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RESEARCH ARTICLE

Breast Cancer Profile Analysis in the Health Regions of a Southern Brazilian State from 2013 to 2021

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ABSTRACT

Background: The present study aimed to identify the profile of breast cancer in Santa Catarina from 2013 to 2021.

Aims: The main objective was to profile breast cancer in Santa Catarina from 2013 to 2021, focusing on prevalence by age group, analyzing temporal trends in mortality across macro-regions, and comparing mortality rates by age in different state regions.

Methods: The study utilized a mixed ecological approach in Santa Catarina, analyzing public records from the Panel Oncologia on Tabnet at the Department of Informatics of DATASUS. It focused on women over 18 years old diagnosed with breast cancer in SC from 2013 to 2021, including age at diagnosis, mortality rates, treatment options, and diagnosis by health region, totaling 73,487 cases.

Results: Health data from 16 regions in Santa Catarina showed an increase in breast cancer diagnoses, treatments, and mortality. Several areas, including Alto Vale do Rio do Peixe, saw significant rises in diagnoses and treatments, with a mortality trend among young women.

Conclusion: The analysis of breast cancer in SC shows increased diagnoses and treatments, with Alto Vale do Rio do Peixe experiencing rising mortality. There is a significant rise in diagnoses among young women, highlighting the need for targeted screening for this demographic.

Keywords: Breast Neoplasms, Epidemiology, Risk Factors, Antineoplastic Protocols

Introduction

Breast cancer is the most common disease from a global perspective;[1] alone, it represents 30% of all diagnoses of primary cancer in women and is the second most prevalent regarding mortality.[2]

In Brazil, excluding non-melanoma tumors, breast cancer is the most prevalent cancer among women in all regions, with higher incidence rates observed in the South and Southeast. Last year, the estimated prevalence was 66.54 cases per 100,000 women in Brazil, compared to 93.05 cases of malignant breast neoplasms per 100,000 women in Santa Catarina.[3]

Early detection of breast cancer significantly improves the chances of cure, while diagnosis at more advanced stages is associated with poorer prognosis, higher mortality rates, and reduced survival chances.[4] Additionally, financial inequality and social disparities contribute to limited access to healthcare and higher breast cancer mortality. [5]

The risk factors are diverse and include both modifiable and non-modifiable causes, such as female sex, age, family history of breast or ovarian cancer, genetic mutations, parity, breast tissue density, and others. [6] The disease is linked to circulating estrogen levels, affecting women in more than 99% of cases.[7,8] The difference in these risk factors is notable with aging. Still, it can occur in young women, where there is a greater risk of genetic hereditary mutations that predispose them to breast cancer.[9] In more advanced ages, the risk of carcinogenesis increases and reflects aging caused by an accumulation of mutated cells exposed to many carcinogens.[6]

It is known that there are at least 18 histological types of breast cancer described [10,] and the most common of them is invasive carcinoma without other specifications (IDC-NST), followed by invasive lobular carcinoma.[11,12] Besides the histology, the use of biomarkers in routine is recommended to predict the prognosis in each patient[13] better, and in Brazil, the Instituto Nacional do Câncer (INCA) preconizes that when it is confirmed cancer, it should analyze the presence of estrogen receptors (ER), progesterone receptors (PR) and the protein HER-2 expression (HER2).[14]

Since breast cancer is a time-sensitive disease, it implies in a maximum that the earlier it is diagnosed and treated, the better will be the evolution of the patient.[15] INCA and the Ministério da Saúde (MS) preconize mammography (MMG) as a biennial screening tool for women between 50 and 69 years old.[16]

Meanwhile, strategies to reach an earlier diagnosis based on the specific subgroups still need fast and precise pathology results so that the public system can achieve the patients who need it the most quickly, considering the limited financial resources. [17]

Cancer treatment is conducted in specialized units with varying levels of complexity, ranging from outpatient clinics and radiotherapy centers to advanced hospital facilities. Treatment occurs in specialized units that differ in complexity, including clinics, radiotherapy centers, and even hospital complexes.[18]

In Brazil, patient profiles differ significantly between the public healthcare system and private care, including variations in histological types and disease staging at diagnosis. This disparity negatively affects the prognosis of less fortunate patients, which is troubling given that 7 out of 10 Brazilians depend on the public healthcare system, Sistema Único de Saúde (SUS).[19,20]

That said, these diverse circumstances significantly influence the prognosis of breast cancer patients. This highlights the urgent need for efforts to raise awareness among the population and public organizations to improve this scenario.[21, 22]

This study highlights the importance of researching and sharing breast cancer knowledge due to its significant impact on women's lives. Understanding the disease's characteristics across different groups is crucial. Additionally, assessing the disease over time in SC's macroregions offers insights for guiding actions, including new approaches and educational interventions. The main goal was to identify the epidemiological profile of breast cancer in Santa Catarina from 2013 to 2021, focusing on early detection and screening gaps to support public policy development that improves treatment outcomes. This study also aims to deepen understanding and implement measures against this urgent public health issue.

