








## Quality of life and sociodemographic and clinical profile of breast and prostate cancer patients

### Qualidade de vida e perfil sociodemográfico e clínico de pacientes com câncer de mama e próstata

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#### ABSTRACT

**Objective:** to assess the association between health-related quality of life and sociodemographic and clinical characteristics of breast and prostate cancer patients. **Methods:** a cross-sectional study of 305 patients was performed. The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30, the Quality of Life Questionnaire Breast Cancer, and a structured instrument were used. Descriptive and inferential statistical analyses were performed. **Results:** the study revealed a prevalence of patients aged 50-69 years, married, with 13 or more years of education, retired, with an income of up to two minimum wages, and receiving radiotherapy for breast cancer. Significant associations were observed between the Global Health Scale and gender and marital status, the Functional Scale and age group and family income, the Symptom Scale and gender, age group, cancer type, and current treatment, and between the Global Health Scale and cancer type, current treatment, treatment duration, lack of companion, and number of comorbidities. **Conclusions:** health-related quality of life in breast and prostate cancer patients is negatively influenced by sociodemographic and clinical characteristics. **Contributions to practice:** the data provide insights for designing individualized care plans.

**Descriptors:** Breast Neoplasms; Prostatic Neoplasms; Quality of Life; Oncology Nursing; Nursing Care.

#### RESUMO

**Objetivo:** avaliar a associação entre a qualidade de vida relacionada à saúde e as características sociodemográficas e clínicas de pacientes com câncer de mama e próstata. **Métodos:** estudo transversal com 305 pacientes. Foram utilizados o *European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30*, *Quality of Life Questionnaire Breast Cancer* e um instrumento estruturado. Realizaram-se análises estatísticas, descritiva e inferencial. **Resultados:** observou-se prevalência de faixa etária entre 50 e 69 anos, casados, 13 anos ou mais de estudo, aposentados, com renda de até dois salários mínimos, com câncer de mama em radioterapia. Houve associação significativa entre Escala de Saúde Global e sexo e conjugalidade; Escala Funcional e faixa etária e renda familiar; Escala de Sintomas e sexo, faixa etária, tipo de câncer, tratamento atual; Escala de Saúde Global e tipo de câncer, tratamento atual, tempo de tratamento, falta de acompanhante e número de comorbidades. **Conclusão:** a qualidade de vida relacionada à saúde é influenciada negativamente pelas características sociodemográficas e clínicas de pacientes com câncer de mama e próstata. **Contribuições para a prática:** os dados fornecem subsídios para concepção de um plano individualizado de cuidados de enfermagem.

**Descritores:** Neoplasias da Mama; Neoplasias da Próstata; Qualidade de Vida; Enfermagem Oncológica; Cuidados de Enfermagem.

## Introduction

Cancer is currently a global public health problem due to its magnitude and morbidity. In Brazil, an estimated 704,000 cases of the disease have been projected for the period 2023-2025, with breast and prostate cancer being the most common in the female and male population (73,000 and 71,000 cases, respectively), in line with global statistics<sup>(1)</sup>. This disease has a significant impact on patients' lives, as in addition to the emotional and psychological changes, especially after confirmation of the diagnosis, there is the challenge of therapy, which can adversely affect their quality of life<sup>(2-4)</sup>.

Quality of life encompasses self-perception and life satisfaction, taking into account cultural aspects and values regarding expectations, goals, and concerns. When the health-disease process is considered, it is referred to as "health-related quality of life" (HRQOL)<sup>(5)</sup>.

Women diagnosed with breast cancer often experience impaired HRQOL in several ways. Chemotherapy is associated with adverse effects including pain, nausea/vomiting, fatigue, discomfort, diarrhea, and insomnia<sup>(2,6)</sup>. Radiation therapy can lead to radiodermatitis, resulting in functional limitations and social withdrawal<sup>(7)</sup>. Mastectomy generally affects self-image and subsequently sexual and affective function<sup>(8)</sup>. In essence, physical, psychoemotional, spiritual, economic, and social inconveniences become apparent<sup>(9)</sup>.

In prostate cancer, the gold standard treatment, prostatectomy, alone or in combination with other therapeutic modalities, can result in urinary and sexual dysfunction, including urinary incontinence, dysuria, hematuria, urinary frequency, decreased libido, erection, and orgasm<sup>(10)</sup>, which directly affect men's HRQOL.

In addition to treatment-related changes, it is noteworthy that HRQOL is influenced by patients' sociodemographic and clinical conditions, as these factors can modify the course of the disease and treatment. An example is low socioeconomic status, which

implies financial difficulties in meeting needs during treatment<sup>(11)</sup>.

