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Original Article

Factors associated with quality of life in advanced breast cancer during palliative chemotherapy*

Fatores associados à qualidade de vida em câncer de mama avançado durante quimioterapia paliativa

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ABSTRACT

Objective: to investigate sociodemographic and clinical factors associated with quality of life in women with advanced breast cancer beginning palliative chemotherapy. **Methods:** this observational, cross-sectional, and analytical study evaluated women with advanced breast cancer starting palliative chemotherapy at an oncology outpatient clinic. We administered sociodemographic and clinical questionnaires, alongside the Functional Assessment of Cancer Therapy – General. Analyses included descriptive statistics, Student's t-test, ANOVA, and Pearson correlation, using bootstrapping (2,000 resamples) for effect size at a significance level of p≤0.05. **Results:** the study included 123 women with a mean age of 53.25 years. The overall quality of life score was 55.28. Overall quality of life differed significantly based on the number of children (p=0.008) and receipt of government financial assistance (p=0.003). **Conclusion:** clinical and sociodemographic factors, including chemotherapy, radiotherapy, and having children, correlated with poorer quality of life in women with advanced breast cancer. **Contributions to practice:** these findings underscore the need for continuous, comprehensive monitoring of quality of life and the external factors affecting this outcome in women with advanced breast cancer.

Descriptors: Quality of Life; Breast Neoplasms; Neoplasm Metastasis; Oncology Nursing.

RESUMO

Objetivo: investigar fatores sociodemográficos e clínicos associados à qualidade de vida em mulheres com câncer de mama avançado no início do tratamento quimioterápico paliativo. **Métodos:** estudo observacional, transversal e analítico, realizado com mulheres com câncer de mama avançado iniciando quimioterapia paliativa em um ambulatório oncológico. Aplicaram-se questionários — sociodemográfico e clínico — e o *Functional Assessment of Cancer Therapy – General.* As análises incluíram estatística descritiva, teste t de *Student,* ANOVA e correlação de Pearson, com tamanho de efeito *bootstrapping* (2.000 reamostragens) adotando p≤0,05. **Resultados:** participaram 123 mulheres, média de 53,25 anos; escore de qualidade de vida global de 55,28. Houve diferença significativa para qualidade de vida global, quando correlacionada a número de filhos (p=0,008) e recebimento de ajuda de custo/benefício do governo (p=0,003). **Conclusão:** fatores clínicos e sociodemográficos como fazer quimioterapia, radioterapia e ter filhos, associaram-se à pior qualidade de vida em mulheres com câncer de mama avançado. **Contribuições para a prática:** reforça-se a importância do monitoramento contínuo e completo da qualidade de vida e dos fatores externos que interferem neste desfecho para mulheres com câncer de mama avançado.

Descritores: Qualidade de Vida; Neoplasias da Mama; Metástase Neoplásica; Enfermagem Oncológica.

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Introduction

Breast cancer is the most common malignant neoplasm among women worldwide. In 2022, approximately 2 million new cases were recorded globally, accounting for nearly one-quarter of all female cancers[1]. In Brazil, the National Cancer Institute (INCA) estimated 73,610 new cases annually for the 2023-2025 period, highlighting the growing disease burden[2].

In addition to the increasing incidence, breast cancer mortality remains a major concern for healthcare systems. Projections indicate that by 2050, breast cancer will cause over 3.2 million new cases and 1.1 million deaths[3]. Advanced Breast Cancer (ABC) diagnoses (stages III and IV) account for most breast cancer deaths, with five-year survival rates below 5%, compared to approximately 80% for early-stage disease.

An estimated 6% of all cancer diagnoses occur at an advanced stage, a condition linked to roughly 90% of disease-related deaths[4-5]. For breast cancer specifically, nearly 40% of diagnoses happen in advanced stages, emphasizing the need for targeted research[6]. Late diagnosis frequently stems from socioeconomic inequalities, limited healthcare access, and low health literacy. These factors worsen prognosis and increase the need for palliative interventions[2,7].

