BREAST CANCER IN THE HEALTH INSURANCE SYSTEM OF JUNDIAÍ: DATA ON 105 PATIENTS

Câncer de mama no sistema de saúde suplementar de Jundiaí: dados de 105 pacientes

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ABSTRACT

Introduction: The data related to breast cancer's epidemiology in Brazil are heterogenous, reflecting the country's socioeconomic inequalities. Significant number of cases of this disease are attended through the health insurance system, but data on these cases is poorly disseminated. **Objective:** To evaluate epidemiological data on breast cancer from patients attended through the health insurance system in the municipality of Jundiaí, São Paulo. **Methods:** This was a retrospective study conducted through reviewing the medical files of 105 patients diagnosed with breast cancer, who were attended between January 2014 and December 2015. The information gathered included: age, clinical staging, histological type, immunohistochemical profile, surgical treatment and adjuvant treatment. **Results:** The study included 105 patients with breast cancer who were treated exclusively within the health insurance system of Jundiaí. The patients' mean age was 50.8 years. We observed that 13 patients (12.3%) were diagnosed with ductal carcinoma *in situ* (stage 0), 43 (40.9%) with stage I, 34 (32.3%) with stage II, 11 (10.4%) with stage III and 2 (1.9%) with stage IV. Conservative surgery was performed on 76 patients (72.3%), while 29 (27.7%) underwent mastectomy. Among the latter, immediate reconstruction was performed in 82.7% (24) of the cases. **Conclusion:** The high rates of early diagnosis and conservative surgery show that screening for breast cancer within the health insurance system of the municipality of Jundiaí, has been effective. Accessible mammography and the socioeconomic level of the population seem to be the main factors responsible for the obtained findings.

KEYWORDS: Breast neoplasms; supplemental health; mastectomy; mammography; epidemiology.

RESUMO

Introdução: Os dados referentes à epidemiologia do câncer de mama no Brasil são heterogêneos, reflexo da desigualdade socioeconômica do país. A medicina suplementar possui número relevante de casos da doença, porém estes são pouco divulgados. **Objetivo:** Avaliar os dados epidemiológicos do câncer de mama em pacientes atendidas pela saúde suplementar no município de Jundiaí, SP. **Método:** Estudo retrospectivo por meio da revisão do prontuário médico de 105 pacientes com diagnóstico de câncer de mama atendidas entre janeiro de 2014 e dezembro de 2015. As informações coletadas incluíram: idade, estadiamento clínico, tipo histológico, perfil imuno-histoquímico, tratamento cirúrgico e adjuvante. **Resultados:** O estudo incluiu 105 pacientes com câncer de mama, tratadas exclusivamente no sistema de saúde suplementar de Jundiaí. A idade média das pacientes foi de 50,8 anos. Observamos que 13 (12,3%) pacientes foram diagnosticadas com carcinoma ductal in situ (estádio 0), 43 (40,9%) no estádio I, 34 (32,3%) no estádio II, 11 (10,4%) no estádio III, e 2 (1,9%) no estádio IV. A cirurgia conservadora foi realizada em 76 (72,3%) pacientes, das quais 29 (27,7%) foram submetidas à mastectomia. Nessas pacientes, a reconstrução imediata foi realizada em 82,7% (24) dos casos. **Conclusão:** A elevada taxa de diagnósticos precoces, assim como de cirurgias conservadoras, revela rastreamento eficaz para o câncer de mama na saúde suplementar do município de Jundiaí. A acessibilidade à mamografia e o nível socioeconômico da população parecem ser os principais responsáveis pelos achados obtidos.

PALAVRAS-CHAVE: neoplasias da mama; saúde suplementar; mastectomia; mamografia; epidemiologia.

INTRODUCTION

Jundiaí is a city with approximately 400,000 inhabitants[1]. It has been calculated that 60% of its population has access to some type of health insurance plan[2]. This proportion is quite above the national average (23%) and the average for the state of São Paulo (44%)[2]. The high coverage of health insurance in this municipality leads to the supposition that this is an important factor within the epidemiological data relating to the population's health.

