

  <https://doi.org/10.56238/alookdevelopv1-081>

### Lucimila Teixeira Ribeiro

Physiotherapist, University of Pernambuco, Petrolina Campus.

### Lidiane Régia Pereira Braga de Britto

PhD in biotechnology (RENORBIO), University of Pernambuco, Petrolina Campus.

### ABSTRACT

**Objective:** To perform the descriptive analysis of the main sociodemographic and clinical characteristics of breast cancer patients followed at the Petrolina Oncology Center - PE between 2010 and 2015. **Methodology:** A retrospective and descriptive study with a transversal approach, where 670 medical records were analyzed. **Results:** A predominance of female patients (99.25%) occurred, most of them referred by the Brazilian Unified Health System (SUS) (52.24%), presenting a mean age of  $56.15 \pm 14.41$ , race / color (79.25%), non-alcoholics (77.91%), presence of family history of cancer (57.16%) and level of schooling until incomplete primary education (43.58%). Regarding

the clinical data, prevalence of the diagnosis in stage I (21.64%) was observed, with the invasive ductal being the most common histological type of tumor (79.40%). The most used therapeutic approach was the surgery associated to the use of chemotherapy, radiotherapy and hormone therapy (30.90%). Radical mastectomy modified with the axillary evacuation procedure, were the most performed surgical intervention (23.58%). At the end of the first treatment, the disease was often stable (74.63%), with a reduced amount of patients performing breast reconstruction (4.95%). **Conclusion:** A better knowledge of the individuals' profile affected by breast cancer in the Submédio São Francisco allows health managers and patients to obtain more information about the disease and its epidemiology, as well as clinical and therapeutic characterization of the disease. Such data never before evaluated in the region, may enable the development of more effective strategies in the prevention and diagnosis of breast neoplasia.

**Keywords:** Breast Neoplasms, Medical Records, Risk Factors, Descriptive Epidemiology, Mastectomy.

## 1 INTRODUCTION

Breast cancer is the most prevalent malignant neoplasm and it is a frequent cause of death worldwide, including in Brazil. For this country, about 59,700 new cases of this type of cancer were estimated in 2018, which corresponds to About 28% of new cases of cancer each year, being the most common type among Brazilian women, after non-melanoma skin cancer. Men can also be affected, but it is rare, accounting for only 1% of all cases of the disease <sup>(1)</sup>.

Some risk factors are related to a greater predisposition to the development of breast cancer or even to its etiology. These risk factors differ into non-modifiable and modifiable. The former are related to family history associated with genetics, race/color, and older age. The modifiable factors are related to lifestyle (such as alcohol consumption) and reproductive behavior <sup>(2, 3)</sup>.

Breast cancer is a heterogeneous disease determined from the division and abnormal growth of breast cells. Its histopathological classification varies according to the type of tumor and the degree of extension that determines its staging. Carcinomas are the most common breast tumors that are subdivided into two broad categories: noninvasive or *In Situ* and invasive <sup>(4, 5)</sup>. The staging is done

through an evaluation recommended by the International Union Against Cancer (UICC) called "TNM System of Classification of Malignant Tumors", which uses the anatomical extension of the disease considering the primary characteristics of the tumor (T), absence or presence of metastasis in the regional lymph nodes (N) and absence or presence of distant metastasis (M) <sup>(6)</sup>.

Treatment varies according to the staging of the disease, tumor characteristics and individualized conditions of the patient (age, comorbidities, behavioral and cultural aspects). Thus, based on the clinical picture, drug procedures with the use of chemotherapy, endocrine and biological therapy, as well as radiotherapy protocols and surgical techniques are used. Finally, the quality of the prognosis is associated with the stage of diagnosis and the histology of the tumor <sup>(7)</sup>.

Among the Brazilian regions that have a higher number of deaths due to breast cancer, the Midwest and Northeast regions stand out, with a prevalence in the state of Pernambuco, with a trend of increase in deaths among the age group of 20 to 49 years, which is related to the deficiency in breast cancer screening in young women. In this state there is still the persistence of high mortality rates between 50 and 69 years, associating – if the inefficiency of public health policies for control and prevention of the disease <sup>(8)</sup>.

In this context, having knowledge of the profile of the users of the Oncology services allows to identify the target audience and the most incident clinical pictures, enabling the development of strategies for early diagnosis, prevention measures and targeted interventions <sup>(9)</sup>. Therefore, in view of the above, and considering the need to know the predominant profile of individuals affected by breast cancer, the objective of this study was to perform a descriptive analysis of the main sociodemographic and clinical characteristics of patients followed up at an Oncology Center.