Methods

A mixed-type ecological study was conducted, composed of public records from the Panel Oncologia on Tabnet is available at the Department of Informatics of the Sistema Único de Saúde (DATASUS). In this study, women over 18 years old and diagnosed with breast cancer in SC from 2013 through 2021, along with age at diagnosis, the mortality rate of breast cancer, mortality rate, treatment, and diagnosis according to health region, totalizing 73.487 cases (Painel Oncologia - Tabnet). Since it was an ecological time-series study, it was not necessary to perform a sample size calculation, and for the taxes, It utilized population data from the 2010 IBGE census.

The study's dependent variables were the age range at diagnosis (in years), total treatment performed (in numbers), total mortality (in numbers), breast cancer mortality rate (in numbers) by health macro-region of SC, and breast cancer diagnosis rate (in numbers) by health macro-region of SC. The independent variable was the analyzed period 2013–2021.

Mortality numbers were recorded in Microsoft Excel® and exported to IBM SPSS® 20.0 for analysis. The proportions of diagnoses, treatments, and mortality were calculated by age range and health region in SC.

The studied values were calculated as the ratio of women with breast cancer in SC multiplied by 100,000 inhabitants. For the time trend analysis, rates and the simple linear regression method were used, obtaining an estimated model according to the formula $Y = b_0 + b_1X$,

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where Y = standardized coefficient, b_0 = average coefficient for the period, b_1 = average annual increment, and X = year.

To examine the behavior (increase, decrease, or stability) and the Average Annual Variation of the mortality coefficient, the value (positive or negative) and the statistical significance of the regression coefficient (β) were assessed. The statistical significance of the model was confirmed for $p<0.05$.

This study was conducted exclusively with secondary and aggregated data, publicly available, and in compliance with Resolution No. 466 of December 12, 2012, of the National Health Council (CNS), as well as with the guidelines and standards of Resolution 510/2016 of the National Health Council, Article 1, Sole Paragraph, Items II, III, and V. The database does not provide access to patient names or personal information that allows individual identification or compromises data confidentiality. Therefore, the study was exempt from evaluation by a Research Ethics Committee.

Results

Data on the resident population from the population estimates study, broken down by municipality, age, and sex, for 2013–2021 were analyzed. During this period, the total number of women aged 19 years or older residing in the state was 23,371,955. Specifically, the number of women per year was as follows: 2,398,524 in 2013, 2,450,075 in 2014, 2,501,111 in 2015, 2,551,517 in 2016, 2,601,287 in 2017, 2,649,891 in 2018, 2,696,534 in 2019, 2,740,742 in 2020, and 2,782,274 in 2021.

The data regarding the number of diagnoses by age range in the state is illustrated in *Table 1*. We observed an increasing trend in the prevalence of breast cancer with age ($p<0.05$), indicating a statistically significant rise in the number of diagnoses as age increases. This increase is particularly notable in the 29 to 39-year age group ($p<0.05$), suggesting a higher frequency of diagnoses during the analyzed period, while other age groups remained unchanged.

Table 1: Diagnoses by Age Range in SC

Age	Average Rate	R(*)	R^2	ß (‡)	IC 95%	p	Tendency
19-29 years old	4.7298	0.530	0.281	0.269	-0.115 - 0.654	0.142	↔
29 - 39 years old	27.7981	0.843	0.710	1.256	0.538 - 1.973	0.004	↑
39 - 49 years old	89.0283	0.487	0.237	0.884	-0.532 - 2.301	0.183	↔
49 - 59 years old	118.9999	0.176	0.031	0.466	-1.865 - 2.797	0.651	↔
59-69 years old	143.4633	0.406	0.165	-1.164	-3.504 - 1.176	0.278	↔
69-79 years old	141.0086	0.184	0.034	0.800	-3.028 - 4.628	0.636	↔
> 80 years old	91.5865	0.543	0.295	-1.521	-3.622 - 0.580	0.131	↔
Total	71.1037	0.676	0.458	1.184	0.032 - 2.336	0.045	↑