Palliative chemotherapy, often indicated in these stages, causes multiple adverse effects, including fatigue, nausea, peripheral neuropathy, anxiety, depression, and body image disturbances, which negatively impact patients' health-related quality of life (HRQoL)[8-9]. The literature characterizes HRQoL as a subjective metric influenced by both treatment and individual traits[10]. Evidence suggests sociodemographic and clinical factors, such as age, education, family income, social support, race, marital status, comorbidities, and time since diagnosis, negatively affect HRQoL perception. However, few studies robustly investigate these associations in women with ABC starting palliative chemotherapy, a phase characterized by high physical and emotional vulnerability and difficult therapeutic decisions[11].

In this context, the research question of this study was: Which sociodemographic and clinical factors associate with the quality of life of women with advanced breast cancer beginning palliative therapy? To address this, we aimed to investigate sociodemographic and clinical factors associated with quality of life in women with advanced breast cancer beginning palliative chemotherapy.

Methods

Type of study

This was an observational, cross-sectional, and analytical study. We followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for cross-sectional studies.

Locus and period

We conducted the study at the chemotherapy outpatient clinic of a reference oncology hospital in southern Brazil, located in the state of Paraná, which primarily serves the Unified Health System. Participants were recruited from September 2021 to October 2022.

Population, inclusion and exclusion criteria

A convenience sample was obtained by inviting all women with advanced breast cancer who were starting palliative chemotherapy during the data collection period, totaling 126 eligible patients. Three declined to participate, yielding a final sample of 123 women. We based the sample size calculation on the number of patients with ABC undergoing palliative chemotherapy (first- or second-line) treated in the three years prior to the study: 2018 (n=150), 2019 (n=157) e 2020 (n=143). We used the annual average of these visits as the reference population for sample sizing. Assuming a 3.8% margin of error and a 95% confidence level, we estimated a required sample of 123 participants.

Inclusion criteria comprised women aged 18 or older with a confirmed diagnosis of advanced breast cancer (stage III and/or IV) scheduled to start palliative chemotherapy, assessed prior to their first infusion. We excluded women unable to maintain verbal or written communication. Notably, we approached all eligible patients during the collection period, and none met the exclusion criteria.

Data collection

We initially contacted patients in the chemotherapy waiting room and subsequently directed them to a private room to ensure data collection occurred without companions present. The lead researcher collected data using two printed questionnaires. Namely: 1) A sociodemographic and clinical questionnaire; and 2) The Functional Assessment of Cancer Therapy – General (FACT-G). Participants completed both self-administered questionnaires. If a participant lacked certain information for the sociodemographic and clinical questionnaire, the lead researcher extracted the missing data from their electronic medical records.

Researchers from the Multidisciplinary Adult Health Study Group developed the sociodemographic and clinical questionnaire, previously validated in similar populations[12-13]. The instrument covers sociodemographic variables (age, sex, city of origin, family accompaniment, residential zone, race/ethnicity, marital status, number of children, education level, occupation, family income, religious beliefs, and practices) and clinical variables (diagnosis, diagnosis date, clinical staging, metastasis, previous treatments, family cancer history, clinical comorbidities, smoking, alcohol consumption, continuous medication use, chemotherapy protocol, and Karnofsky Performance Status [KPS]).

The KPS clinically assesses and quantifies the functional capacity of patients, particularly those with chronic diseases like cancer. It consists of 11 levels graded in 10% increments; lower scores indicate poorer functionality. In this study, rather than measuring the KPS directly, the researcher retrieved it from the patients' electronic medical records.

The FACT-G specifically evaluates the quality of life of cancer patients[14]. It comprises 27 Likert-type items on a 0 to 4 scale, divided into four main domains: physical (seven items), social/family (eight items), emotional (six items), and functional (seven items). Domain scores represent the mean of the responses, while the total score is the sum of the domain scores. Total scores range from 0 to 108, with higher scores reflecting better quality of life.

