# #2463: Early Mortality in Young Women with Breast Cancer: Insights from 66,000 Cases in the Brazilian Public Health System (2000–2023)

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## Introduction

Breast cancer (BC) in adolescents in young adults (AYAs), defined as individuals aged 15–39 years, poses distinct clinical and public health challenges as underrepresentation in guidelines or screening exclusion. It is the most common solid tumor among young women, contributing substantially to morbidity and mortality. AYAs are more likely to experience diagnostic delays, aggressive subtypes, and worse outcomes due to unique biological and psychosocial vulnerabilities. In Brazil, where ethnic and socioeconomic disparities are pronounced, understanding the drivers of BC mortality in young women treated within the public healthcare system is essential This study investigates factors associated with mortality in a nationwide cohort of Brazilian women aged 15–39 years diagnosed with BC over a 23-year period.

## Methods and Materials

A secondary database study was conducted, including women aged 15 to 39 years who were diagnosed and treated for BC (ICD-10 C50) within Brazil's public healthcare system, as recorded in the national Hospital Cancer Registry between 2000 and 2023. Non-analytic cases were excluded. The primary endpoint was death occurring after diagnosis and during the initial course of the proposed treatment. Sociodemographic, clinical, and tumor-related variables were collected. Descriptive analysis was performed, and multivariable logistic regression using the Stepwise Forward method was applied to identify factors associated with the outcome.

## Results

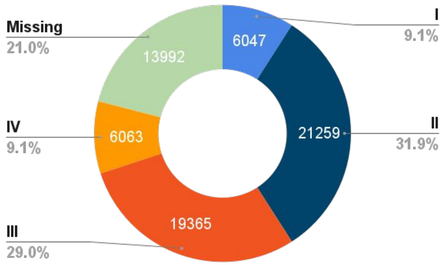
Of 66,726 eligible women, most were aged 30–39 (87.3%), self-identified as Black or mixed-race (55.4%), had ≥9 years of education (59.0%), and lived with a partner (54.3%). The majority were from the Southeast (44.8%) and Northeast (26.9%). Invasive carcinoma of no special type was the most common subtype (86.8%) (Table 1). At diagnosis, 40.3% were stage II and 36.7% stage III (Figure 1). Treatment initiation exceeded 60 days in 44.6% of cases. Neoadjuvant chemotherapy was administered to 39.5%, surgery to 49.3%, radiotherapy to 8.3%, and endocrine therapy to 2.0% (Figure 2). A total of 2,337 women (3.5%) died before or during the initial treatment.

**Table 1:** Frequency of demographic and clinical variables

| Variables | Total |
|---|---|
| **Age (years)** | |
| Median (min–max) | 35 (15–39) |
| **Race/ethnicity** | |
| White/Other | 19947 (44.6) |
| Black or Mixed race | 24796 (55.4) |
| **Educational level** | |
| ≥ 9 years of study | 30144 (59.0) |
| ≤ 8 years of study | 20919 (41.0) |
| **Marital status** | |
| With partner | 23382 (54.3) |
| Without partner | 19716 (45.7) |
| **Alcohol consumption** | |
| No | 61262 (91.8) |
| Yes* | 5464 (8.2) |
| **Smoking history** | |
| No | 62784 (94.1) |
| Yes* | 3942 (5.9) |
| **Region** | |
| South and Southeast | 41691 (62.8) |
| North, Northeast, Center-West | 24684 (37.2) |
| **Referral source** | |
| Private service | 9071 (21.2) |
| Public Health System (SUS) | 33658 (78.8) |
| **Histological type** | |
| Others | 7927 (13.2) |
| No Special Type (NST) | 52256 (86.8) |

In adjusted analyses, younger age was associated with higher mortality, with a 2% reduction in odds of death per year of age (OR 0.98; 95% CI: 0.96–0.99; p = 0.003). Black or mixed-race women had a 40% higher risk of death (OR 1.40; 95% CI: 1.23–1.61), and those with lower education a 36% increase (OR 1.36; 95% CI: 1.21–1.52). Living in the North, Northeast, or Central-West was associated with 30% higher mortality (OR 1.30; 95% CI: 1.14–1.47), and absence of a partner increased the risk by 23% (OR 1.23; 95% CI: 1.10–1.38). Advanced stage (III/IV) was the strongest predictor of death (OR 7.54; 95% CI: 6.37–8.93; p < 0.001) (Table 2).

**Figure 1.** Clinical stage at diagnosis



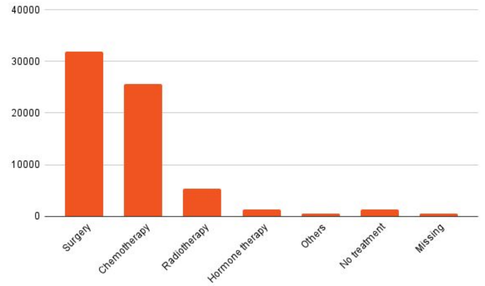




**Figure 2** First treatment modality

## Conclusions

This nationwide study demonstrates a high burden of early mortality among young Brazilian women with breast cancer, particularly those from marginalized racial, educational, and geographic backgrounds. Black or mixed-race ethnicity, low educational attainment, absence of a partner, and residence in underserved regions were independently associated with increased risk of death. Late-stage diagnosis was the most significant predictor. These findings underscore the urgent need for targeted public health interventions to promote earlier diagnosis, reduce treatment delays, and improve equity in breast cancer care across Brazil.

**Table 2:** Independent factors associated with an increased chance of death.

| Variables | OR Adjusted (IC 95%) | P value |
|---|---|---|
| **Age** | | |
| Years | 0.98 (0.96 – 0.99) | <0.003 |
| **Skin color** | | |
| Others | Reference | <0.001 |
| Black or brown | 1.40 (1.23 – 1.61) | |
| **Education** | | |
| ≥ 9 years of study | Reference | <0.001 |
| Up to 8 years of study | 1.36 (1.21 – 1.52) | |
| **Region** | | |
| South and Southeast | Reference | <0.001 |
| North, Northeast, Center-West | 1.30 (1.14 – 1.47) | |
| **Marital status** | | |
| With partner | Reference | <0.001 |
| Without partner | 1.23 (1.10 – 1.38) | |
| **Clinical Stage** | | |
| Early Stage (I-II) | Reference | <0.001 |
| Late Stage (III-IV) | 7.54 (6.37 – 8.93) | |

## Limitations

The real-world analysis and retrospective nature of this study are subject to inherent methodological limitations. The use of secondary data from a continental country may lead to underreporting or omission of relevant variables, as well as potential stage misclassification across different TNM editions.

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