R (*) - correlation coefficient; R^2 - determination coefficient; ß (‡) - linear regression coefficient; IC - confidence interval; ↑ - increase; ↓ - decrease e ↔ - stability

The total number of breast cancer treatments across different age ranges in SC was also examined, as shown in *Table 2*. It can be observed that there was an increase over the 8-year analysis in the number of treatments for breast neoplasia among all groups below 69 years old, with statistical significance ($p<0.05$). In contrast, we see stability when examining patients above 69 years old.

Table 2: Treatments by Age Range in SC

Age	Average Rate	R(*)	R^2	ß (‡)	IC 95%	p	Tendency
19-29 years old	4.5375	0.694	0.481	0.377	0.027 - 0.728	0.038	↑
29 - 39 years old	27.1914	0.930	0.865	2.017	1.305 - 2.730	0.000	↑
39 - 49 years old	86.9736	0.963	0.927	3.164	2.369 - 3.959	0.000	↑
49 - 59 years old	115.9290	0.887	0.786	2.968	1.584 - 4.353	0.001	↑
59-69 years old	138.0495	0.773	0.598	2.152	0.575 - 3.729	0.015	↑
69-79 years old	136.6719	0.626	0.392	4.272	-0.485 - 9.029	0.071	↔
> 80 years old	88.4114	0.164	0.27	0.576	-2.512 - 3.664	0.672	↔
Total	69.2187	0.974	0.949	2.824	2.238 - 3.409	0.000	↑

R (*) - correlation coefficient; R^2 - determination coefficient; ß (‡) - linear regression coefficient; IC - confidence interval; ↑ - increase; ↓ - decrease e ↔ - stability

Regarding breast cancer mortality rates across various age groups in SC, the analyzed period indicated an increase, though no specific group displayed a discernible trend. The data reflects stability across all age ranges, with statistical significance ($p<0.05$), as demonstrated in *Table 3*.

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Table 3: Mortality by Age Range in SC

Age	Average Rate	R(*)	R^2	ß (‡)	IC 95%	p	Tendency
19-29 years old	0.8746	0.191	0.037	0.23	-0.82 - 0.127	0.622	↔
29 - 39 years old	6.32023	0.539	0.291	0.206	-0.81 - 0.493	0.134	↔
39 - 49 years old	19.0872	0.196	0.039	0.120	-0.417 - 0.657	0.613	↔
49 - 59 years old	34.6634	0.521	0.271	-0.402	-0.990 - 0.187	0.150	↔
59-69 years old	48.2354	0.277	0.077	-0.319	-1.37 - 0.670	0.471	↔
69-79 years old	66.6046	0.399	0.159	1.094	-1.151 - 3.339	0.287	↔
> 80 years old	103.5873	0.182	0.033	0.727	-2.794 - 4.248	0.640	↔
Total	23.4616	0.915	0.838	0.429	0.261 - 0.589	0.001	↑

R (*) - correlation coefficient; R^2 - determination coefficient; ß (‡) - linear regression coefficient; IC - confidence interval; ↑ - increase; ↓ - decrease e ↔ - stability

In *Table 4*, data on the time to treatment for breast cancer in the state of SC is presented over the studied period. It shows that in all the years analyzed, more than 50% of women wait more than 60 days to initiate oncological treatment.

Table 4: Year x Time of Treatment in SC

Year	Until 30 days	31 - 60 days	More than 60	Total
2013	480 (27.6%)	330 (19%)	926 (53.3%)	1.736
2014	392 (24.6%)	319 (20%)	877 (55.2%)	1.588
2015	411 (25%)	345 (21%)	882 (53.8%)	1.638
2016	461 (26.1%)	347 (19.6%)	954 (54.1%)	1.762
2017	455 (25.4%)	361 (20.2%)	970 (54.3%)	1.786
2018	474 (24.5%)	369 (19.1%)	1084 (56.2%)	1.927
2019	429 (21.1%)	374 (18.4%)	1225 (60.4%)	2.028
2020	424 (22%)	465 (22.1%)	1037 (53.8%)	1.926
2021	480 (24.4%)	524 (23.3%)	1236 (55.1%)	2.240

Oncology Panel DATASUS - Outpatient Information System (SIA), through the Individualized Outpatient Production Bulletin (BPA-I) and the Authorization for High-Complexity Procedures; Hospital Information System (SIH); Cancer Information System (SISCAN), 2013 - 2021.

