

YOUNG WOMEN AND BREAST CANCER: CLINICAL FACTORS ASSOCIATED WITH POST-TREATMENT PAIN AND DISCOMFORT

MULHERES JOVENS E CÂNCER DE MAMA: FATORES CLÍNICOS ASSOCIADOS À DOR E AO DESCONFORTO PÓS-TRATAMENTO

MUJERES JOVENES Y CÁNCER DE MAMA: FACTORES CLÍNICOS ASOCIADOS AL DOLOR Y LAS MOLESTIAS POSTERIORES AL TRATAMIENTO

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Objective: to investigate the occurrence of pain and discomfort and its association with time since diagnosis in young female breast cancer survivors. Method: an observational, analytical, cross-sectional study conducted from

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September 2024 to February 2025, involving 75 participants, at a High-Complexity Oncology Center in Southern Brazil. Results: 65.3% of the participants had comorbidities. All underwent surgery (100%), with adherence to radiotherapy (92%) and chemotherapy (90.6%). Pain was reported by 44% of the women. Discomfort affected 72%, being more prevalent in women with less than five years of disease (83.3%) compared to those with five years or more (61.5%), with a significant correlation ($p=0.036$). Pain did not vary according to disease duration ($p=0.59$). Conclusion: survivors are in a phase of life marked by productive, family, and social demands, in which pain and discomfort persist as significant symptoms.

Keywords: Women. Breast Neoplasms. Cancer Survivors. Pain. Signs and Symptoms.

Objetivo: investigar a ocorrência de dor e desconforto e sua associação com o tempo de diagnóstico em mulheres jovens sobreviventes do câncer de mama. Método: estudo observacional, analítico, com delineamento transversal, conduzido entre setembro de 2024 a fevereiro de 2025, com 75 participantes, em um Centro de Alta Complexidade em Oncologia do Sul do Brasil. Resultados: 65,3% das participantes apresentavam comorbidades. Todas realizaram cirurgia (100%), com adesão à radioterapia (92%) e à quimioterapia (90,6%). A dor foi relatada por 44% das mulheres. O desconforto afetou 72%, sendo mais prevalente em mulheres com menos de cinco anos de doença (83,3%), em comparação às com cinco anos ou mais (61,5%), com correlação significativa ($p=0,036$). A dor não variou conforme o tempo de doença ($p=0,59$). Conclusão: as sobreviventes se encontram em uma fase de vida marcada por demandas produtivas, familiares e sociais, nas quais a dor e o desconforto persistem como sintomas expressivos.

Descritores: Mulheres. Neoplasias da Mama. Sobreviventes de Câncer. Dor. Sinais e Sintomas.

Objetivo: investigar la presencia de dolor y molestias y su asociación con el tiempo de diagnóstico en mujeres jóvenes supervivientes de cáncer de mama. Método: estudio observacional, analítico y transversal, realizado entre septiembre de 2024 y febrero de 2025, con 75 participantes, en un Centro Oncológico de Alta Complejidad del Sur de Brasil. Resultados: el 65,3% de las participantes presentaba comorbilidades. Todas se sometieron a cirugía (100%), con adherencia a la radioterapia (92%) y quimioterapia (90,6%). El 44% refería dolor. La molestia afectó al 72%, siendo más prevalente en mujeres con menos de cinco años de enfermedad (83,3%), comparado a las que tenían cinco años o más (61,5%), con correlación significativa ($p=0,036$). El dolor no varió en función del tiempo de enfermedad ($p=0,59$). Conclusión: las supervivientes se encuentran en una etapa de vida marcada por exigencias laborales, familiares y sociales, donde el dolor y la molestia persisten como síntomas significativos.

Palabras clave: Mujeres. Neoplasias de mama. Supervivientes de cáncer. Dolor. Signos y síntomas.

Introduction

Breast cancer represents a global public health challenge; it is the most common cancer among women and the leading cause of cancer-related mortality in this group. According to the International Agency for Research on Cancer (IARC), approximately 2.45 million new cases will be diagnosed worldwide in 2025, resulting in about 715,000 deaths during the same period⁽¹⁾. In Brazil, the National Cancer Institute José de Alencar e Silva (INCA) estimated 73,610 new cases for each year of the 2023–2025 period, corresponding to an adjusted incidence rate of 41.89 cases per 100,000 women⁽²⁾.