Breast cancer is the most frequent malignant disease among women, except for non-melanoma skin cancer. One in every ten tumors diagnosed worldwide occurs in breast tissue, and this is the largest cause of death due to cancer among the female Brazilian population[3]. Unfortunately, the rates of early diagnosis and timely treatment in Brazil remain insufficient. Despite important advances over the last two decades, the overall five-year survival rate is only around 58%, which is below the global average (61%) and the averages of countries like Costa Rica (70%) and the United States (84%)[4].

The Brazilian epidemiological data reflect the enormous socio-economic heterogeneity of its population, which in the regions of temperate climate (south and southeast) present rates close to those of European countries, while in the northern states data are similar to those of central African countries[5].

Healthcare strategies and policies need to be based on very clear epidemiological data. Determining the regions in which mammographic screening is insufficient and where there are difficulties regarding its coverage and delays in starting treatments, it is vital for improving healthcare. Longitudinal incidence and mortality data may define the course of actions and reveal the obtained results. On the other hand, cross-sectional data presents the situation at a given moment in time and provides information on clinical staging, subgroups that are at greater risk and the types and frequencies of implemented treatments, among other matters. There are no efficient actions without the interpretation of essential information.

PATIENTS AND METHODS

This retrospective descriptive cross-sectional study was developed based on the revision of the medical files of 105 patients who were diagnosed with breast cancer between January 2014 and December 2015. They were attended at the Women's Healthcare Unit — Breast Clinic (a private medical center), in the municipality of Jundiaí, SP. All of them underwent operations performed by the same breast surgeon. All of them were assisted through a health insurance system.

The information gathered included: age, clinical staging (TNM; AJCC 7th ed), histological type, immunohistochemical profile, surgical treatment (conservative versus radical, with or without immediate reconstruction) and adjuvant treatment.

Descriptive statistical methods were used, and the results were demonstrated by graphs and tables. The data were stored and tabulated using the Microsoft Excel software.

RESULTS

The study included 105 patients with breast cancer who were treated exclusively through the health insurance system in Jundiaí. Patients' mean age was 50.8 years, with a range from 21 to 86 years; 79 patients (75%) were up to 60 years and 25 (23%) of them were under 40 years (Figure 1).

The distribution of patients among health insurance companies was as follows: 65.7% (69 patients) with Unimed; 12.3% (13 patients) with Bradesco; 5.7% (6 patients) with Amil; and 16.1% (17 patients) with other plans.

Regarding staging, we observed that 13 patients (12.3%) were diagnosed with ductal carcinoma *in situ* (stage 0), 43 (40.9%) with stage I, 34 (32.3%) with stage II, 11 (10.4%) with stage III and 2 (1.9%) with stage IV. 61 patients (58%) were diagnosed with tumors smaller than 2.0 cm. Seventy-six patients (71.4%) presented local disease (affecting breast and axilla), 28 (26.6%) regional disease (involving breast and axilla) and only two (2%) presented systemic disease at the time of diagnosis (Figure 2).

Non-special invasive carcinomas (formerly known as invasive ductal carcinoma) were responsible for 75.2% of the cases, followed by ductal carcinoma *in situ* in 12.3% of the cases, invasive lobular carcinoma (7.6%) and special carcinomas, 3.8%. Regarding molecular subtypes, it was observed that 27 (25.7%) were classified as luminal A, 31 (29.5%) as luminal B, 5 (4.7%) as luminal-HER, 3 (2.8%) as subtype HER 2+ and 10 (9.5%) as triple negative. For 29 cases (27.6%) no immunohistochemical study was available.

Conservative surgery (quadrantectomy) was performed on 76 patients (72.3%), while 29 (27.7%) underwent mastectomy. These latter cases were divided into two groups, namely:

- total mastectomy, 19 cases;
- subcutaneous mastectomy, 10 cases (Figure 3).