## **2 METHODOLOGY**

This is a retrospective and descriptive study with a cross-sectional approach, carried out with 670 medical records of patients who presented the following predetermined eligibility criteria: receipt of diagnosis and treatment for breast cancer between the years 2010 to 2015 at the Dr. Muccini Oncology Center (CEONCO) in Petrolina – PE. CEONCO is part of the philanthropic institution called Associação de Amparo à Maternidade e a Infância (CEONCO/APAMI).

The research information was collected between the period of August 2017 to April 2018, through the Tumor Registration Forms (standardized instrument used in Brazil to collect information by the Hospital Cancer Registry – RHC), and the written medical records - stored in the Medical and Statistical File Service (SAME) of the CEONCO - or electronic medical records (Engeplus®) for the data not filled out or addressed in the form.

The following variables were collected and analyzed for sociodemographic aspects: gender, origin of referral to the CEONCO (SUS, private or on their own), age, race/color, alcoholism, smoking, family history of cancer, schooling and marital status. Regarding the clinical aspects of the neoplasm, the variables observed were the staging of the disease (I, IIA, IIB, IIIA, IIIB, IIIC and IV), histology of the tumor, type of treatment, surgical interventions, breast reconstruction and disease status at the end of the first treatment (complete or partial remission, stable or progressing disease, metastasis and death).

Statistical analysis was performed after tabulation and organization of data in Microsoft Excel® (Microsoft Corporation, Redmond, WA, United States). This analysis occurred in the statistical package program *Statistical Package for the Social Science for Windows version 20.0 (SPSS Inc., Chicago, IL, United States of America)*; where the data were calculated by means of descriptive statistics with absolute and relative frequencies, means, medians and standard deviations for the quantitative variables.

This study was submitted to and approved by the Research Ethics Committee of the University of Pernambuco (CEP-UPE), according to the CAAE protocol : 46228115.8.0000.5207.

### 3 RESULTS

In this study, there was a predominance of female patients (99.25%) in relation to males (0.75%), with the majority of patients referred by the Unified Health System (52.24%) and with a mean age of  $56.15 \pm 14.41$ ; and the age group between 50 and 79 (55.67%) years was the main one affected by the disease. There was also a prevalence of mixed race (79.25%), non-drinkers (77.91%) and non-smokers (60.75%), presence of a family history of cancer (57.16%), with incomplete education level up to elementary school (43.58%) and married marital status (50.15%). The complete set of descriptive data is shown in Table 1.

Table 1. Descriptive analysis of the sociodemographic profile.

Variable	N	%
<b>Sex</b>		
Female	665	99,25
Male	5	0,75
<b>Forwarding source</b>		
THEIR	350	52,24
Particular	197	29,40
He came on his own	43	6,42
No Information	80	11,94
<b>Age</b>		
< 30	8	1,19
30 – 49	248	37,01
50 – 79	373	55,67
≥ 80	41	6,12
<b>Race/Color</b>		

White	95	14,18
Pardon	531	79,25
Black	30	4,48
No Information	14	2,09
<b>Alcoholism</b>		
Yes	42	6,27
No	522	77,91
Ex – ethylist	70	10,45
No information	36	5,37
<b>Smoking</b>		
Yes	60	8,96
No	407	60,75
Former smoker	173	25,82
No Information	30	4,48
<b>Family history of cancer</b>		
Yes	383	57,16
No	197	29,40
No Information	90	13,43
<b>Schooling</b>		
Illiterate	87	12,99
Incomplete Fundamental	292	43,58
Complete Fundamental	37	5,52
Incomplete High School	2	0,30
Complete Medium	128	19,10
Superior Incomplete	11	1,64
Complete Superior	98	14,63
No Information	15	2,24
<b>Marital status</b>		
Married	336	50,15
Single	156	23,28
Widower	120	17,91
Divorced	49	7,31
No Information	9	1,34

Único Health System: SUS.

According to the clinical data described in Table 2, there was a prevalence of diagnosis in staging IA (21.64%) and IIIB (17.31%), with invasive ductal staging being the most common histological type of tumor (79.40%). As for the most used therapeutic approach, surgery associated with the use of chemotherapy, radiotherapy and hormone therapy stood out (30.90%). The modified radical mastectomy together with the axillary dissection procedure was the most frequently performed surgical intervention (23.58%). However, of the 546 patients submitted to surgical intervention, only 27 underwent breast reconstruction, which represents 4.95% of them. Finally, the disease status at the end of the first treatment was often stable (74.63%).