When examining the 16 health regions in the state, there is a noted general increase in the number of diagnoses for breast neoplasia ($p<0.05$), particularly evident in the following regions: Extremo Oeste, Alto Vale do Itajaí, Foz do Rio Itajaí, Meio Oeste, Alto Vale do Rio do Peixe, and Planalto Norte, all with $p<0.05$ (*Table 5*). The only region that experienced a decline in the number of diagnoses was the Nordeste Catarinense ($p<0.05$). The others remained at stable levels.

Table 5: Diagnosis of breast cancer by health region in SC

	Average Rate	R(*)	R^2	ß (‡)	IC 95%	p	Tendency
Extremo Oeste, Oeste e Xanxerê	64.6792	0.464	0.215	-1.049	2.840 - 0.742	0.209	↔
Alto Vale do Itajaí	29.2060	0.887	0.787	9.808	5.252 - 14.364	0.001	↑
Foz do Rio Itajaí	64.0340	0.784	0.615	3.890	1.141 - 6.639	0.012	↑
Médio Vale do Itajaí	80.3178	0.064	0.004	0.382	-4.909 - 5.673	0.869	↔
Grande Florianópolis	80.1957	0.253	0.064	0.879	-2.122 - 3.879	0.511	↔
Meio Oeste	176.8280	0.975	0.951	11.920	9.496 - 14.345	0.000	↑
Alto Vale do Rio do Peixe	51.5308	0.854	0.729	24.212	11.031 - 37.394	0.003	↑
Alto Uruguai Catarinense	8.4564	0.581	0.337	1.069	0.271 - 2.408	0.101	↔
Nordeste e vale do Itapocú	73.3971	0.759	0.576	-3.29	-5.352 - -0.705	0.018	↓
Planalto Norte	46.0230	0.961	0.924	7.571	5.630 - 9.512	0.000	↑
Serra Catarinense	122.9796	0.505	0.255	-6.691	-16,911 - 3.529	0.166	↔
Extremo Sul Catarinense	0.1422	0.548	0.300	0.085	-0.031 - 0.202	0.127	↔
Carbonífera	109.9612	0.559	0.312	2.671	-0.873 - 6.215	0.118	↔
Laguna	73.3836	0.522	0.272	1.874	-0.866 - 4.614	0.150	↔
General	71.1037	0.676	0.458	1.184	0.032 - 2.336	0.045	↑

R (*) - correlation coefficient; R^2 - determination coefficient; ß (‡) - linear regression coefficient; IC - confidence interval; ↑ - increase; ↓ - decrease e ↔ - stability

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Data regarding treatment in the health regions is presented in *Table 6*. A general increasing trend is also observed ($p<0.05$), though there are variations among treatments. An increase is noted in the following regions: Alto Vale do Itajaí, Foz do Rio Itajaí, Grande Florianópolis, Meio Oeste, Planalto Norte, and Laguna ($p<0.05$). No health region displayed a decrease in the number of treatments during the study period, and the others remained stable.

Table 6: Treatments of breast cancer by health region in SC

	Average Rate	R(*)	R^2	ß (‡)	IC 95%	p	Tendency
Extremo Oeste, Oeste e Xanxerê	62.3341	0.502	0.252	1.466	-0.790 - 3.723	0.168	↔
Alto Vale do Itajaí	36.6674	0.863	0.745	9.695	4.619 - 14.770	0.003	↑
Foz do Rio Itajaí	58.6773	0.827	0.684	3.367	1.321 - 5.413	0.006	↑
Médio Vale do Itajaí	74.1537	0.610	0.372	1.823	-0.292 - 3.937	0.081	↔
Grande Florianópolis	74.5076	0.738	0.544	2.223	0.405 - 4.040	0.023	↑
Meio Oeste	178.4030	0.971	0.943	13.598	10.601 - 16.595	0.000	↑
Alto Vale do Rio do Peixe	0.1148	0.548	0.300	-0.69	-0.163 - 0.025	0.127	↔
Alto Uruguai Catarinense	0.6228	0.394	0.155	-0.189	-0.583 - 0.205	0.294	↔
Nordeste e vale do Itapocú	49.6188	0.393	0.154	-0.723	-2.236 - 0.790	0.296	↔
Planalto Norte	48.9811	0.948	0.898	7.827	5.468 - 10.186	0.000	↑
Serra Catarinense	113.9176	0.116	0.013	1.645	-10.992-14.283	0.767	↔
Extremo Sul Catarinense	0.1422	0.548	0.300	0.085	- 0.031 - 0.202	0.127	↔
Carbonífera	108.6475	0.694	0.481	5.096	0.365 - 9.826	0.038	↑
Laguna	69.2565	0.813	0.661	3.107	1.118 - 5.096	0.008	↑
General	67.7701	0.974	0.948	2.773	2.192 - 3.354	0.000	↑