Among all 105 patients included in the study, 50 (47.6%) underwent immediate breast reconstruction procedures. The most performed method was oncological mammoplasty, in 26 cases.
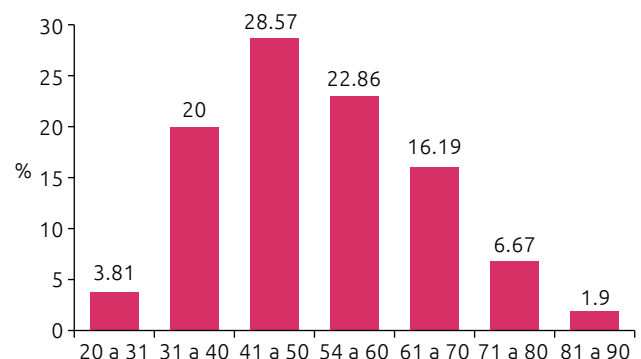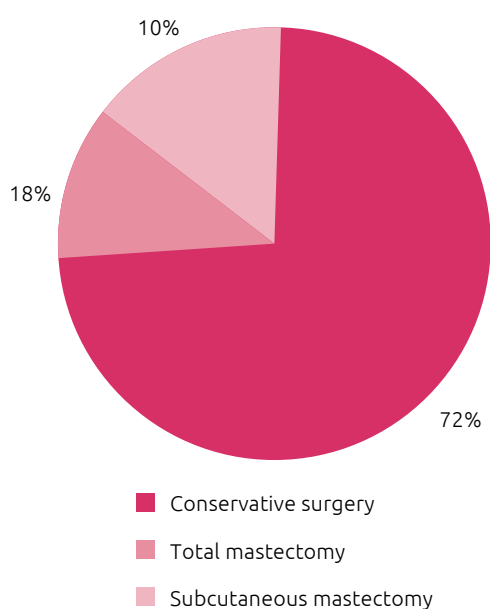

Figure 1. Patients' ages at the time of receiving their diagnosis of breast cancer at the breast clinic (health insurance system in the municipality of Jundiaí), between January 2014 and December 2015 (n=105) (%).

This term is used for techniques in which the breast volume and/or the excess skin is reduced after conservative surgery, and it needs to include measures to achieve symmetry in relation to the contralateral breast. Reconstruction using definitive implants was performed in 16 patients, using temporary expanders in five and definitive in three. Myocutaneous flaps wasn't used in any case for immediate reconstruction.
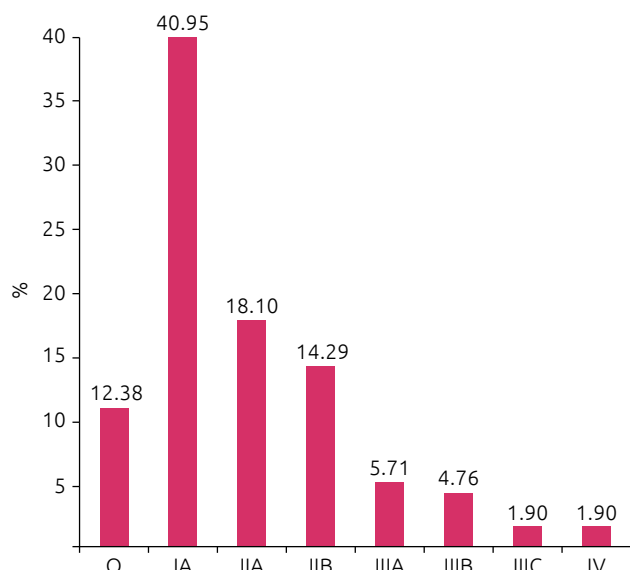
Figure 2. Distribution of patients with breast cancer attended at the breast clinic (health insurance system in the municipality of Jundiaí), according to their clinical stage.

O.M.: oncological mammoplasty.

Figure 3. Distribution of surgical procedures performed on the patients with breast cancer treated at the breast clinic (health insurance system in the municipality of Jundiaí), between January 2014 and December 2015 (n=105) (%).

Among the 105 patients analyzed, 60 (57.1%) underwent chemotherapy. The type of regimen and the endocrine therapy used were not analyzed in this study.