Therefore, the assessment of HRQOL in this population, taking into account their sociodemographic and clinical profiles, is a valuable tool for care. It allows tailoring care to individual needs and contributes to treatment effectiveness and improved quality of life. In particular, the interest in assessing the association between HRQOL and sociodemographic and clinical data in breast and prostate cancer patients arises from the high prevalence of these cancers in the female and male populations, respectively, excluding skin cancer<sup>(1)</sup>. Other studies have been conducted from a similar perspective<sup>(6,10)</sup>. However, the present study advances by providing a comprehensive and specific assessment of quality of life in a robust sample that includes both types of cancer.

Therefore, the aim was to assess the association between health-related quality of life and sociodemographic and clinical characteristics of breast and prostate cancer patients.

## Methods

This study used a quantitative, exploratory and cross-sectional research design and was conducted in a high complexity oncology center located in João Pessoa, Paraíba, Brazil. The study population consisted of adults and elderly individuals diagnosed with breast and prostate cancer, undergoing outpatient oncologic treatment (chemotherapy or radiotherapy) at the facility.

Sample selection was performed using a specific formula for tests and group comparisons, with a prespecified significance level of 95% and power of 80%, based on analysis of variance (ANOVA). The calculation was performed using the statistical software R, based on the means obtained in a pilot study with 15 patients. Consequently, the sample was divided into three balanced groups: "breast cancer undergoing chemotherapy", "breast cancer undergoing radiotherapy", and "prostate cancer undergoing ra-

diotherapy". Each breast cancer group contained 102 patients, while the prostate cancer group contained 101 patients, for a total of 305 participants. These patients were selected by simple random sampling from the daily appointment schedule.

The study included patients 18 years of age or older, diagnosed with breast or prostate cancer, and undergoing chemotherapy with a minimum of four sessions (weekly or every 21 days) or radiation therapy with a minimum of 20 daily sessions. Patients undergoing palliative therapy, hormone therapy, with metastases, and with cognitive deficits as assessed by the Mini-Mental State Examination were excluded.

Data collection took place from June to November 2019, through individual interviews conducted in the waiting rooms of the chemotherapy and radiotherapy departments. After explaining the aspects of the study, patients were asked to give their informed consent by signing a document.

A structured instrument was used to collect data on the sociodemographic and clinical profile of the patients. This instrument included information on gender, age group, race, and ethnicity. This instrument included information on gender, age group, race/ethnicity, marital status, education, religion, employment status, income, household type, ethnicity, diagnosis, time since diagnosis, current treatment type and frequency, previous treatment type, difficulties encountered, presence of comorbidities, and medication use. The instrument was developed for this study based on other instruments used in previous research on this topic.

Health-related quality of life was assessed using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire - Core 30 (EORTC QLQ-C30), validated in Brazil. This questionnaire consists of 30 Likert-type questions divided into three scales: Functional Scale, including physical function, role performance, emotional function, cognitive function, and social function (with scores closer to 100 indicating better HRQOL); Symptom Scale, including symptoms such as fatigue, nausea/

vomiting, dyspnea, insomnia, loss of appetite, constipation, diarrhea, and financial difficulties (with scores closer to 100 indicating worse HRQOL); and Global Health Scale (GHS), with scores closer to 100 indicating better HRQOL. Scores range from 0 to 100 and are calculated separately for each scale<sup>(12)</sup>.

For breast cancer patient groups, the specific module Quality of Life Questionnaire Breast Cancer (EORTC QLQ BR-23) was used, consisting of 23 questions divided into two scales: Functional Scale (body image and sexuality, further subdivided into body image, future perspectives, sexual function, and sexual enjoyment/satisfaction) and Symptom Scale (side effects, concerns about hair loss, arm symptoms, and breast symptoms). Interpretation of the scores, which range from 0 to 100, was analogous to the general questionnaire<sup>(12)</sup>.

Collected data were stored using Microsoft Excel and later processed using SPSS software, version 22.0. Associations were evaluated using Kruskal-Wallis and Mann-Whitney tests, with a significance level of 5% ( $p \leq 0.05$ ).

The study was conducted in accordance with Resolution No. 466/2012 of the National Health Council, approved by the Research Ethics Committee of the Health Sciences Center of the Federal University of Paraíba, with protocol No. 3,293,768/2019, and certified through the Presentation Certificate of Ethical Appreciation No. 11352119.0.0000.5188.

## Results

The sample had a female prevalence of 66.9% (largely due to the composition of groups where the female population predominates), with 56.1% of participants in the 50-69 age group. The majority identified as brown/mixed race (38%), were married (60%), had 13 or more years of education (42.3%), were religious (97%), were retired (36.4%), had personal and family income between one and two minimum wages (75.1% and 86.2%, respectively), and lived with family members (41.6%).