Data analysis and treatment

We double-entered and tabulated questionnaire data using *Microsoft Office Excel*®. Descriptive analysis included means (M) and standard deviations (SD), alongside absolute and relative frequencies for categorical variables. We used Student's t-test to identify differences between FACT-G scores and independent categorical variables with two groups. Levene's test assessed variance homogeneity. We calculated effect size using Cohen's d[15]. Cutoff values were: small = 0.2; medium = 0.5; large = 0.8[16]. For variables with three or more groups, we applied a one-way analysis of variance (ANOVA). Welch's robust test identified differences between means[17]. For the one-way ANOVA, we calculated effect size using Omega squared (Ω^2), with cutoffs of small = 0.01, medium = 0.06, and large = 0.14[16]. We used Pearson's correlation to assess relationships between the FACT-G score and continuous variables such as age and KPS.

We performed all tests using bootstrapping (2,000 resamples; 95% BCa confidence interval [CI]), which corrects for normality deviations and yields more reliable estimates and precise confidence intervals. We conducted all analyses in SPSS, version 25.

Ethical aspects

Regarding ethical aspects, this research complied with National Health Council Resolution 466/2012 and was approved by the Erasto Gaertner

Hospital Research Ethics Committee (Opinion No. 4,704,263/2021; Certificate of Presentation for Ethical Appraisal 44571421.1.0000.0098). All patients provided written informed consent, and we strictly observed all ethical principles.

Results

The sample comprised 123 women with advanced breast cancer starting palliative chemotherapy, with a mean age of 53.3 years (SD±11.3). Most resided in urban areas (117; 95.1%) and identified as white (116; 94.3%).

Regarding religiosity, 118 (95.9%) reported having a religious belief, and 53 (80.3%) actively practiced it. Most participants (80; 65.0%) lacked a steady partner (single and/or widowed), and 105 (85.3%) had at least one child.

Comparing Overall Quality of Life (OQoL) across sociodemographic variables, women without children scored at least eight points higher than those with children (63.2/108±21.2), indicating better quality of life (p=0.008). Furthermore, patients not receiving government financial aid exhibited significantly higher OQoL scores (56.0/108±13.8) than those who did (p=0.003) (Table 1).

Table 1 – Absolute (n) and relative (%) distribution of sociodemographic characteristics in women with advanced breast cancer starting palliative chemotherapy (n=123). Curitiba, PR, Brazil, 2022

Characteristics	Overall Quality of Life			
	n (%)	Mean (SD*)	CI95%†	p-value
Marital status				0.349‡
Married	37 (30.1)	55.4 (15.7)	54.6; 56.2	
Single	67 (54.5)	54.2 (13.5)	53.8; 54.6	
Widowed	13 (10.6)	57.4 (9.0)	56.0; 58.7	
Consensual union	6 (4.9)	61.8 (9.5)	58.7; 64.9	
Number of children				0.008‡‖
No	18 (14.6)	63.2 (21.2)	60.9; 65.5	
1	57 (46.3)	53.1 (11.3)	52.8; 53.5	
2 - 3	38 (30.9)	55.6 (12.7)	55.0; 56.3	
> 3	10 (8.1)	51.9 (7.0)	50.5; 53.3	
Schooling				0.268§
Functionally illiterate (years)	4 (3.3)	54.3 (6.9)	51.0; 57.7	
4 - 7	59 (48.0)	54.0 (13.9)	53.5; 54.4	
8 - 10	45 (36.6)	56.1 (12.6)	55.6; 56.7	
≥11	15 (12.2)	58.3 (17.2)	56.0; 60.5	
Profession/ Occupation				0.135‡
Employee	66 (53.7)	56.6 (14.7)	56.2; 57.0	
Freelancer	20 (16.3)	51.6 (10.0)	50.6; 52.5	
Unemployed	16 (13.0)	59.1 (16.0)	57.1; 61.0	
Student	21 (17.1)	51.6 (10.2)	50.7; 52.6	
Family income (minimum wages)				0.427§
No income	3 (2.4)	54.3 (2.8)	52.5; 56.1	
Up to 1	7 (5.7)	50.3 (6.3)	48.6; 52.0	
1 - 3	100 (81.3)	55.2 (13.6)	54.9; 55.5	
4 - 10	11 (8.9)	60.0 (19.6)	56.5; 63.5	
>10	2 (1.6)	53.0 (2.8)	50.2; 55.8	
Receives government financial assistance/benefits				0.003§‖
Yes	9 (7.3)	46.8 (8.6)	44.9; 48.7	
No	114 (92.7)	56.0 (13.8)	55.7; 56.1	