DISCUSSION

Brazilian epidemiological data related to breast cancer are scarce and scattered. They depend to a large extent on cross-sectional data published by centers and care services in different regions of the country. Most of the data come from university services and synthetize the national public healthcare panorama[6]. Some authors have analyzed data on breast cancer from the health insurance system and observed that the situation was favorable. The data presented in this study reveal the epidemiological profile of the region and makes it possible to formulate proposals in order to adapt resources and optimize the screening and treatment results for breast cancer in the municipality of Jundiaí, SP.

It should be noted that 23% of the patients were diagnosed with breast cancer at ages under 40 years. This figure is much greater than what has been observed in other samples. In the United States, only 6.6% of cases were under this age[7], 5% in Canada and 4% in the United Kingdom[8]. Other studies in Brazil found rates between 9.8 and 12.1%[9,10]. The reason for these results remains unclear. The population attended by the health insurance system in Jundiaí has an age distribution similar to that of the municipality's general population. Data released by Unimed Jundiaí demonstrate that among their patients over 20 years of age, 53.3% are between 20 to 40 years. For the entire population of the municipality, this number is 48%[1]. Moreover, the incidence of breast cancer among young women remains stable. Differing from the rates among patients over 40, the incidence of breast cancer among women has been stable over the last 30 years[11].

Regardless of the reasons, the figures demonstrate that there are many patients with breast cancer at young ages. This draws attention to the possibility that hereditary genetic syndromes might be present and signals that there is a need to preserve the fertility of those patients who might still want to be pregnant.

The evaluation of the 105 patients demonstrated that 71% of them received their diagnosis at an initial stage of the disease (i.e., when the disease was limited to the breast). These data were superior to what was found in countries such as the United States (58.6%)[12] and Canada (68%)[13]. Most of Brazilian data has solely revealed the public healthcare scenario. The Brazilian Group for Breast Cancer Studies (GBECAM) has compiled epidemiological information on staging at the time of diagnosis among patients in both public and private systems of Brazil[14]. They observed that 20% of the diagnoses were in stages 0 and 1. However, in public system, only 15% of the patients received their diagnosis in these stages, while in private system 33% did so. Other published data covering patients solely within Brazilian public system emphasized that the proportion of the diagnoses at the initial stages

was always lesser than 20%[15]. The data from the present study revealed that 53.1% of the diagnoses were made in stages 0 and 1.

Early diagnosing of breast cancer depends fundamentally on three variables: availability of mammography, access to healthcare services and population's socioeconomic level. Data from the United States have demonstrated annual differences in incidence and mortality rates due to breast cancer in different ethnic and socioeconomic groups. This incidence is greater among white population and in states with a higher human development index (HDI), while mortality rates due to breast cancer are higher in Afro-descendant and Latin populations, especially in groups of lower socioeconomic level. Today, Jundiaí has an estimated population of 400,000 inhabitants, with the highest HDI among Brazilian major cities. The health insurance system has five mammograph machines, i.e., more than World Health Organization's recommendation (one machine per 100,000 inhabitants). Thus, the data of the present study describes an epidemiological scenario of breast cancer in a high socioeconomic level population, with mammography available and an accessible healthcare system. This association of factors is responsible for the high rate of early diagnosis observed.

From an epidemiological point of view, surgical treatment for breast cancer says much about the status of a given country in relation to combating this disease. High numbers of mastectomies correspond to late diagnosis and possibly represent overtreatment. This situation involves higher expenditure, complication rates, morbidity and sequelae for the patients. The benefit of conservative surgery is beyond esthetic issues. It enables faster physical and emotional recovery, with lower cost and, especially, fewer sequelae. In turn, survival seems to be greater

than in cases of mastectomy, possibly because of the benefit of radiotherapy[16]. It was observed that 76 patients (72.3%) underwent quadrantectomy, while 29 (27.6%) underwent mastectomy. Data from GBECAM revealed that in 2008, 68% of the patients attended within Brazilian public healthcare system (SUS) underwent mastectomy, while 50% of them underwent this procedure among the patients attended through the private system. In China, this number was 78%[17]. In countries like the United States and Canada, the figures are inverted, such that mastectomy is used in approximately 30% of the cases[12,13] (Figure 4).