Regarding clinical status, most of the sample had been diagnosed with breast cancer (66.9%) within the past one to two years (93.1%), were receiving radiation therapy (66.2%), had completed 20 to 29 sessions (50.5%), had a history of previous treatment (55.7%), primarily surgery (82%), reported transportation difficulties (43.3%), and did not have a companion during treatment (60%). Common comorbidities included systemic arterial hypertension (44.6%) and diabetes mellitus (23.3%).

As for quality of life, assessed by the EORTC QLQ C-30, a comparison of the three groups in the sample showed that breast cancer patients receiving chemotherapy had higher mean scores on the GHS (71.8) and the Functional Scale (54.6). Conversely, they had a higher mean score on the Symptom Scale (37.2). When comparing the subscales within each group, the breast cancer group undergoing radiotherapy had the highest mean score on the GHS (68.7). Patients with prostate cancer also had the highest mean GHS score (62.5). Regarding the EORTC QLQ BR-23, patients receiving chemotherapy had better mean scores on the functional scale (68.3) but lower scores on the symptom scale compared to the radiotherapy group (45.3).

Concerning the domains of the EORTC QLQ C-30 questionnaire, within the Functional Scale, breast cancer patients treated with radiotherapy achieved higher mean scores for physical function (61.8) and social function (66.2). Those undergoing chemotherapy had better emotional function (39.6) and cognitive function (71.0). Men had better role functioning (58.6). Within the symptom scale, the worst results were observed in the group of breast cancer patients undergoing chemotherapy, particularly for fatigue (51.3), pain (54.5), and insomnia (54.4). Financial difficulties were prominent in all three groups (91.1, 83.2, and 85.2).

In the domains of the EORTC BR-23 questionnaire, in both chemotherapy and radiotherapy women, the best mean scores within the functional scale were associated with body image (73.9 and 73.8, respectively), while the lowest scores were seen in se-

xual satisfaction (12.2 and 12.0, respectively). On the symptom scale, the worst scores for both groups were for side effects (55.5 and 63.2, respectively) and breast symptoms (59.6 and 65.2) (Table 1).

**Table 1** – Health-related quality of life domains in patients with breast and prostate cancer (n=305). João Pessoa, PB, Brazil, 2019

Quality of life	Prostate		Breast	
	Radiotherapy	Chemotherapy	Radiotherapy	Chemotherapy
	Mean ± SD*	Mean ± SD	Mean ± SD	Mean ± SD
Global Health Scale	62.5 ± 24.1	71.8 ± 26.9	68.7 ± 26.3	68.7 ± 26.3
Functional Scale	51.3 ± 14.2	54.6 ± 16.6	52.7 ± 15.4	52.7 ± 15.4
Physical function	59.6 ± 18.4	58.6 ± 20.9	61.8 ± 18.6	61.8 ± 18.6
Role/functional performance	58.6 ± 17.3	48.9 ± 20.4	50.5 ± 20.2	50.5 ± 20.2
Emotional function	27.6 ± 28.4	39.6 ± 30.8	29.2 ± 28.3	29.2 ± 28.3
Cognitive function	62.9 ± 21.1	71.0 ± 22.3	65.5 ± 25.8	65.5 ± 25.8
Social function	59.4 ± 17.7	64.2 ± 27.4	66.2 ± 23.4	66.2 ± 23.4
Symptom Scale	30.6 ± 11.6	37.2 ± 17.6	33.9 ± 16.3	33.9 ± 16.3
Fatigue	42.0 ± 21.0	51.3 ± 29.9	50.7 ± 26.9	50.7 ± 26.9
Nausea and vomiting	0.3 ± 3.3	7.9 ± 18.6	4.6 ± 14.2	4.6 ± 14.2
Pain	44.9 ± 28.1	54.5 ± 38.7	41.4 ± 34.5	41.4 ± 34.5
Dyspnea	2.0 ± 9.2	9.7 ± 24.5	10.9 ± 25.4	10.9 ± 25.4
Insomnia	53.5 ± 40.6	54.4 ± 45.3	54.1 ± 42.4	54.1 ± 42.4
Loss of appetite	5.9 ± 19.1	20.7 ± 32.7	14.2 ± 26.4	14.2 ± 26.4
Constipation	23.8 ± 31.7	27.8 ± 39.1	25.7 ± 37.1	25.7 ± 37.1
Diarrhea	4.6 ± 17.7	9.1 ± 21.5	6.3 ± 19.3	6.3 ± 19.3
Financial difficulty	91.1 ± 23.0	83.2 ± 28.0	85.5 ± 28.1	85.5 ± 28.1
Module – Breast Cancer				
Functional Scale	-	68.3 ± 17.8	67.4 ± 18.8	67.4 ± 18.8
Body image	-	73.9 ± 28.0	73.8 ± 26.4	73.8 ± 26.4
Sexual desire	-	17.8 ± 23.3	20.0 ± 24.0	20.0 ± 24.0
Sexual satisfaction	-	12.2 ± 10.9	12.0 ± 9.6	12.0 ± 9.6
Future perspective	-	17.5 ± 33.9	17.2 ± 33.2	17.2 ± 33.2
Symptom Scale	-	45.3 ± 18.9	40.7 ± 16.1	40.7 ± 16.1
Side effects	-	55.5 ± 20.0	63.2 ± 15.3	63.2 ± 15.3
Arm symptoms	-	49.7 ± 37.7	42.6 ± 29.2	42.6 ± 29.2
Breast symptoms	-	59.6 ± 33.8	65.2 ± 26.5	65.2 ± 26.5
Hair loss	-	22.7 ± 9.1	31.6 ± 0.3	31.6 ± 0.3