Although estimates of breast cancer incidence are rising, advances in early diagnostic techniques and multimodal therapeutic protocols have

contributed to increased survival rates among women⁽³⁾. This is due to the use of advanced imaging methods, such as digital mammography and high-resolution magnetic resonance imaging, combined with population-based screening programs that enable the detection of the disease in its early stages⁽⁴⁾. At the same time, integrated therapies, including chemotherapy, radiation therapy, and targeted therapies, optimize therapeutic efficacy and reduce associated complications⁽³⁻⁴⁾. This progress in the clinical approach increases the number of women living longer after diagnosis and leads to the need to understand the concept of survivorship in the context of cancer⁽³⁾.

According to the National Coalition for Cancer Survivorship (NCCS), a cancer survivor is anyone diagnosed with the disease, regardless of treatment or disease progression. This definition was created to replace the term “cancer victim,” recognizing that the experience of living with, through, and beyond cancer is continuous and does not end with treatment⁽⁵⁾.

Along with the consolidation of the concept of survivorship over the years, the number of long-term survivors has steadily increased, with global estimates indicating that nearly eight million women live at least five years after a breast cancer diagnosis⁽⁶⁾. These indicators underscore the need for research focused on clinical follow-up, quality of life (QOL), and the challenges faced by this group.

In the Brazilian context, although the Ministry of Health's (MS) Breast Cancer Early Detection Program prioritizes biennial mammographic screening for women aged 50 to 69, the rising incidence of breast cancer in young women (under 50) represents a growing challenge⁽⁷⁾. In these patients, who fall outside the scope of population-based screening due to lower incidence and a less favorable risk-benefit balance, diagnosis occurs primarily through opportunistic screening or following the identification of symptoms, such as palpable lumps, during self-examination or a clinical consultation⁽⁸⁾.

Data from INCA reveal that approximately 10-15% of breast cancer cases in Brazil occur in women under the age of 40 and are often associated with advanced stages at the time of diagnosis⁽²⁾, requiring more aggressive treatment, which can lead to short- and long-term toxicities. Given this scenario, the Ministry of Health announced the expansion of access to mammography for women aged 40 and older, in a decision made in consultation with healthcare professionals, recognizing that approximately 23% of breast cancer cases occur among women aged 40 to 49⁽⁹⁾. Although this program represents an important step in early detection, the initiative is still carried out on demand rather than systematically, which may

pose challenges regarding coverage, equity, and treatment effectiveness.

In this context of breast cancer survival and the presence of adverse effects, the growing number of young female survivors has revealed new care needs related to the clinical repercussions of treatment and to the physical, emotional, and social obstacles encountered after treatment⁽³⁾. However, there is still a scarcity of studies focusing on breast cancer survivors, and as a result, gaps in knowledge persist. Given this scenario, this study sought to answer the following guiding question: What is the prevalence of pain and discomfort among young female breast cancer survivors, and how are these symptoms associated with time since diagnosis?

In this context, the objective of this study was to investigate the occurrence of pain and discomfort and their association with time since diagnosis in young female breast cancer survivors.

Method

This was an observational, analytical, cross-sectional study with a quantitative approach, conducted among female breast cancer survivors under outpatient follow-up care. The study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for observational studies⁽¹⁰⁾.

Data collection took place between September 2024 and February 2025 at a reference hospital for cancer care in southern Brazil, classified as a High-Complexity Oncology Center (CACON). Participants were identified by reviewing the outpatient appointment schedules of the institution's Breast Surgery and Plastic Surgery teams. Based on this list, electronic medical records were reviewed to identify potential candidates for the study.

Sampling was convenience-based, with an initial approach to 214 women. The pre-established inclusion criteria were: age between 18 and 50 years; confirmed diagnosis of breast cancer; and completion of the first treatment

at least one year prior. The following were excluded: those with psychiatric disorders or cognitive deficits documented in the medical records. After applying these criteria, 139 women did not meet the eligibility criteria, resulting in the final study sample.

For data collection, a sociodemographic and clinical instrument was used that included questions regarding age; education level; marital status; occupation and household income; time since diagnosis; type of treatment received; current treatment; presence of comorbidities; pain and discomfort. This questionnaire was adapted by the researchers and had previously been used in studies assessing quality of life (QoL)⁽¹¹⁾. The data were double-entered into a Microsoft Excel® spreadsheet, followed by verification and correction of inconsistencies.

Pain was assessed through direct questioning of the participants and measured for intensity using a numerical scale from 0 to 10. Discomfort was assessed through direct questioning and characterized based on the participants' self-reports of physical symptoms perceived after treatment. During data collection, it was observed that some participants denied the presence of pain but reported localized painful sensations in the breast or arm when asked about physical discomfort. In these cases, such manifestations were classified as discomfort, respecting the way the symptoms were perceived and reported.