Breast reconstruction rates in Brazil are unknown. Only some reports from university hospitals are available. Although Brazilian healthcare policies guarantee full access to treatments for cancer, the conditions for implementing this policy are insufficient. Since 2012, there have been laws that specify that all Brazilian citizens with malignant neoplasia have the right to receive treatment within 60 days, from when the diagnosis is made (Federal Law no. 12.732/12), as well as the right to breast reconstruction for those who undergo either conservative or radical surgery (Federal Law no. 12.802/13)[15]. The health insurance system in Jundiaí follows the determinations of the National Agency for Supplemental Healthcare (ANS) and covers for all breast reconstruction procedures, including those with use of prostheses.
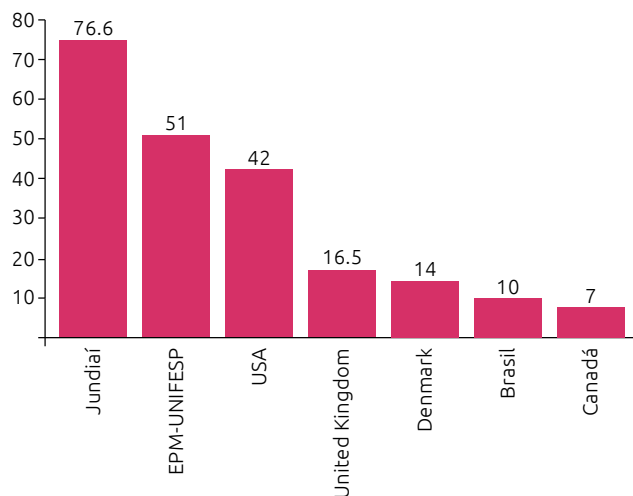
The data presented reveal that 47.6% of the patients underwent breast reconstruction. Repair techniques following quadrantectomy were most frequently used. In the literature, there is little information on the statistics related to this form of treatment, given that no healthcare systems around the world consider this to be obligatory. Reconstruction techniques following
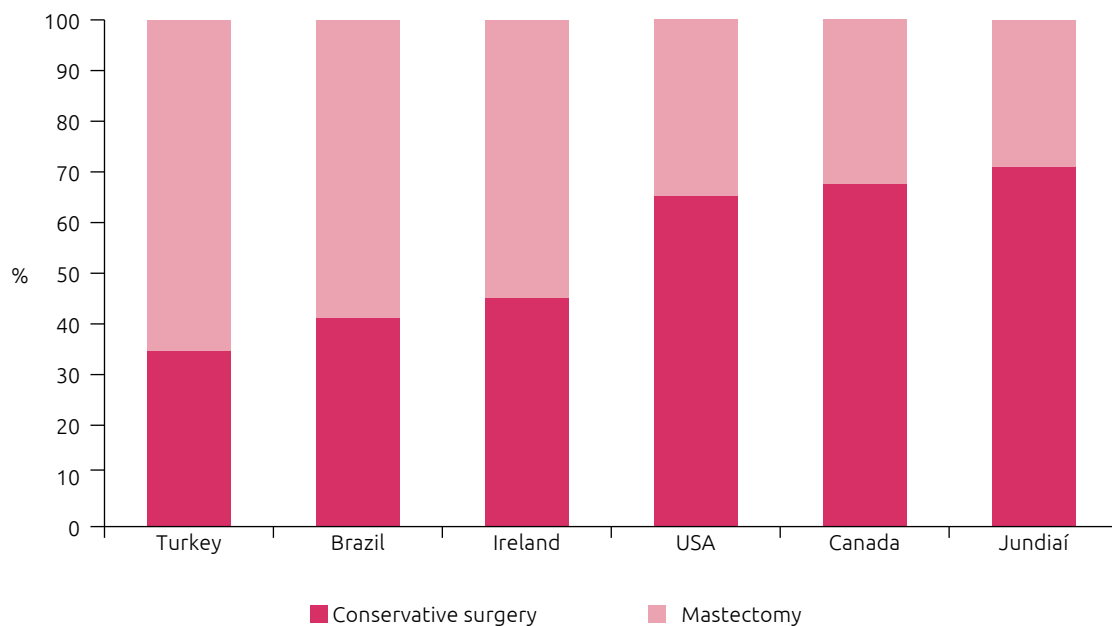
Source: National Cancer Registry, Ireland[15]; SIH, DataSUS[16]; Canadian Institute of Health Information[17]; American Cancer Society[18]; Breast Cancer in World and Turkey, Prof. Dr. Vahit Özmen[19].