\*SD: Standard deviation

Significant associations (p≤0.05) were observed between patients' sociodemographic characteristics and HRQOL. There were associations between the GHS and the variables "sex" and "marital status", between the Functional Scale and age group and family income, and between the Symptom Scale and sex and age group (Table 2).

**Table 2** – Association between sociodemographic characteristics and health-related quality of life in patients with breast and prostate cancer (n=305). João Pessoa, PB, Brazil, 2019

Variables	Global Health Scale	Functional Scale	Symptom Scale
	Mean ± SD*	Mean ± SD	Mean ± SD
Sex			
Female	70.3 ± 26.5	53.6 ± 15.9	35.5 ± 16.9
Male	62.5 ± 24.0	51.3 ± 14.1	30.5 ± 11.5
p-value	0.002 <sup>†</sup>	0.185 <sup>†</sup>	0.021 <sup>†</sup>
Age range (years)			
Adult (20-59)	69.6 ± 27.3	55.7 ± 15.0	31.9 ± 16.2
Older adult (> 60)	67.2 ± 25.1	51.8 ± 15.3	34.6 ± 15.1
p-value	0.239 <sup>‡</sup>	0.034 <sup>‡</sup>	0.049 <sup>‡</sup>
Color/Race			
White	69.0 ± 24.0	53.5 ± 15.8	35.6 ± 17.5
Brown/Mulatto	66.6 ± 26.2	54.1 ± 14.6	32.0 ± 13.4
Black	67.7 ± 27.6	50.6 ± 15.6	34.5 ± 15.8
p-value	0.916 <sup>†</sup>	0.348 <sup>‡</sup>	0.332 <sup>‡</sup>
Marital status			
Single	69.4 ± 23.3	53.6 ± 14.4	33.2 ± 15.4
Married or in a stable union	72.9 ± 26.4	59.6 ± 14.7	26.4 ± 13.1
Separated or divorced	67.7 ± 26.5	51.7 ± 12.8	35.8 ± 14.9
Widowed	53.8 ± 32.1	42.6 ± 17.9	43.4 ± 14.2
p-value	0.020 <sup>‡</sup>	0.231 <sup>‡</sup>	0.194 <sup>‡</sup>
Education (years)			
Illiterate	64.1 ± 25.7	49.8 ± 13.2	32.4 ± 12.0
1-4	83.3 ± 0.0	57.7 ± 0.0	23.0 ± 0.0
5-8	62.0 ± 30.8	48.8 ± 17.1	38.7 ± 38.7
9-12	74.4 ± 23.8	53.4 ± 13.1	33.8 ± 33.8
> 13	68.6 ± 23.6	55.7 ± 15.7	32.0 ± 32.0
p-value	0.113 <sup>‡</sup>	0.222 <sup>‡</sup>	0.157 <sup>‡</sup>
Religion			
Yes	57.4 ± 31.3	60.4 ± 13.6	29.0 ± 16.7
No	68.0 ± 25.7	52.6 ± 15.4	34.0 ± 15.5
p-value	0.284 <sup>†</sup>	0.108 <sup>†</sup>	0.272 <sup>†</sup>
Personal income (minimum wage)			
No income	67.9 ± 28.5	56.1 ± 16.0	35.4 ± 17.9
< 1	64.5 ± 44.2	51.7 ± 12.3	43.5 ± 32.0
1-2	67.7 ± 25.1	51.8 ± 15.3	33.6 ± 14.4
3-4	66.6 ± 21.0	57.7 ± 6.8	23.0 ± 10.5
p-value	0.917 <sup>‡</sup>	0.259 <sup>‡</sup>	0.300 <sup>‡</sup>
Family income (minimum wages)			
No income	88.8 ± 13.6	72.5 ± 16.9	24.7 ± 20.8
< 1	61.6 ± 38.9	41.7 ± 12.9	49.7 ± 25.4
1-2	66.9 ± 26.4	52.2 ± 14.8	33.8 ± 14.9
3-4	69.4 ± 20.2	54.8 ± 17.0	34.0 ± 14.6
> 5	83.3 ± 13.6	65.0 ± 15.1	32.0 ± 31.7
p-value	0.167 <sup>‡</sup>	0.017 <sup>‡</sup>	0.177 <sup>‡</sup>
Living arrangement			
Living together	67.6 ± 25.2	52.6 ± 15.3	34.1 ± 15.8
Alone	68.4 ± 32.7	55.3 ± 16.2	31.4 ± 12.3
p-value	0.462 <sup>‡</sup>	0.573 <sup>‡</sup>	0.620 <sup>‡</sup>
Origin			
Sertão paraibano	71.3 ± 26.1	53.9 ± 14.6	31.5 ± 14.6
Borborema	56.5 ± 30.2	51.1 ± 11.1	43.5 ± 15.2
Agreste Paraíba	68.9 ± 19.5	47.7 ± 16.6	37.1 ± 16.7
Paraiban forest	66.3 ± 26.8	53.4 ± 15.4	34.0 ± 15.6
p-value	0.321 <sup>‡</sup>	0.307 <sup>‡</sup>	0.128 <sup>‡</sup>