Table 2. Descriptive analysis of the clinical profile.

<b>Variable</b>	<b>N</b>	<b>%</b>
<b>TNM Stadium</b>		
I	145	21,64
IIA	112	16,72
IIB	86	12,84
IIIA	81	12,09
IIIB	116	17,31
IIIC	10	1,49
IV	83	12,39
No Information	37	5,52
<b>Tumor Histology</b>		
Adrenocarcinoma	4	0,60
Ductal In Situ	69	10,30
Invasive Ductal	532	79,40
Anaplásic lymphoma	1	0,15
Lobular <i>In Situ</i>	1	0,15
Lobular Invasivo	14	2,09
Medullary	7	1,04
Carcinoma Apócrino	1	0,15
Mucinoso	7	1,04
Squamous Cell Carcinoma	1	0,15
Carcinoma Tubular	2	0,30
Carcinoma Papilífero	7	1,04
Nipple + Areola	2	0,30
Papilífero intracístico	4	0,60
Neoplasia Nodular	1	0,15
Tumor Filóide	1	0,15
No Information	16	2,39
<b>Treatment</b>		
Surgery	6	0,90
Chemotherapy	59	8,81
Radiotherapy	4	0,60
Hormonoterapia	28	4,18
Chemotherapy, radiotherapy, hormone therapy and Immunotherapy	1	0,15
Immunotherapy and hormone therapy	1	0,15
Surgery and hormone therapy	34	5,07
Chemotherapy and radiotherapy	13	1,94
Surgery and chemotherapy	57	8,51
Surgery, radiotherapy and hormone therapy	36	5,37
Surgery and radiotherapy	1	0,15
Surgery, chemotherapy and immunotherapy	4	0,60
Surgery, chemotherapy and radiotherapy	66	9,85
Surgery, chemotherapy, radiotherapy and hormonotherapy	207	30,90
Surgery, chemotherapy, hormone therapy and immunotherapy	7	1,04

Surgery, chemotherapy, radiotherapy, Hormone therapy and immunotherapy	14	2,09
Surgery, chemotherapy, radiotherapy, immunotherapy	20	2,99
Chemotherapy and hormone therapy	10	1,49
Chemotherapy, radiotherapy and hormone therapy	5	0,75
Chemotherapy, radiotherapy and immunotherapy	1	0,15
Radiotherapy and hormonotherapy	3	0,45
Surgery, chemotherapy and immunotherapy	2	0,30
Surgery, chemotherapy and hormone therapy	82	12,24
No Information	4	0,60
None	5	0,75
<b>Types of Surgery</b>		
Radical mastectomy	1	0,15
Modified radical mastectomy	140	20,90
Modified radical mastectomy + AS	158	23,58
Modified radical mastectomy + BLS	11	1,64
Simple Mastectomy + AS	2	0,30
Quadrantectomy	56	8,36
Quadrantectomy + EA	81	12,09
Quadrantectomy + BLS	83	12,39
Simple Mastectomy	6	0,90
Adrenomastectomia + BLS	1	0,15
Nodulectomia	2	0,30
Simple Mastectomy + BLS	3	0,45
Adenectomia + BLS	1	0,15
Quadrantectomia + BLS + EA	1	0,15
Didn't need it *	40	5,97
There was no **	45	6,72
No Information	39	5,82
<b>Disease status at the end of the first treatment</b>		
Complete remission	1	0,15
Partial remission	1	0,15
Stable disease	500	74,63
Progressing disease	29	4,33
Metástase	5	0,75
Death	109	16,27
No Information	25	3,73
<b>Breast reconstruction</b>		
Yes	27	4,95
No	519	95,05

Sentinel Lymph Node Biopsy: BLS; Axillary Emptying: AS.

\* Refers to patients who did not need to undergo a surgical procedure.

\*\* Patients who did not undergo surgical intervention for various reasons, such as having died early or refused for cultural reasons.

## 4 DISCUSSION

The study in question presented the sociodemographic profile with a predominance of breast cancer in female patients, which is similar to recent studies in the literature that address breast cancer in men as a rare disease, representing 0.11% of all male neoplasms and less than 1% of breast cancer cases<sup>(10, 11)</sup>. Regarding the origin of the referral, most patients (52, 24%) came from the SUS, which refers to the commitment of this system with the vast majority of Brazilians, who depend entirely on it (12 - 14).

