, G1–G3 Cohen's d: comparisons between G1 – bone, G2 – soft tissue, and G3 – visceral metastasis groups. Bold figures indicate the magnitude of the difference (Cohen's d > 0.7).
p – Kruskal-Wallis test p-value.

functioning in the bone metastasis group than in the other two groups (Cohen's *d* above 0.7 in all cases). Finally, regarding ASC scores, patients with bone metastases reported higher levels of cancer worry and global worries than the other two groups (Cohen's *d* above 0.70 in all cases) and higher levels of health worry than patients with soft tissue metastases (Cohen's *d* = 0.80).

Discussion

The proportion of patients who agreed to participate was higher than in a previous study of MBC patients with metastases for ≥ 5 years (64%), indicating the study was well accepted [11]. QLQ-C30 scores were moderately high, generally higher than EORTC MBC reference values [24], with medium differences [25] in favour of our sample appearing in role (19 points), social functioning (13), and dyspnoea (12). On the other hand, financial impact showed larger limitations (34). Scores were generally higher than in a sample of advanced breast cancer patients who had had the disease for 1.6–4.6 years. Medium differences were found in favour of our sample in role (27 points), social (22), fatigue (15), pain (10) and dyspnoea (13), but financial impact was worse (33) [26]. QLQ-C30 scores were in line with normative data for women in the general Spanish population [27], though our patients showed a larger financial impact (38, medium difference). QLQ-BR42 scores were also moderately high, in line with EORTC QLQ-BR23 reference values for MBC [28]. Our patients had a better future perspective (20 points) but lower sexual enjoyment (11). Our patients showed higher body image (25 and 17 points, respectively) and future perspective (40 and 25) scores than Polish MBC patients [29] and advanced breast cancer patients who have had the disease for 1.6–4.6 years [26].

QLQ-C30 domains such as role and social functioning, which MBC patients consider as key HRQOL dimensions [9], maintained robust levels. This is also reflected in the QLQ-C30 summary score. QLQ-BR42 scores were especially high in key HRQOL dimensions for MBC such as body image [30]. However, the prevalence of symptoms such as fatigue, sleep disturbance, sexual functioning, skeletal symptoms, weight gain, and future perspective underscores the persistent challenges faced by MBC metavivor patients. Fatigue is considered one of the most prevalent and distressing concerns of MBC patients [31]. Low scores in sexual functioning are found in other studies of Spanish breast cancer patients [22]. Psychological factors, as highlighted by future perspective, sleep disturbance, and ASC areas that are also relevant global QOL determinants, underscore the need for integrated psychosocial support in MBC metavivor care. Related to ACS scores and their role as HRQOL determinants, hope is identified as a key MBC area [32], while a significant correlation is reported between elevated cancer worry and diminished HRQOL in MBC patients [33].

Higher limitations are found on the psychosocial aspects scale of the QLQ-BM22 than in the other three QLQ-BM22 areas. These results suggest that, despite potential moderate functioning and pain control in patients with bone metastases, patients are worried about limitations bone metastases may involve. These moderate QLQ-BM22 scores are in line with those from bone metastasis patients (with different tumour sites) who have completed RT [34].

Our investigation highlights role functioning and financial impact as pivotal determinants of global QOL. Maintaining role functioning is also found to be a key global QOL determinant in MBC patients [35] that enables patients to focus on trying to maintain some key activities rather than merely living [36]. The financial impact was high, as it is for Polish MBC patients [29]. Costs for MBC patients are found to be substantially higher than for those with earlier disease stages [37] due to factors such as loss of income related to stopping work or reducing workload. This financial strain is also related to lower HRQOL in MBC [30]. The influence of limiting comorbidities on overall HRQOL aligns with existing literature [13]. The need for comprehensive care that addresses cancer-related and comorbidity-related aspects is emphasised [38].

The results obtained for the HR(+) patient subgroup were similar to those for the global sample, though the power diminished and the significance disappeared in several areas. However, the two areas that seem to be specific for this subgroup are age and sexual functioning, though the magnitudes and direction of the relationships with the risk of low HRQOL did not differ greatly. In general, we believe the total sample can be analysed as a whole.

The lack of differences among metastatic sites in most HRQOL areas may reflect improved pain management strategies in patients with bone metastases and is in line with an MBC study that compared bone and visceral metastases [39]. The higher level of worries in the bone metastasis group may be explained by complications such as pathological fractures or pain, which may be more easily perceived than in the other groups [40].

Several limitations warrant further consideration. For example, the generalisability of our study's findings may be constrained by our reliance on a specific patient population that potentially restricts extrapolating results to broader demographic or clinical contexts. Also, since the EORTC measures were not developed to exclusively evaluate women with metastatic breast cancer, they may not have captured all their HRQOL concerns. The absence of longitudinal data precludes examining dynamic changes over time with the studied variables.

Our main findings show that HRQOL among MBC metavivors was high in many areas, with moderate limitations in financial impact, sexuality, future perspective, breast satisfaction and treatment side effects. The main factors influencing global HRQOL were comorbidity, role functioning, financial impact and cancer worry. Patients with only bone metastases showed higher cancer and health worries than those with other metastasis sites.

Conclusions

This extensive single-centre investigation into HRQOL among MBC metavivors, using several assessment instruments, provides detailed insights into their HRQOL. High levels of HRQOL were found in many areas, but challenges in others, such as sexuality, future perspective and treatment side effects. These high HRQOL scores suggest that

treatments are offered to patients who can adequately tolerate them, which helps maintain their HRQOL. QLQ-C30 global score analysis underscores the need to address not only medical aspects but also integrated psychosocial and economic support in MBC metavivor care. Comparative analysis based on metastasis sites underlines the importance of tailoring interventions to address site-specific challenges. This study may help design programmes aimed at improving patients' HRQOL.

Disclosures

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Address for correspondence

Juan Ignacio Arraras
Medical Oncology Department
Hospital Universitario de Navarra
Institute for Health Research of Navarre (IdiSNA)
3 Irunlarrea St.
31008, Pamplona, Spain
e-mail: jiarraras@correo.cop.es

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