R (*) - correlation coefficient; R^2 - determination coefficient; ß (‡) - linear regression coefficient; IC - confidence interval; ↑ - increase; ↓ - decrease e ↔ - stability

Lastly, as illustrated in *Table 7*, we present the relationship between mortality rates and the state's health regions, which exhibited a general increasing trend ($p<0.05$). The area contributing to this finding, which also displayed a growing mortality trend, was Alto Vale do Rio do Peixe ($p<0.05$). Similarly to the previous variable, this analysis showed that the regions remained stable, with none demonstrating a declining trend.

Table 7: Mortality of breast cancer by health region in SC

	Average Rate	R(*)	R^2	ß (‡)	IC 95%	p	Tendency
Extremo Oeste, Oeste e Xanxerê	19.9202	0.065	0.004	0.066	-0.845 - 0.977	0.869	↔
Alto Vale do Itajaí	23.1352	0.074	0.006	0.159	-1.750 - 2.069	0.849	↔
Foz do Rio Itajaí	13.7589	0.277	0.077	-0.174	-0.714 - 0.366	0.471	↔
Médio Vale do Itajaí	24.9857	0.396	0.156	-0.517	-1.591 - 0.556	0.292	↔
Grande Florianópolis	26.1557	0.647	0.418	0.690	-0.037 - 1.417	0.060	↔
Meio Oeste	17.5962	0.506	0.256	0.752	-0.392 - 1.897	0.164	↔
Alto Vale do Rio do Peixe	17.0197	0.681	0.463	0.930	0.035 - 1.826	0.044	↑
Alto Uruguai Catarinense	23.5752	0.063	0.004	0.089	0.089 - 0.529	0.871	↔
Nordeste e vale do Itapocú	24.4498	0.873	0.002	1.201	0.601 - 1.802	1.201	↔
Planalto Norte	24.4495	0.211	0.586	-0.277	-1.422 - 0.869	0.586	↔
Serra Catarinense	25.6509	0.166	0.028	-0.382	-2.406 - 1.643	0.669	↔
Extremo Sul Catarinense	20.1140	0.494	0.244	1.278	-0.731 - 3.287	0.176	↔
Carbonífera	21.4859	0.006	0.000	-0.006	-0.838 - 0.826	0.987	↔
Laguna	23.3509	0.530	0.281	0.641	-0.276 - 1.558	0.142	↔
General	23.4616	0.915	0.838	0.429	0.261 - 0.598	0.001	↑

R (*) - correlation coefficient; R^2 - determination coefficient; ß (‡) - linear regression coefficient; IC - confidence interval; ↑ - increase; ↓ - decrease e ↔ - stability

Discussion

The analysis of the 16 health regions in SC showed a general increase in the data regarding the amount of diagnoses, treatment, and mortality related to breast cancer. Extremo Oeste, Alto Vale do Itajaí, Foz do Rio Itajaí, Meio Oeste, Alto Vale do Rio do Peixe, and Planalto Norte exhibited significant increases in diagnosis and treatment. In contrast, the Nordeste Catarinense recorded a notable decline in diagnostics. There wasn't a decrease in treatment in any region. Regarding mortality, the Alto Vale do Rio do Peixe was the only health region showing an increasing trend.