*SD: Standard Deviation; †CI: Confidence interval; ‡ANOVA test; §Student's t-test; ‖Statistical significance

Clinically, all participants had stage IV breast cancer, denied alcohol consumption, had distant metastases, and had undergone prior treatments.

Prior treatments universally included chemotherapy (123; 100%), alongside radiotherapy (85; 69.1%) and surgery (96; 78.0%). Those who did not undergo surgery exhibited slightly higher OQoL scores (60.5/108±17.1) than the operated group (Table 2).

Regarding cancer history, 55 (44.7%) reported a previous cancer diagnosis. Additionally, 51 (41.5%) had at least one comorbidity, most notably hypertension (41; 33.3%) and diabetes mellitus (25; 20.3%). As detailed in Table 2, 65 women (52.8%) used at least one continuous medication. Clinical characteristics did not significantly drive differences in the OQoL scores.

Table 2 – Absolute (n) and relative (%) distribution of clinical characteristics in women with advanced breast cancer starting palliative chemotherapy (n=123). Curitiba, PR, Brazil, 2022

Characteristics	Overall Quality of Life			
	n (%)	Mean (SD*)	95% CI†	p-value‡
Prior radiotherapy				0.548
Yes	85 (69.1)	54.8 (13.2)	54.4; 55.0	
No	38 (30.9)	56.5 (14.8)	55.7; 57.2	
Previous surgery				0.060
Yes	96 (78.0)	53.9 (12.2)	53.6; 54.0	
No	27 (22.0)	60.5 (17.1)	59.2; 61.7	
Cancer history				0.100
Yes	55 (44.7)	57.7 (16.6)	57.1; 58.2	
No	68 (55.3)	53.3 (10.4)	53.0; 53.6	
Clinical comorbidities				0.977
Yes	51 (41.5)	55.3 (12.8)	54.9; 55.9	
No	72 (58.5)	55.2 (14.3)	54.9; 55.6	
Systemic Arterial Hypertension				0.879
Yes	41 (33.3)	55.5 (13.4)	54.9; 56.2	
No	82 (66.7)	55.2 (13.9)	54.8; 55.5	
Diabetes mellitus				0.540
Yes	25 (20.3)	56.9 (15.1)	55.7; 58.1	
No	98 (79.7)	54.9 (13.3)	54.6; 55.1	
Smoker				0.105
Yes	26 (21.1)	59.7 (15.8)	58.5; 60.9	
No	97 (78.9)	54.1 (12.9)	53.9; 54.4	
Number of medications				0.258
1	75 (61.0)	54.2 (13.9)	53.8; 54.5	
≥2	48 (39.0)	57.0 (13.1)	56.2; 57.4	
Continuous medication use				0.709
Yes	65 (52.8)	54.8 (13.8)	54.4; 55.2	
No	58 (47.2)	55.8 (13.5)	55.3; 56.2	

*SD: Standard Deviation; †CI: Confidence interval; ‡Student's t-test

Table 3 details the mean scores for each domain and the total FACT-G score, which defines the OQoL. The four domains (physical, social/family, emotional, and functional well-being) comprehensively assess quality of life in cancer patients. OQoL was markedly low even before starting palliative chemotherapy (55.3/108±13.7), with functional well-being showing the greatest impairment (10.3/28±4.6).