\*SD: Standard deviation; <sup>†</sup>Mann-Whitney; <sup>‡</sup>Kruskal-Wallis

In the association between HRQOL and patients' clinical characteristics, the GHS showed significant associations (p≤0.05) with the variables: cancer type, current treatment, treatment duration, lack of companion, and number of comorbidities. The Functional Scale showed significant associations with number of comorbidities, diabetes mellitus, musculoskeletal disease, number of medications, and hypoglycemic agents. On the other hand, the Symptom Scale was associated with the following variables: cancer type, current treatment, number of comorbidities, diabetes mellitus, musculoskeletal disease, number of medications, and hypoglycemic agents (Table 3).

**Table 3** – Association between clinical conditions and health-related quality of life in patients with breast and prostate cancer (n=305). João Pessoa, PB, Brazil, 2019

Variables	Global Health Scale	Functional Scale	Symptom Scale
	Mean ± SD*	Mean ± SD	Mean ± SD
Type of cancer			
Breast	70.3 ± 26.5	53.6 ± 15.9	35.5 ± 16.9
Prostate	62.5 ± 24.0	51.3 ± 14.1	30.5 ± 11.5
p-value	0.002 <sup>†</sup>	0.0185 <sup>†</sup>	0.021 <sup>†</sup>
Time of diagnosis (years)			
> 1	68.3 ± 22.3	54.5 ± 15.3	31.8 ± 13.9
1-2	66.8 ± 28.5	52.1 ± 15.5	34.2 ± 15.8
3-4	67.3 ± 34.5	46.4 ± 19.2	42.3 ± 19.2
> 5	74.0 ± 18.3	49.6 ± 9.4	46.7 ± 20.7
p-value	0.881 <sup>†</sup>	0.645 <sup>‡</sup>	0.070 <sup>‡</sup>
Current treatment			
Radiotherapy	65.6 ± 25.3	52.0 ± 14.7	32.2 ± 14.1
Chemotherapy	71.8 ± 26.8	54.6 ± 16.5	37.2 ± 17.5
p-value	0.020 <sup>†</sup>	0.164 <sup>†</sup>	0.016 <sup>†</sup>
Treatment time (sessions)			
5-9	66.9 ± 29.6	53.9 ± 17.5	38.7 ± 18.0
10-19	73.3 ± 23.9	55.9 ± 17.2	36.4 ± 17.2
20-9	71.0 ± 22.7	53.6 ± 13.2	31.7 ± 14.4
> 30	57.1 ± 28.6	48.4 ± 16.7	33.8 ± 14.2
p-value	0.007 <sup>‡</sup>	0.083 <sup>‡</sup>	0.054 <sup>‡</sup>
Frequency of treatment			
1 time a day	65.6 ± 25.3	52.0 ± 14.7	32.2 ± 14.1
1 time a week	71.3 ± 28.9	56.2 ± 16.3	36.2 ± 18.0
3 times a week	83.3 ± 0.0	44.4 ± 0.0	46.1 ± 0.0
Every 21 days	71.9 ± 71.9	53.7 ± 16.8	37.7 ± 17.4
p-value	0.130 <sup>‡</sup>	0.364 <sup>‡</sup>	0.079 <sup>‡</sup>
Difficulties with treatment			
Transportation			
Yes	64.7 ± 27.1	51.0 ± 15.3	35.2 ± 14.8
No	69.9 ± 25.5	54.4 ± 15.4	32.6 ± 15.6
p-value	0.085 <sup>†</sup>	0.085 <sup>†</sup>	0.116 <sup>†</sup>
Lack of companion			
Yes	39.3 ± 36.7	40.4 ± 9.9	56.4 ± 15.7
No	68.6 ± 25.3	53.3 ± 15.4	32.9 ± 14.5
p-value	0.007 <sup>†</sup>	0.211 <sup>†</sup>	0.316 <sup>†</sup>
Number of comorbidities			
None	72.7 ± 22.6	57.1 ± 15.6	32.0 ± 16.3
1-2	66.6 ± 27.1	52.2 ± 13.9	33.1 ± 14.5
3-4	54.7 ± 26.7	40.3 ± 15.8	45.4 ± 13.7
p-value	0.004 <sup>†</sup>	< 0.001 <sup>†</sup>	< 0.001 <sup>†</sup>