A descriptive analysis was performed on categorical variables using absolute and relative frequencies, and on numerical variables using mean, median, standard deviation, minimum

and maximum values. Associations between clinical variables, duration of disease (<5 years; >5 years), pain, and discomfort were assessed using Spearman's correlation coefficient, with a significance level of $p \leq 0.05$. The analyses were performed using the Statistical Package for the Social Sciences (SPSS) software, version 20.0, by a researcher from the Department of Statistics of the Federal University of Paraná.

The study was conducted in accordance with national ethical guidelines, with approval from the institution's Human Research Ethics Committee, in compliance with National Health Council Resolution No. 466/2012, under substantiated opinion No. 6,834,452. All participants were informed about the study, its objective, risks, and benefits, and their inclusion occurred after signing the Informed Consent Form (ICF) in duplicate.

Results

Of the 214 women approached, 139 were ineligible for the study, resulting in a sample of 75 breast cancer survivors. Table 1 presents the sample characteristics, which include 54 (72%) women aged 41 to 50 years, with a mean age of 43 years (29–50 years); 41 (54.6%) were married or in a stable relationship, and 57 (76%) had at least one child. Regarding occupation, 50 (66.6%) reported being economically active; 48 (64.0%) had a monthly family income of 1 to 3 minimum wages, which represented their main source of support (70.6%; $n=53$). Regarding education, 28 (37.3%) participants had completed high school.

Table 1 – Sociodemographic characterization of breast cancer survivors. Curitiba – PR, Brazil, 2025. (N=75)

Sociodemographic and Clinical Variables	n = 75	%
Age in years (Mean = 43)		Mean = 43
20 to 30	1	1.33
31 to 40	20	26.67
41 to 50	54	72.00
Marital Status		
Married / Common-law partnership	41	54.67
Single	21	28.00

Table 1 – Sociodemographic characterization of breast cancer survivors. Curitiba – PR, Brazil, 2025. (N=75)

Separated / Divorced	11	14.67
Widowed	1	1.33
Other	1	1.33
Education		
Incomplete primary education	5	6.67
Complete primary education	8	10.67
Incomplete secondary education	2	2.67
Complete secondary education	28	37.33
Incomplete higher education	7	9.33
Complete higher education	25	33.33
Occupation		
Retired	1	1.33
Employed	40	53.33
Homemaker	13	17.33
Self-employed	10	13.33
Unemployed	7	9.33
Other	4	5.33
Source of income		
Salary	53	70.67
Benefit	9	12.00
None	4	5.33
Sickness benefit	9	12.00
Household Income		
No income	3	4.00
< 1 minimum wage	4	5.33
1–3 minimum wages	48	64.00
4–10 minimum wages	20	26.67

Source: Own elaboration.

Regarding clinical data, 49 (65.3%) participants had comorbidities, the most common being hypertension, with 14 cases (18.6%). Regarding treatment, all participants underwent surgical treatment (100%), 69 (92%) received radiation

therapy, and 68 (90.6%) received chemotherapy. Among these treatment options, all participants underwent at least two modalities. Regarding the duration since diagnosis, 39 (52%) had been living with the disease for five years or more (Table 2).

Table 2 – Clinical variables. Curitiba – PR, Brazil, 2025. (N=75)

Comorbidities	n = 75	%
Yes	49	65.33
No	26	34.67
Types of Comorbidities		
Systemic Arterial Hypertension	14	18.67
Diabetes Mellitus	8	10.67
Cardiac disease	3	4.00
Respiratory disease	2	2.67

Table 2 – Clinical variables. Curitiba – PR, Brazil, 2025. (N=75)

Others*	6	7.98
Year of Diagnosis		
2001–2005	2	2.67
2006–2010	5	6.67
2011–2015	6	8.00
2016–2020	26	34.67
2021–2025	36	48.00
Treatments Received		
Surgery	75	100.00
Radiotherapy	69	92.00
Chemotherapy	68	90.67
Hormone therapy	16	21.33
Immunotherapy	6	8.00
Current Treatment		
Follow-up	39	52.00
Hormone therapy	31	41.33
Immunotherapy	3	4.00
Chemotherapy	2	2.67

* = 1 hepatic disease, 1 gastric, 1 dermatological, 1 renal, 1 psychiatric disorder, and 1 dyslipidemia, each corresponding to 1.33% of the sample.