Table 3 – Mean scores for the domains and the overall score of the Functional Assessment of Cancer Therapy – General (n=123). Curitiba, PR, Brazil, 2022

Variables	Mean (SD*)	CI95%†	Variation‡
Physical well-being	15.1 (5.5)	14.1; 16.1	(0-28)
Social/family well-being	13.1 (4.7)	12.3; 13.9	(0-28)
Emotional wellbeing	16.8 (4.6)	15.9; 17.6	(0-24)
Functional well-being	10.3 (4.6)	9.5; 11.1	(0-28)
Overall Quality of Life	55.3 (13.7)	52.8; 57.7	(0-108)

SD= Standard Deviation; †CI: Confidence interval; ‡Possible range for each subscale

Table 4 presents the correlation analysis between quality of life, age, and Karnofsky performance status. We found a significant negative correlation between age and the FACT-G score (r=-0.205; p=0.024), demonstrating an inverse relationship: as age increases, quality of life scores decrease.

Table 4 – Pearson correlation between Functional Assessment of Cancer Therapy – General scores and independent variables (n=123). Curitiba, PR, Brazil, 2022

Characteristics	Correlation			p-value		
	Age	FACT-G*	Karnofsky	Age	FACT-G	Karnofsky
Age	1.000	–	–	–	–	–
FACT-G – Overall quality of life score	-0.205	1.000	–	0.024†	–	–
Karnofsky	-0.088	0.0448	1.000	0.333	0.627	–

*FACT-G: Functional Assessment of Cancer Therapy – General; †Statistical significance

Discussion

Our results demonstrate that women with advanced breast cancer, particularly stage IV, suffer

significant functional impairment prior to initiating palliative chemotherapy, translating to limitations in daily activities, autonomy, and physical performance. These findings underscore the severe toll imposed by advanced-stage disease.

Consistent with our results, a Brazilian study in Amazonas identified a significant correlation between functional limitation and poorer quality of life in breast cancer patients, suggesting the progressive nature of the disease exacerbates symptom burden. Moreover, they associated fatigue with quality of life, confirming that persistent physical symptoms drive declining well-being. While not specific to ABC, these findings validate the central role of functional status in compromising quality of life[18].

Regarding clinical data, chemotherapy and radiotherapy remain treatment mainstays in public health services, with wide use of multiple therapeutic modalities before transitioning to palliative care. This aligns with the high prevalence of prior treatments in our sample. A history of multiple treatments, routine adverse effects, metastatic progression, and clinical complexity directly degrade quality of life, which suffers not only from physical symptoms but also from emotional burden, reduced functionality, and the limitations imposed by palliative therapy[19-20].

The high prevalence of systemic arterial hypertension and diabetes mellitus, coupled with continuous medication use in over half the sample, demonstrates that advanced-stage oncology patients frequently face multiple comorbidities. These associate with polypharmacy, supportive therapies for adverse effect management, and advanced age. Such a profile compromises tolerance to chemotherapy regimens, dictates therapeutic decisions, and may diminish treatment adherence, ultimately reducing quality of life[21-22].

Internationally, a multicenter study of women with metastatic breast cancer showed progressive FACT-G score declines during treatment, particularly absent active quality of life monitoring. Their time to deterioration analysis revealed that a 10-point FACT-G drop constitutes significant clinical QoL deterioration, proving that even minor score fluctuations substantially impact patients' lives. Therefore, the mean score observed in our cohort signals substantial clinical vulnerability, consistent with advanced-stage disease[23].

Furthermore, advanced age inversely correlated with QoL scores. Studies in similar populations echo these findings, indicating that declining quality of life likely stems from more intense treatment side effects, coupled with comorbidities and pre-existing functional limitations linked to aging. International literature has widely documented this outcome, highlighting heightened functional, physical, and emotional vulnerability in older cohorts[24-25].