The prevalent age range was from 50 to 79 years (55.67%), with low occurrence of breast cancer in patients under 30 years of age. These data are compatible with the information provided by the National Cancer Institute (INCA) and scientific studies, which address such a neoplasm with progressively increasing incidence after 50 years and relatively rare before 35 years<sup>(1, 15, 16)</sup>. In addition, studies associate breast cancer in young women with a worse prognosis due to screening difficulties in this age group, thus presenting late diagnosis with advanced staging<sup>(17, 18)</sup>.

The race/color that predominated was mulatto (79.25%), which is in agreement with the work of Silva *et al.*<sup>(12)</sup> and Barboza *et al.*<sup>(19)</sup> in which both present, respectively, a sample of 53.6% and 63% of patients with this color. However, this information differs from what was found in other studies conducted in the country, which demonstrate the white color as prevalent among those affected by breast cancer<sup>(16, 20, 21)</sup>. However, it is worth mentioning that the Brazilian population presents intense ethnic miscegenation<sup>(22)</sup>, with a large majority of whites and browns, according to data exposed by the Brazilian Institute of Geography and Statistics (IBGE)<sup>(23)</sup>, making this a limiting factor for the study of this variable.

Non-alcoholic (77.91%), non-smoking (60.75%) and positive individuals regarding family history of cancer (57.16%) stood out in the research, equivalent to what was found in the scientific research of Dugno *et al.*<sup>(14)</sup>, Haddad *et al.*<sup>(17)</sup> and Barboza *et al.*<sup>(19)</sup>. An emphasis should be given to the consumption of alcoholic beverages that can promote carcinogenesis, in addition to increasing the progression and aggressiveness of existing mammary tumors<sup>(24)</sup>. As for family history, this in turn increases the risk of developing breast cancer through mutations of the *BRCA1/BRCA2 genes* transferred over generations<sup>(18, 19)</sup>.

The most relevant level of education was incomplete elementary school (43.58%) and married marital status (50.15%). Such findings corroborate with studies that affirm that the level of education is associated with the level of knowledge, directly influencing preventive measures and early detection of the tumor<sup>(12, 18 - 20)</sup>. Marital status is not a determining factor for the development of breast cancer, but the marital status of married people promotes greater social support for those affected by this neoplasm<sup>(14, 17)</sup>.

The descriptive analysis of the clinical profile demonstrated similarly to the study by Barboza *et al.* <sup>(19)</sup> high frequencies of patients diagnosed at the beginning of the disease in stages I (21.64%) and IIA (16.72%), with a decrease according to the advancement of the stages. However, stage IIIB (17.31%) was also prevalent, which highlights the need for greater strategies for primary prevention of risk factors for breast cancer and secondary for investigation and early diagnosis. The latter when performed in early stages are associated with a better prognosis in survival and a reduction in the risk of death <sup>(17)</sup>.

The tumor invasive ductal (79.40%) followed by ductal *in situ* (10.30%) were the predominant histological types in the study, with other types less incident and some rare. These results are compatible with Pinheiro's studies *et al.* <sup>(18)</sup> which showed a sample with 90.7% of the patients with the first tumor mentioned above and 3.7% with the second, and Barboza *et al.* <sup>(19)</sup> which presented 81% of patients with invasive ductal tumor and 8% with ductal tumor *in situ*. Both tumors originate from epithelial cells (carcinomas) and start in the breast ducts, with the invasive ductal presenting cancer cells that invade the surrounding stroma and ductal *in situ* remaining contained in its place of origin, without rupturing the milk duct. The latter manifests a better prognosis, but if not treated properly it represents a risk, which can become invasive and fatal <sup>(3, 4, 25)</sup>.

The predominant therapeutic approach was the performance of surgery associated with chemotherapy cycles, radiotherapy and hormone therapy, which corroborates Barboza's findings *et al.* <sup>(19)</sup> and Magellan *et al.* <sup>(20)</sup>. Despite the small number of patients submitted to immunotherapy, adherence to such conduct is observed, which has scientifically presented good results, with durable clinical responses and increased survival through strategies of stimulation of the immune system and elimination of tumor antigens <sup>(26, 27)</sup>.