Source: Own elaboration.

Pain was reported by 33 (44%) participants, with a mean intensity of 6.09 points on a scale of 0 to 10. The comparison between disease duration and the presence of pain did not reveal a statistically significant difference (<5 years: 47.22%; n = 17; ≥5 years: 41.03%; n = 16; $p = 0.59$), indicating that pain remains similar among survivors over time.

Regarding discomfort, it was prevalent, affecting 54 (72%) participants. Among the

reported types, arm pain (20.37%; n = 11), breast pain (20.37%; n = 11), and fatigue (16.67%; n = 9) stood out. A significant association was observed between discomfort and time since diagnosis, with discomfort being more frequent among women with less than five years of disease (83.3%; n = 30) compared to those with five years or more (61.5%; n = 24) ($p = 0.036$), as shown in Table 3.

Table 3 – Association between disease duration, pain, and discomfort. Curitiba – PR, Brazil, 2025. (N=75)

Disease duration	Discomfort				Disease duration	Pain		Mean intensity: 6.09*
	Yes	No	Total	p		No		p
< 5 years	30	6	36	0.036	< 5 years	19	36	0.59
≥ 5 years	24	15	39		≥ 5 years	23	39	
Total	54	21	75		Total	42	75	

* = On a scale from zero to 10.

Source: Own elaboration.

Discussion

Pain and discomfort are can be common manifestations among breast cancer survivors and can persist for years after treatment ends. These symptoms affect functional ability and social interaction and compromise the overall perception of health-related quality of life (HRQoL). In addition to affecting overall well-being, persistent pain and discomfort can increase feelings of vulnerability, restrict daily activities, and hinder the resumption of professional and personal projects, making them key factors in understanding the long-term impact of the disease among young survivors⁽¹²⁾.

In recent decades, there has been an increase in the incidence of breast cancer among young women, creating a new epidemiological landscape that challenges cancer care traditionally focused on older age groups. Although the prevalence of breast cancer is higher after age 50, the number of diagnoses in women under 50 has been growing rapidly, reflecting changes in demographic profiles, lifestyle habits, and breast cancer screening⁽¹³⁾. In this regard, the findings of the present study reinforce this trend, highlighting the occurrence of the disease in a productive and socially active age group.

A breast cancer diagnosis at a younger age has repercussions that extend beyond the clinical setting, affecting various aspects of survivors' lives. This is a phase characterized by multiple demands, in which they balance productive, family, and social roles. In this context, data indicate that 76% of women of working age are employed at the time of diagnosis⁽¹⁴⁾, many serving as the primary breadwinners and/or sole caregivers for their children⁽¹⁵⁾.

The intertwining of social and economic responsibilities in the illness process highlights a specific vulnerability, in which the economic repercussions tend to be more pronounced for young women diagnosed with cancer, due to the stage of life they are in, which can potentially increase the socioeconomic burden

on this group. As they are an active part of the workforce, the diagnosis can profoundly impact their employment opportunities and career development, resulting in lasting social and economic consequences⁽¹⁴⁾.

In addition, the responsibilities associated with marriage and motherhood tend to intensify psychosocial distress, especially among those who are diagnosed with breast cancer during periods of personal and professional transition⁽¹⁵⁾. From a clinical perspective, young women present with tumors that exhibit a more aggressive biological behavior, often associated with a higher incidence of triple-negative tumors, HER2-positive subtypes, higher histological grades, and diagnoses at more advanced stages. These characteristics result in an unfavorable prognosis and an increased risk of early recurrence, compared to those diagnosed at older ages⁽¹⁶⁾.

The significant proportion of comorbidities in this sample, despite the young age group, constitutes a relevant finding and suggests the influence of genetic or lifestyle factors on the early onset of breast cancer⁽¹⁷⁾. This finding reinforces the need for screening and early intervention programs aimed at identifying risks for modifiable comorbidities in this population.

Surgical treatment, combined with radiation therapy and chemotherapy, reflects the need for an intensive therapeutic approach, consistent with evidence linking breast cancer in young women to more challenging biological characteristics and greater aggressiveness⁽¹⁸⁾. In this sense, this therapeutic intensity may directly contribute to significant subsequent and late symptoms, such as pain and discomfort, which points to the need for management strategies that consider the cumulative effects throughout the therapeutic course⁽¹⁹⁾.