Sociodemographic aspects also exerted significant influence, notably driving higher QoL in women without children. Although the literature frequently positions children as a support source, our findings suggest their presence may compound caregiving responsibilities and psychosocial stress during treatment[26]. Consequently, childless women may retain greater autonomy to focus on self-care and disease coping.

From another perspective, the literature also notes that the presence of children or other dependents heavily burdens these women. A recent study revealed that palliative care patients feel powerless against an advanced cancer diagnosis; moreover, perceiving that they cause suffering in others amplifies this powerlessness. This suggests the lower QoL scores in mothers tie directly to intense worry over their children's future without them[27].

Financially, Brazilian literature confirms that insufficient income degrades quality of life. In this context, women relying on government assistance tend to exhibit lower QoL, matching our results. Receiving aid likely signals underlying economic vulnerability, leaving these women more susceptible to the negative impacts of the disease and its treatment[24]. Additionally, employed women reported lower quality of life than their unemployed counterparts. This likely stems from the struggle to sustain work routines and productivity demands during treatment, combined with the fear of job loss and subsequent income depriva-

tion, a dynamic supported by international studies[28].

Overall, our findings confirm that functional, clinical, and sociodemographic factors strongly affect OQoL in women with ABC. This highlights the need for multidimensional approaches and care strategies centered on functionality, psychosocial support, and continuous quality of life monitoring as structural pillars of palliative care.

We must interpret these results within their specific context, given that we recruited the sample from a single oncology service. Multicenter studies profiling diverse populations will expand our understanding of these factors and guide more targeted interventions.

Study limitations

Primary limitations include conducting the study at a single oncology service in southern Brazil, which may restrict extrapolating and replicating our findings to other regions or to socio-demographically and culturally distinct populations. Consequently, future research across diverse institutions and geographic contexts remains vital to broaden representation and strengthen generalizability.

Contributions to practice

This study proves that women with advanced breast cancer suffer significant OQoL deterioration—particularly in the functional domain—before even starting palliative chemotherapy, reiterating the demand for comprehensive, personalized care. Our results emphasize the importance of continuous assessment using validated instruments, early vulnerability identification, and targeted symptom management driven by clinical and sociodemographic factors. Ultimately, these findings support nursing practice by emphasizing the value of humanized, multidimensional, and individualized interventions, driving more effective therapeutic decisions that address patient needs beyond the strict biomedical scope.

Conclusion

Our findings indicate that disease-driven clinical characteristics and sociodemographic factors, such as advanced age, having children, and financial vulnerability, correlate with poorer quality of life in women with advanced breast cancer initiating palliative chemotherapy. These factors highlight the need for care strategies that address individual needs as well as the functional and psychosocial dimensions of illness.

Authors' contributions

Study conception, data analysis and interpretation, manuscript drafting, critical review of intellectual content, final approval of the version to be published, and agreement to be accountable for all aspects of the work to ensure that questions related to its accuracy or integrity are appropriately investigated and resolved: **Marcondes L, Prado E, Baltazar MEL, Santos ME, Silva NFS, Nogueira LA, Kalinke LP**.

Data availability

The datasets supporting these results are available from the corresponding author upon request.

References

1. Bray F, Laversanne M, Sung H, Ferlay J, Siegel RL, Soerjomataram I, et al. Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2024;74(3):229-63. doi: https://doi.org/10.3322/caac.21834
2. Instituto Nacional de Câncer. Controle do câncer de mama no Brasil: dados e números 2025 [Internet]. 2025 [cited Oct 15, 2025]. Available from: http://ninho.inca.gov.br/jspui/handle/123456789/17733
3. Sidharthan C. Breast cancer cases and deaths set to surge by 2050—are we prepared? News Medical [Internet]. 2025 [cited Oct 15, 2025].