Figure 4. Relation between conservative surgery and mastectomy for treating breast cancer observed in different regions (%).

mastectomy are well known[17-19] (Figure 5). In Escola Paulista de Medicina (UNIFESP), the rate of reconstruction following mastectomy was 51% between 2014 and 2015[20]. Reconstruction is performed according to the patient's desire, as well as to her clinical condition. Published data show that women with higher schooling level, high socioeconomic level and age under 60 years are the group that is most likely to undergo this procedure[21-24]. In turn, the clinical conditions that contraindicate reconstruction include: tumors compromising skin, presence of metastases (multiple and with a poor prognosis) and significant clinical morbidity.

Source: adapted from SIH, DataSUS, 2010[16], Platt et al.[18], Howard-Mc-Natt[19], EPM – UNIFESP 2014 and 2015[23].

Figure 5. Breast reconstruction rates after mastectomy in different regions of the world (%).

CONCLUSION

The presented data demonstrate the importance of early diagnosis for breast cancer and show its repercussions on this disease's treatment. Awareness, both among doctors and their patients, is fundamental for the results observed. Strategies for combating mortality due to malignant diseases depend especially on epidemiological information. Thus, this study presents the need for future efforts towards registering and publishing data on diagnosis and treatment of breast cancer in Brazil, not only from patients within public healthcare system but also from those within the private one.

ACKNOWLEDGEMENTS

REFERENCES

1. Brasil. Instituto Brasileiro de Geografia e Estatística. Cidades [Internet]. 2017 [cited on Dec., 2018]. Available at: http://www.ibge.gov.br

2. Brasil. Ministério da Saúde. A Saúde Suplementar no Brasil [Internet]. [cited on Dec., 2018]. Available at: http://www.planodesaude.net.br

3. Brasil. Ministério da Saúde. Instituto Nacional do Câncer José Alencar Gomes da Silva. Estimativa 2016. Incidência de Câncer no Brasil [Internet]. 2016 [cited on Dec., 2018]. Available at: http://www.inca.gov.br

4. Gonzaga CM, Freitas-Junior R, Curado MP, Sousa AL, Souza-Neto JA, et al. Temporal trends in female breast cancer mortality in Brazil and correlations with social inequalities: ecological time-series study. BMC Public Health. 2015;15:96. https://doi.org/10.1186/s12889-015-1445-7

5. National Cancer Institute. Surveillance, Epidemiology, and End Results. SEER Stat Fact Sheets: Female Breast Cancer [Internet]. [cited on Jan., 2018]. Available at: http://seer.cancer.gov/statfacts/html/breast.html

6. Schwartsmann G. Breast cancer in South America: challenges to improve early detection and medical management of a public health program. J Clin Oncology. 2001;19(18):118s–24s.

7. DeSantis CE, Fedewa ES, Sauer AG, Kramer JL, Smith RA, Jemal A. Breast cancer Statistics, 2015: Convergence of Incidence Rates Between Black and White Women. CA Cancer J Clin. 2016;66:31-42. https://doi.org/10.3322/caac.21320

8. United Kingdom. Health System. Cancer research UK. Cancer Statistics for the UK [Internet]. [cited on Feb., 2018]. Available at: www.cancerresearchuk.org/

9. Leal C, Santos K, Nunes-Maia H. Características epidemiológicas do câncer de mama no estado da Paraíba. Rev Bras Mastol. 2002;12(2):15-22.