The high prevalence of moderate-intensity pain may have a significant negative impact on HRQoL⁽¹⁹⁻²⁰⁾, particularly in a young population seeking social and occupational reintegration. A recent study corroborates these findings by

revealing that more than half of breast cancer survivors experience persistent pain after treatment, compromising their functionality and HRQoL⁽¹⁹⁾.

Pain is not only related to the course of the disease but is also induced by therapeutic strategies such as surgery, radiation therapy, and chemotherapy^(19–21). Furthermore, the presence of comorbidities – such as hypertension, diabetes mellitus, and cardiovascular disease – observed in the sample of the present study may increase the intensity of pain, exacerbating its physical and emotional impact⁽²¹⁾. This combination highlights the importance of pain management strategies as a priority area for research and clinical intervention⁽¹⁹⁾.

Living with chronic pain can entail financial costs and restrict participation in important social activities, impairing family relationships, support networks, and re-entry into the labor market⁽²²⁾. In this regard, in addition to impacting physical capacity, persistent pain can make returning to or maintaining work more challenging, affecting independence and the sense of productivity – essential elements that are often fundamental to recovery⁽²³⁾.

In the present study, pain did not show significant variation over time, indicating that the number of years since the start of treatment is not associated with its onset and/or intensity. This finding is consistent with a South African study in which more than half of the survivors reported persistent chronic pain, regardless of the time since diagnosis, especially among younger women⁽²²⁾.

Regarding discomfort, the most frequently cited physical symptoms among participants were pain in the breast and arm, which are often associated with surgery and radiation therapy. This type of discomfort generally compromises range of motion and shoulder function, affecting the performance of self-care activities, and is recognized as a determining factor in the perception of disability and the ability to perform daily activities⁽²⁴⁾. A study conducted in North America found that symptoms of discomfort and pain in the arm and breast can persist for ten

years after treatment, significantly impacting daily life and the return to occupational activities⁽²⁵⁾.

The results of this study indicate that discomfort tends to be more prevalent in the first five years following diagnosis, showing a significant correlation ($p=0.036$). This finding suggests that discomfort is more pronounced in the initial post-treatment period, possibly due to the physiological and emotional effects of the therapy. In this context, these findings are consistent with previous studies, which suggest that young women experience a greater burden of symptoms, including fatigue and functional impairments, particularly in the first few years following treatment⁽³⁾.

The persistence of pain and discomfort highlights the need for ongoing care tailored to the specific needs of young women who are breast cancer survivors. In this regard, nursing reaffirms its role as a key player in comprehensive care, particularly in managing post-treatment pain and discomfort – conditions that emerge as significant barriers to social and occupational reintegration and improvements in HRQoL. Considering that survivors are in the productive phase of life, with a high prevalence of comorbidities, nursing assumes a strategic role in promoting individualized, patient-centered interventions focused on functional rehabilitation, pain management, and improvement in HRQoL.

A limitation of the present study is the absence of records regarding tumor stage or subtype, which could better clarify the results, suggesting the need for future studies with greater clinical detail that include these variables. Furthermore, the relatively small sample size may limit the generalizability of the findings to broader populations of breast cancer survivors. However, the data observed in this study, such as the persistence of pain and the gradual reduction of discomfort in the first few years post-treatment, are consistent with the literature.

Conclusion

This study shows that pain and discomfort remain significant symptoms among young

breast cancer survivors, even after the start and completion of treatment. The persistence of these symptoms reflects the cumulative impact of therapies, as well as the biopsychosocial vulnerabilities of these women, who are in an active and productive stage of their lives. The findings suggest that treatment success should not be limited to survival alone, but should also include managing the late effects of treatment and improving HRQoL.

The need to manage pain and discomfort over time highlights the need for integrated strategies for follow-up and rehabilitation aimed at maintaining physical function, promoting well-being, and facilitating the social and occupational reintegration of young survivors. Within this scenario, the role of nursing is fundamental for the continuous assessment of symptoms and for providing personalized care that aids in pain management and encourages self-care.

Contributions:

1 – project conception and planning: Cristiano de Oliveira Ribeiro, Lourdes Maria Rosinski Lima Gomes, Sonia Silva Marcon, Luciana Puchalski Kalinke.

2 – data analysis and interpretation: Cristiano de Oliveira Ribeiro, Julia Luriane Hermes de Oliveira, Lourdes Maria Rosinski Lima Gomes, Luciana Puchalski Kalinke, Paulo Ricardo Bittencourt Guimarães.

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Conflicts of interest

There are no conflicts of interest.

Data availability

The dataset supporting the results of this study was published in the article itself.

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