In the present study, the surgical type that prevailed was modified radical mastectomy accompanied by lymph node removal or axillary dissection (23.58%), which corroborates Haddad's study *and. ly.* <sup>(17)</sup> where about 60% of women underwent such procedures. Axillary dissection correlates with invasive ductal carcinoma with a diameter of more than 2 cm, which is associated with angiolymphatic invasion, which can cause metastasis <sup>(28)</sup>. As for the state of the disease at the end of the first treatment, the main outcome was its stability (74.63%), which is similar to that found by Pinheiro *et al.* <sup>(18)</sup> and Barboza *et al.* <sup>(19)</sup>.

The breast reconstruction procedure was performed in a small number of women (4.95%), a result similar to what was found in the literature. Although this practice is beneficial for the quality of life of women undergoing mastectomy by promoting lower psychological aspects and body image, its implementation is not yet a reality of the public health system of the country <sup>(29, 30)</sup>.



even though there has been a legal requirement since 2013 (Law 12,802) to perform the same in cases of mutilation resulting from breast cancer (29).

It should be considered, as a limitation of the research, that it was developed in a single institution of diagnosis and treatment of cancer in the city of Petrolina-PE. With the magnitude of the incidence of the disease, further research with women with breast cancer in the State of Pernambuco is necessary in order to provide more information for the planning and application of public policies directed to this neoplasm.

## **5 CONCLUSION**

According to the results of the present study, it was inferred that they were compatible with recent research conducted in Brazil. Therefore, the better knowledge of the profile of individuals affected by breast cancer in the Submedo do São Francisco, allows to provide health managers and patients themselves, more information about the disease and its epidemiology, as well as clinical and therapeutic characterization of it. Such data, never before evaluated in the region, may enable the development of more effective strategies in the prevention and diagnosis of breast cancer.

## REFERENCES

Types of breast cancer. National cancer institute josé alencar gomes da silva. Inca [internet]. 2018 [cited may 21, 2018]. Available in: <http://www2.inca.gov.br/wps/wcm/connect/tiposdecancer/site/home/mama>

Jerônimo af de a, freitas âgq, weller m. Risk factors of breast cancer and knowledge about the disease: an integrative revision of latin american studies. *Cien saude colet*. 2017;22(1): 135-49.

Diniz csg, pellini acg, ribeiro ag, tedardi mv, de miranda mj, touso mm, et al. Breast cancer mortality and associated factors in são paulo state, brazil: an ecological analysis. *Bmj open*. 2017;7(8): 1-15.

Fondón i, sarmiento a, garcía ai, silvestre m, eloy c, polónia a, et al. Automatic classification of tissue malignancy for breast carcinoma diagnosis. *Comput biol med.*, elsevier ltd; 2018;96: 41–51

Pollanen i, braithwaite b, ikonon t, niska h, haataja k, toivanen p, et al. Computer-aided breast cancer histopathological diagnosis: comparative analysis of three dtocs-based features: sw-dtocs, sw-wdtocs and sw-3-4-dtocs. 2014 4th int conf image process theory, tools appl ipta 2014. 2015;0–5.

Barrios ch, buzaid ac, cruz mr, mayer ia. Manual of clinical oncology in brazil. Solid tumors. 11 ed. St. Paul: dendrix; 2013. Chapter 1, breast cancer. Pp. 2-5.

Breast cancer control. Treatment. National cancer institute josé alencar gomes da silva (inca) [internet]. 2016 [cited may 28, 2018]. Available in: [http://www2.inca.gov.br/wps/wcm/connect/acoaes\\_programas/site/home/nobrasil/programa\\_controle\\_cancer\\_mama/tratamento](http://www2.inca.gov.br/wps/wcm/connect/acoaes_programas/site/home/nobrasil/programa_controle_cancer_mama/tratamento)

Brischiliari scr, oliveira rr, andrade l, brischiliari a, gravena aaf, carvalho mdb, peloso sm. The rise in mortality from breast cancer in young women: trend analysis in brazil. *Plos one*. 2017: 12 (1).

Gusmão en of s, macena tn of s, fortuna jl. Clinical-epidemiological characteristics of breast cancer in patients of a high complexity oncology unit. *Rev bahian public health* 2016;40(3): 633 -647.

Siegel rl, miller kd, jemal a. Cancer statistics. *Ca cancer j clin*. 2016;66(1):7–30.