10. Borges GS, Rebelo JR, Maman KAS, Zabel MCJ, Almeida AM, Custodio GS, et al. Perfil epidemiológico dos pacientes portadores de câncer de mama atendidos em um ambulatório de mastologia da região do Vale do Itajaí. Rev Bras Oncol Clín. 2013;9(33).

11. Anders CK, Johnson R, Litton J, Phillips M, Bleyer A. Breast Cancer Before Age 40 Years. Semin Oncol. 2009;36(3):237-49. https://doi.org/10.1053/j.seminoncol.2009.03.001

12. Ries LAG, Melbert D, Krapcho M, Stinchcomb DG, Howlader N, Horner MJ, et al. SEER Cancer Statistics Review, 1975-2005 [Internet]. Bethesda, MD: National Cancer Institute. [cited on Mar., 2018]. Available at: http://seer.cancer.gov/csr/1975_2005/

13. Fletcher SW, Black H, Harris R, Rimer KB, Shapiro S. Report of the International Workshop on Screening for Breast Cancer. JNCI J Natl Cancer Inst. 1993;85(20):1644-56. https://doi.org/10.1093/jnci/85.20.1644

14. Liedke PE, Finkelstein DM, Szymonifka J, Barrios CH, Chavarri-Guerra Y, Bines J, et al. Outcomes of breast cancer in Brazil related to health care coverage: a retrospective cohort study. Cancer Epidemiol Biomarkers Prev. 2014;23(1):126-33. https://doi.org/10.1158/1055-9965.EPI-13-0693

15. Ferlay J1, Autier P, Boniol M, Heanue M, Colombet M, Boyle P. Estimates of the cancer incidence and mortality in Europe in 2006. Ann Oncol. 2007;18(3):581-92. https://doi.org/10.1093/annonc/mdl498

16. Azevedo E Silva G, Bustamante-Teixeira MT, Aquino EM, Tomazelli JG, Dos-Santos-Silva I. Access to early breast cancer diagnosis in the Brazilian Unified National Health System: an analysis of data from the Health Information System].Cad Saúde Pública. 2014;30(7):1537-50.

17. Platt J, Baxter N, Zhong T. Breast reconstruction after mastectomy for breast cancer. CMAJ. 2011;183(18):2109-16. https://doi.org/10.1503/cmaj.110513

18. DeSantis CE, Lin CC, Mariotto AB, Siegel RL, Stein KD, Kramer JL, et al. Cancer treatment and survivorship statistics, 2014. CA Cancer J Clin. 2014;64(4):252-71. https://doi.org/10.3322/caac.21235

19. Thuler LCS, Mendonça GA. Estadiamento inicial dos casos de câncer de mama e colo do útero em mulheres brasileiras. Rev Bras Ginecol Obstet. 2005;27(11):656-60. http://dx.doi.org/10.1590/S0100-72032005001100004

20. Nazário ACP. Mastologia Condutas Atuais. São Paulo: Manole; 2016. v.1.

21. Yılmaz HH1, Yazıhan N, Tunca D, Sevinç A, Olcayto EÖ, Ozgül N, et al. Cancer trends and incidence and mortality patterns in Turkey. J Clin Oncol. 2011;41(1):10-6. https://doi.org/10.1093/jjco/hyq075

22. Agarwal S, Pappas L, Neumayer L, Kokeny K, Agarwal J. Effect of Breast Conservation Therapy vs Mastectomy on Disease-Specific Survival for Early-Stage Breast Cancer FREE. JAMA Surg. 2014;149(3):267-74. https://doi.org/10.1001/jamasurg.2013.3049

23. Yu KD, Di GH, Wu J, Lu JS, Shen KW, Shen ZZ, et al. Development and trends of surgical modalities for breast cancer in China: a review of 16-year data. Ann Surg Oncol. 2007;14(9):2502-9. https://doi.org/10.1245/s10434-007-9436-2

24. Howard-McNatt M. Patients opting for breast reconstruction following mastectomy: an analysis of uptake rates and benefit. Breast Cancer. 2013:5;9-15. https://dx.doi.org/10.2147%2FBCTT.S29142