Available from: http://www.news-medical.net/news/20250225/Breast-cancer-cases-and-deaths-set-to-surge-by-2050e28094are-we-prepared.aspx

4. Riggio AI, Varley KE, Welm AL. The lingering mysteries of metastatic recurrence in breast cancer. Br J Cancer 2021;124(1):13-26. doi: https://doi.org/10.1038/s41416-020-01161-4

5. American Cancer Society. Cancer facts & figures [Internet]. 2023 [cited Oct 15, 2025]. Available from: http://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2023/2023-cancer-facts-and-figures.pdf

6. Instituto Nacional de Câncer. Controle do câncer de mama no Brasil: dados e números [Internet]. 2024 [cited Oct 15, 2025]. Available from: https://www.inca.gov.br/publicacoes/livros/controle-do-cancer-de-mama-no-brasil-dados-e-numeros-2024

7. Dourado CARO, Santos CMF, Santana VM, Gomes TN, Cavalcante LTS, Lima MCL. Breast cancer and analysis of the factors related to the disease detection and staging methods. Cogitare Enferm. 2022;27:e81039. doi: https://doi.org/10.5380/ce.v27i0.81039

8. Hasanah U, Ahmad M, Prihantono P, Usman AN, Aryyad A, Agustin DI. The quality of life assessment of breast cancer patients. Breast Dis. 2024;43(1):173-85. doi: http://doi.org/10.3233/BD-249008

9. Cardoso F, Rihani J, Harmer V, Harbeck N, Casas A, Rugo HS, et al. Quality of life and treatment-related side effects in patients with HR+/HER2– advanced breast cancer: findings from a multicountry survey. Oncologist. 2023;28(10):856-65. doi: https://doi.org/10.1093/oncolo/oyad207

10. Costa MSO, Diniz JR, Vasconcelos EMR, Albuquerque KA, Santos CR, Araújo EC. Fatores que influenciam na qualidade de vida e no autocuidado de mulheres com câncer de mama. Rev Recien. 2023;13(41):412-22. doi: https://dx.doi.org/10.24276/rrecien2023.13.41.412-422

11. Santos TB, Borges AKM, Ferreira JD, Meira KC, Souza MC, Guimarães RM, et al. Prevalence and factors associated to advanced stage breast cancer diagnosis. Ciênc Saúde Coletiva. 2022;27(2):471-82. doi: http:10.1590/1413-81232022272.36462020

12. Silva LAA, Machado CAM, Santana EO, Silva MN, Felix JVC, Sawada NO, et al. Guided imagery relaxation in quality of life of patients undergoing hematopoietic stem cell transplantation: a quasi-experiment. Asian Pac J Cancer Prev. 2021;22(8):2453-60. doi: https://doi.org/10.31557/APJCP.2021.22.8.2453

13. Santana EO, Silva LS, Silva LAA, Lemos JLA, Marcondes L, Guimarães PRB, et al. Effect of guided imagery relaxation on anxiety in cervical cancer: randomized clinical trial. Rev Bras Enferm. 2023;76(5):e20210874. doi: https://doi.org/10.1590/0034-7167-2021-0874

14. Campos JADB, Spexoto MCB, Serrano SV, Maroco J. Psychometric characteristics of the Functional Assessment of Cancer Therapy-General when applied to Brazilian cancer patients: a cross-cultural adaptation and validation. Health Qual Life Outcomes. 2016;14(1):8. doi: https://doi.org/10.1186/s12955-015-0400-8

15. Lakens D. Calculating and reporting effect sizes to facilitate cumulative science: a practical primer for t-tests and ANOVAs. Front Psychol. 2013;4:863. doi: https://doi.org/10.3389/fpsyg.2013.00863

16. Serdar CC, Cihan M, Yücel D, Serdar MA. Sample size, power and effect size revisited: simplified and practical approaches in pre-clinical, clinical and laboratory studies. Biochem Med (Zagreb). 2021;31(1):010502. doi: https://dx.doi.org/10.11613/BM.2021.010502