(the Table 3 continue in the next page...)



Variables	Global Heal-	Functional	Symptom
	th Scale	Scale	Scale
	Mean ± SD*	Mean ± SD	Mean ± SD
<b>Type of comorbidity</b>			
Arterial hypertension			
Yes	66.6 ± 26.9	51.7 ± 14.0	32.9 ± 14.2
No	68.6 ± 25.4	53.7 ± 16.4	34.6 ± 16.5
p-value	0.592 <sup>†</sup>	0.250 <sup>†</sup>	0.444 <sup>†</sup>
Diabetes mellitus			
Yes	63.3 ± 27.7	46.7 ± 15.5	38.1 ± 15.9
No	69.0 ± 25.3	54.7 ± 14.9	32.6 ± 15.2
p-value	0.142 <sup>†</sup>	< 0.001 <sup>‡</sup>	0.004 <sup>‡</sup>
Musculoskeletal disease			
Yes	58.5 ± 30.7	45.9 ± 15.6	40.7 ± 14.5
No	68.8 ± 25.1	53.7 ± 15.1	33.1 ± 15.5
p-value	0.142 <sup>†</sup>	< 0.001 <sup>‡</sup>	0.004 <sup>†</sup>
Tumber of drugs			
None	72.4 ± 23.2	56.8 ± 15.8	32.1 ± 16.2
1	65.3 ± 27.4	53.2 ± 14.1	32.9 ± 14.9
> 2	64.3 ± 26.7	46.4 ± 14.7	38.2 ± 14.8
p-value	0.073 <sup>‡</sup>	< 0.001 <sup>‡</sup>	0.008 <sup>‡</sup>
<b>Type of medicine</b>			
Antihypertensive			
Yes	64.4 ± 26.8	49.7 ± 14.8	34.8 ± 14.8
No	67.7 ± 28.6	54.3 ± 13.3	35.5 ± 16.7
p-value	0.413 <sup>‡</sup>	0.153 <sup>‡</sup>	0.704 <sup>‡</sup>
Hypoglycemic			
Yes	63.4 ± 27.1	47.8 ± 15.3	37.9 ± 15.8
No	65.9 ± 27.2	52.1 ± 14.1	33.1 ± 14.3
p-value	0.512 <sup>‡</sup>	0.025 <sup>‡</sup>	0.024 <sup>‡</sup>
Anti-inflammatory			
Yes	60.4 ± 30.1	48.7 ± 14.1	39.7 ± 15.1
No	65.2 ± 26.7	50.8 ± 14.7	34.3 ± 15.0
p-value	0.473 <sup>‡</sup>	0.478 <sup>‡</sup>	0.069 <sup>‡</sup>

\*SD: Standard deviation; <sup>†</sup>Mann-Whitney; <sup>‡</sup>Kruskal-Wallis

## Discussion

The evaluation of HRQOL using the EORTC QLQ C-30 questionnaire showed that patients in the breast cancer group receiving chemotherapy had better average GHS and Functional Scale scores, particularly in cognitive and emotional functions. However, they had the lowest scores on the Symptom Scale, with pain, insomnia, and fatigue standing out. A study of oncology patients undergoing chemotherapy showed good cog-

nitive function (78.43), while emotional (55.66) and social functions (55.88) were impaired<sup>(2)</sup>.

Regarding the cognitive function, the results found here were inconsistent with the literature. Chemotherapy is commonly associated with a reduction in this function, with cognition being affected up to 24 months after treatment, primarily due to the ability of antineoplastic agents to cross the blood-brain barrier and cause damage and alterations in DNA, cytokines, neuronal repair, neurotransmitters, and hormones<sup>(13)</sup>.

As for the emotional function, there is a significant likelihood that it will be affected during the course of the disease and treatment. For example, during chemotherapy, authors believe that the social and psychological impact of treatment is greater than the physical impact, which is usually caused by side effects. Therefore, emotional support from the social support network is important<sup>(14)</sup>.