Wang k, wang q-j, xiong y-f, shi y, yang w-j, zhang x, et al. Survival comparisons between early male and female breast cancer patients. *Sci rep*. 2018;8( 1):8900.

Silva pf e, amorim mhc, zandonade e, viana kcg. Association between sociodemographic variables and advanced clinical staging of breast neoplasms in a reference hospital in the state of espírito santo. *Rev bras cancerol*. 2013;59(3): 361–7.

Suleiman nn, birth n, botelho jms, rabbit rc. Overview of breast cancer in women in the north of tocantins - brazil. *Rev col bras cir*. 2017;44(4):316–22.

Dugno mlg, soldatelli js, daltoé t, rosado jo, spada p, formolo f. Profile of breast cancer and relationship between risk factors and clinical staging in a hospital in southern brazil. *Rev bras oncol clinic*. 2013;10(36):60–6.

Torres dm, valente py, feitosa gp, matos c de fp de, mota fsx, machado jr. Analysis of epidemiological data of patients followed by breast cancer in a hospital in fortaleza (ce). *Rev bras mastol*. 2016;26(2):39–44.

Paiva c, cesse e. Aspects related to the delay in the diagnosis and treatment of breast cancer in a hospital unit of pernambuco. *Rev bras cancerol*. 2015;61(1):23–30.

Haddad nc, carvalho ac de a, novaes cdo. Sociodemographic and health profile of women undergoing surgery for breast cancer. *Rev hosp univ pedro ernesto*. 2015;14(0):28–35.

Pinheiro ab, lauter ds, medeiros gc, cardozo ir, menezes lm, souza rm, et al. Breast cancer in young women: analysis of 12,689 cases. *Rev bras cancerol*. 2013;59(3):351–9.

Barboza r dos s, ferreira jk dos r, faustino r da s, júnior ls da s. Breast cancer in rio grande do norte, a retrospective study: epidemiological, clinical and therapeutic profile. *Rev bras mastol* 2017;27(2):109–16.

Magalhães g, brandão-souza c, fustinoni sm, matos jc, schirmer j. Clinical, sociodemographic and epidemiological profile of women with breast cancer. *Rev online pesqui [internet]*. 2017 [cited june 3, 2018]; 9(2):473. Available in: <http://seer.unirio.br/index.php/cuidadofundamental/article/view/5445>.

Andrade fp, muniz rm, lange c, schwartz e, guanilo mee. Sociodemographic and economic profile of cancer survivors according to the degree of resilience. *Text and context enferm*. 2013;22(2):476–84.

Fayer va, guerra mr, cintra jrd, bustamante-teixeira mt. Ten-year survival and prognostic factors for breast cancer in southeastern brazil. *Rev bras epidemiol*. 2016;19(4):766–78.

Saraiva a. Population reaches 205.5 million, with fewer whites and more browns and blacks. *Ibge news agency [internet]*. 2017 [cited june 4, 2018]. Available at: <https://agenciadenoticias.ibge.gov.br/agencia-noticias/2012-agencia-de-noticias/noticias/18282-pnad-c-moradores.html>

Wang y, xu m, ke z. J, luo j. Cellular and molecular mechanisms underlying alcohol-induced aggressiveness of breast cancer. *Pharmacological research*. 2017; 115: 299-308.

Stafin i, caponi lgf, torres tp, araujo jn, guedes vr. Prognostic factors in breast cancer. *Hu magazine*. 2012; 38(3 and 4): 193-201.

Tan tj, chan jj, Kamis s, dent ra. What is the role of immunotherapy in breast cancer? *Chinese clin oncol*. 2018;7(2):13.

Li z, qiu y, lu w, jiang y, wang j. Immunotherapeutic interventions of triple negative breast cancer. *J transl med. Biomed central*; 2018;16(1):147.

Aquino rgf, vasques phd, cavalcante dim, oliveira alds, oliveira bmk, pinheiro lgp. Invasive ductal carcinoma: relationship of anatomopathological characteristics with the presence of axillary metastasis in 220 cases. *Rev col bras cir*. 2017;44(2):163–70.

Barbosa pa, cesca rg, pacific ted, icg milk. Quality of life in women with breast cancer after surgical intervention in a city in the forest zone of minas gerais, brazil. *Rev bras health matern infant*. 2017;17(2):385–99.

Britto lrp, souza ec, ribeiro lt, schwingel pa, melo ara, nascimento pl, portela gjs. The impact of sensory alterations on upper limb function after a mastectomy. 2017;27(4):287–92.