17. Field A. Descobrindo a estatística usando o SPSS. São Paulo: Penso; 2021.

18. Cardoso MCM, Araújo RS, Silva JP, Brandão RNM, Carneiro SR. Assessment of upper limbs functionality, quality of life and postoperative fatigue in women with breast cancer at a reference hospital in the Amazon Region. Rev Bras Cancerol. 2025;71(4):e–055271. doi: http://doi.org/10.32635/2176-9745.RBC.2025v71n4.5271

19. Santos RLB, Osorio-de-Castro CGS, Sobreira-da-Silva MJ, Pepe VLE. First use of antineoplastic agents in women with breast cancer in the state of Rio de Janeiro, Brazil. Front Pharmacol. 2023;14:1069505. doi: https://doi.org/10.3389/fphar.2023.1069505

20. Machado RHI, Souza JR. Pacientes mulheres com câncer de mama metastático: impacto do diagnóstico e estratégias de enfrentamento. Brasília

Med. 2022;59:1-23. doi: http://doi.org/10.5935/2236-5117.2022v59a246

21. Shamieh O, Alarjeh G, Li H, Naser MA, Farsakh FA, Abdel-Razeq R, et al. Care needs and symptoms burden of breast cancer patients in Jordan: a cross-sectional study. Int J Environ Res Public Health. 2022;19(17):10787. doi: https://doi.org/10.3390/ijerph191710787

22. Brandstetter LS, Grau A, Heuschmann PU, Müller-Reiter M, Salmen J, Störk S, et al. Medication patterns and potentially inappropriate medication in patients with metastatic breast cancer: results of the BRE-BY-MED study. BMC Cancer. 2025;25(1):125. doi: https://doi.org/10.1186/s12885-025-13548-8

23. Harbeck N, Fasching PA, Wuerstlein R, Degenhardt T, Lüftner D, Kates RE, et al. Significantly longer time to deterioration of quality of life due to CANKADO PRO-React eHealth support in HR+ HER2- metastatic breast cancer patients receiving palbociclib and endocrine therapy: primary outcome analysis of the multicenter randomized AGO-B WSG Pre-Cycle trial. Ann Oncol. 2023;34(8):660-9. doi: https://doi.org/10.1016/j.annonc.2023.05.003

24. Viana LRC, Ferreira GRS, Silva CRR, Freitas SA, Frazão MCLO, Costa TF, et al. Quality of life and sociodemographic and clinical profile of breast and prostate cancer patients. Rev Rene. 2023;24:e89231. doi: https://dx.doi.org/10.15253/2175-6783.20232489231

25. Campos AAL, Bustamante-Teixeira MT, Ervilha RR, Fayer VA, Cintra JRD, Freitas RM, et al. Quality of life of women who underwent breast cancer treatment relative to sociodemographic, behavioral, and clinical factors. Einstein (São Paulo). 2024;22:eAO0585. doi: http://doi.org/10.31744/einstein_journal/2024AO0585

26. Oliveira DAL, Silva LBF, Alves SKM, Guerra MCGC, Ramos VP. Social network support for women with breast cancer undergoing chemotherapy. Rev Enferm Digit Cuid Prom Saúde. 2023;8:01-08. doi: https://doi.org/10.5935/2446-5682.20230186

27. Prado E, Sales CA, Girardon-Perlini NMO, Matsuda LM, Benedetti GMS, Marcon SS. Experience of people with advanced cancer faced with the impossibility of cure: a phenomenological analysis. Esc Anna Nery. 2020;24(2):e20190113. doi: https://doi.org/10.1590/2177-9465-EAN-2019-0113

28. Surbhi, Gupta H, Brar GK, Jalota V. Quality of life and its sociodemographic determinants in breast cancer patients. Ind Psychiatry J. 2022;31(2):313-7. doi: https://doi.org/10.4103/ipj.ipj_6_21