Chemotherapy prolongs life and improves prognosis, but it is associated with high toxicity. Thus, adverse effects such as nausea/vomiting, diarrhea or constipation, pain, alopecia, and fatigue are expected and may cause concerns about self-image, employment status, marital status, and future prospects<sup>(15)</sup>. In this study, fatigue, pain, and insomnia were the most common symptoms reported by patients.

Fatigue is multidimensional and highly subjective. It often involves biopsychosocial factors and is the most common symptom in breast cancer patients, especially in advanced stages and during chemotherapy<sup>(5)</sup>. Physical activity, when possible, is recommended to minimize its impact.

Pain in oncology patients, on the other hand, is quite common and leads to limitations that negatively affect emotional, social, and functional aspects, thus reducing HRQOL. Thus, the efficient and effective management of pain by pharmacological or non-pharmacological means becomes relevant<sup>(5)</sup>.

Sleep deprivation, in turn, is generally associated with psychological distress due to uncertainty about prognosis. Insomnia reported by breast cancer patients is often associated with concerns about the

future and sadness<sup>(16-17)</sup>.

Financial difficulties were prominent in the symptom scale of all three groups in this sample. When individual and/or family income is insufficient, difficulties such as the inability to afford transportation, food, and medication arise<sup>(18-19)</sup>. Patients with lower family incomes have worse quality of life<sup>(20)</sup>.

In the present study, breast cancer patients undergoing radiotherapy had higher mean GHS and Functional Scale scores, with particular emphasis on physical and social functioning. Due to its localized nature, radiotherapy is less aggressive. Side effects, if any, are milder than chemotherapy, with radiation dermatitis being more common. This is generally prevented and treated by the use of topical agents that minimize the cutaneous radiotoxic effect<sup>(7)</sup>. Therefore, such patients may have a better perception of health and quality of life during radiotherapy.

In the group of prostate cancer patients undergoing radiotherapy, good averages were also observed in the GHS and the Functional Scale, with role performance standing out. This function is often more impaired in women with breast cancer<sup>(21)</sup>, especially after surgical treatment, which imposes physical limitations with restricted range of motion due to the risk of lymphedema and its complications, thus interfering with task performance. Role performance has been correlated with higher depressive symptom scores and anxiety levels in cancer patients<sup>(3)</sup>.

In addition, men experience lifestyle changes during prostate cancer and its treatment. The diagnosis causes family disruption, sometimes necessitating changes in family structure and roles, with the male figure becoming the caregiver and requiring the involvement and support of other members during various stages of treatment<sup>(22)</sup>.

The assessment of HRQOL in women using the EORTC QLQ BR-23 showed that, on the Functional Scale, the highest mean scores were related to body image, while the lowest were related to sexual satisfaction. On the symptom scale, the worst scores were in the areas of side effects and breast symptoms, con-

tradicting findings showing a decline in women's self-image<sup>(8,19)</sup>.

In general, changes in body image result from alopecia and surgical mutilation. Alopecia occurs after the start of chemotherapy, and hair regrowth is slow. The use of scarves, wigs, and turbans may be sought for comfort and well-being, as well as prevention with thermal caps that use cryotherapy to prevent hair loss<sup>(23)</sup>. As for mastectomy, the feeling of incompleteness after breast loss is common and affects not only the self-image, but also the identity and self-esteem of women, which negatively affects aspects related to sexuality, such as sexual satisfaction. The breast is an important sexual aspect of the female body, and one solution that can alleviate this sensation is breast reconstruction<sup>(8)</sup>, which is currently offered by the Brazilian Unified Health System.

Side effects and breast symptoms were the domains with the worst HRQOL in the Symptom Scale of the sample studied. The worst scores on the Symptom Scale are related to concerns about hair loss, side effects, and breast symptoms, including itching, swelling, and pain, the latter being more frequent<sup>(24)</sup>.

In the association between scales of the EORTC QLQ C-30 and sociodemographic characteristics, there was statistical significance between GHS and the variables "female sex" and "marital status (married)", which may reflect the predominance of women and married/cohabiting individuals in the sample. A study of women diagnosed with breast cancer found that married women had a better quality of life<sup>(20)</sup>.

Perceptions of health and quality of life take into account context and lived experience. The availability of a social support network has often been shown to be relevant in promoting quality of life. Women perceive the social network as an important factor throughout treatment, providing physical and emotional support. The primary network (spouse, children, and siblings) is identified as the primary source of this support<sup>(14)</sup>.