The Alto Vale do Rio do Peixe has only one unit capable of performing oncological treatment. According to data from the Panel of Oncological Surgery Monitoring

created by the State's Health Secretary, 14.7% of patients wait more than 60 days to begin treatment. Additionally, there is a lack of geographical accessibility to specialized services associated with inadequate treatment, a worse prognosis, and a decline in quality of life. Nonetheless, this region also has one of the lowest per capita incomes, second only to the Planalto Norte, according to data from IBGE.[23]

In light of the increase in breast cancer diagnoses, the question arises regarding the system's ability to handle this reality and the effectiveness of the measures in screening. According to INCA in 2018, the south of Brazil has a prevalence profile similar to that of developed countries and has the second highest number of deaths due to this neoplasia. [24] However, the COVID-19 pandemic 2020 led to a significant decline in MMG procedures nationally and in SC, with reductions of 41.0% and 50.7%, respectively. Even in 2022, the number of MMG procedures performed was approximately 8.2% lower than in 2018.[17,25]

In the present study, an increase in the prevalence of cancer cases among young women aged 29 to 39 was observed, with an approximate annual mortality rate increase of 1.25. Seventy-one percent of this increase can be attributed to the passage of time during the study period. Relating this to the AMAZONA study, the discussion becomes even more relevant, considering that about 41% of women in Brazil diagnosed with breast cancer are under 50 years old.[26] Therefore, availing the efficacy of the existing screening methods and a possible adjustment in the national guidelines becomes relevant to serving this age range of women better in the state.

Despite the importance of screening, INCA[24] data indicates that the use of MMG, even for high-risk women, is considered non-cost effective. [16] On the other hand, studies from FRBRASGO suggest that expanding the age range to 40-74 years and reducing the time interval between exams to annual can lower breast cancer mortality by 25% over 10 years. Aside from FEBRASGO, the Brazilian Society of Breast Surgeons, the Brazilian Society of Radiology and the Brazilian Society of Oncology recommend that screening should begin annually at age 40 to reduce mortality from the disease.[17]

Furthermore, Marchi *et al,*[28] show that only 6 out of every 10 women have access to screening MMGs, and the AMAZONA 3[18, 21] study indicates that only about one-third of women treated in the public health system were diagnosed by routine MMG screening. Santos Silva *et al.* demonstrate that 2,500 deaths could have been avoided if the breast cancer screening program had an adherence rate above 80%. If, with the same variables, these same patients with stage 3 disease had been diagnosed 5 years earlier in stage 2, 7,500 deaths could have been prevented.[29] This brings up the issue of access to mammographic screening in our population.[18,30]

The amount of treatment for breast cancer increased in 6 out of the 16 health regions in the state. It also showed an increase across all age ranges, which the rise in therapeutic approaches available and access to them may justify.[31] These health regions represent 42.2% of the state's population that received treatment for breast cancer during the analyzed period and include 5 of the 10 most populated counties in the state.[32] However, although the state's population experienced the second-largest growth in absolute numbers in the country over the last 10 years, with an increase of 21.8%—three times the national average[33]—the investment in public health in Brazil rose by only 2.5% during the same period. [34] When looking at the state of SC, the gross value of health investments increased from approximately 42 billion reais in 2013 to almost 70 billion in 2021. An important point is that although there is a 60-day law that ensures treatment for cancer patients must begin within a maximum of 60 days after diagnosis, in SC, throughout all the studied years, it was found that this reality did not occur in more than 50% of cases.[35]

The study has certain limitations that must be considered. Since it relies on secondary data from public SUS databases, there is potential for selection bias and record errors that could compromise the accuracy of the estimates. Additionally, the ecological design of the study limits the ability to establish individual relationships. Moreover, the study did not assess the effectiveness of treatments, which may obscure the analyses impacting clinical outcomes. The interval between data collection and manuscript submission was essential for conducting a thorough and reliable analysis of the 73,487 cases from 16 health regions. With the study examining temporal trends from 2013 to 2021, detailed data processing and statistical validation were crucial for deriving significant epidemiological insights. Additionally, situating the findings within the current literature, improving the manuscript through internal reviews, and managing potential pandemic-related delays influenced the timeline. This timeframe facilitated a comprehensive, high-quality evaluation, guaranteeing the study's accuracy and relevance to breast cancer trends in Santa. Catarina.

Conclusion

It is noted that the analysis of breast cancer in SC reveals an increase in diagnoses and treatments, with the Alto Vale do Rio do Peixe displaying a rising trend in mortality. The challenges are exacerbated by low geographic accessibility and per capita income in the region. Additionally, there was a notable increase in diagnoses among individuals aged 29 to 39. In contrast, other age groups remained stable, indicating a need for special attention to this demographic, which falls outside the typical groups targeted for screening. The findings of this research aim to enhance understanding of the breast cancer landscape among women in the state, contributing to the development of public policies, as well as prevention and diagnosis, to effectively address its impacts.

Conflicts of Interest Statement

We hereby declare no conflict of interest in the present study.

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