The Functional Scale was associated with the age group 20 to 59 years and an income of more than

five minimum wages. The relationship between the Functional Scale and age has been found in other studies<sup>(24-25)</sup>. In general, younger people tend to have higher physical functioning scores, which may be due to better physical functioning at this age<sup>(25)</sup>. Regarding the relationship between the Functional Scale and income, income influences education levels, which contribute to a higher level of knowledge that facilitates access to resources for managing cancer, as well as the practice of healthier habits such as physical activity and proper nutrition. The result of this cascade effect is an improvement in quality of life.

The Symptom Scale was associated with female gender and an age group over 60 years. The association between the Symptom Scale and female gender may be due to the predominantly female composition of the sample. With increasing age, quality of life tends to decrease, possibly due to a greater impact of symptoms during treatment in older individuals<sup>(2)</sup>.

The association between HRQOL and clinical characteristics showed statistical significance between the GHS and the following variables: breast cancer diagnosis, chemotherapy, 10 to 19 sessions, presence of a companion, and no comorbidities. No similar associations were found between the scale and breast cancer and chemotherapy. However, one study showed that negative perceptions of the disease were higher in patients receiving chemotherapy and were associated with a reduction in well-being<sup>(26)</sup> and consequently quality of life. This suggests that these women tend to have worse HRQOL, which is different from our study findings.

The better perception in GHS could be related to the duration of treatment. In some cases, toxicity may be mild during the first few sessions, resulting in fewer symptoms and better functionality. Symptoms such as insomnia and nausea/vomiting were related to treatment duration, as longer treatment times were associated with a worse impact of these side effects<sup>(2)</sup>.

Regarding the presence of a companion and comorbidities, having a companion means more available support, which contributes to a sense of well-

-being. The role of companion is often assumed by the primary support network, such as a spouse or children, who are considered the main sources of instrumental support and play an important role in emotional support<sup>(14)</sup>. The absence of comorbidities results in fewer symptoms and consequently better functionality and perception of HRQOL.

It was observed that the Functional Scale was associated with variables such as no comorbidities, including diabetes and musculoskeletal disease, and no medication use, including hypoglycemic agents. The Symptom Scale of patients in this study was statistically associated with variables such as breast cancer diagnosis, chemotherapy, presence of three to four comorbidities including diabetes and musculoskeletal disease, and use of two or more medications including hypoglycemic agents<sup>(27)</sup>. It's reiterated that chemotherapy often changes women's lifestyle because it is a debilitating treatment with various adverse effects.

It is evident that health-related quality of life has been compromised in various aspects and is associated with both sociodemographic and clinical characteristics of patients. Therefore, it is essential for nurses to be vigilant in the early identification of factors that affect quality of life in this population. This consideration should include the patient's socioeconomic and cultural context, allowing for comprehensive care and tailored interventions to promote quality of life. This approach is critical to achieving improved outcomes in living conditions and health<sup>(5)</sup>.

## Study limitations

The main limitation of this research is its cross-sectional design, which prevents us from examining the causal relationship between variables and their effects. Therefore, it is suggested that studies with appropriate methodological designs be conducted to understand aspects related to health-related quality of life and other important health and living conditions variables in this population.



## Contributions to practice

The results of this research are relevant to health care practice as they endorse the creation of personalized care that considers each patient's unique characteristics, context, and living conditions. This approach facilitates the adaptation of health interventions and the reduction of the negative impact of disease and therapies on quality of life. In terms of education and research, the data can support the reformulation of the undergraduate nursing curriculum, contributing to the implementation of a module focused on oncology nursing. It can also guide research efforts in this area.

## Conclusion

This study showed that different aspects and functions of health-related quality of life of breast and prostate cancer patients were affected during therapy. In relation to sociodemographic and clinical characteristics, statistical significance was observed, when associated, between the Global Health Scale and the variables "gender" and "marital status"; the Functional Scale and age group and family income; the Symptom Scale and gender and age group; the Global Health Scale and cancer type, current treatment, treatment duration, lack of companionship, and number of comorbidities; the Functional Scale and number of comorbidities, diabetes mellitus, musculoskeletal disease, number of medications, and hypoglycemic agents; and the Symptom Scale and cancer type, current treatment, number of comorbidities, diabetes mellitus, musculoskeletal disease, number of medications, and hypoglycemic agents. These results indicate that various sociodemographic and clinical aspects directly influence the quality of life of the sample studied.

## Authors' contributions

Conception and design, data analysis, interpretation, manuscript writing, relevant critical review of the in-

tellectual content, final approval of the version to be published, and responsibility for all aspects of the text in guaranteeing the accuracy and integrity of any part of the manuscript: Viana LRC, Costa KNFM.

Final approval of the version to be published and responsibility for all aspects of the text in guaranteeing the accuracy and integrity of any part of the manuscript: Ferreira GRS, Silva CRR, Freitas SA, Frazão MCLO, Costa TF.

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