





Factors associated with having mammography examinations in primary health care users in Vitória, Espírito Santo, Brazil*

doi: 10.5123/S1679-49742019000100010

Ranielle de Paula Silva¹ –  orcid.org/0000-0002-0745-0501

Denise Petrucci Gigante² –  orcid.org/0000-0001-7309-5838

Maria Helena Costa Amorim³ –  orcid.org/0000-0002-4252-7092

Franciele Marabotti Costa Leite⁴ –  orcid.org/0000-0002-6171-6972

¹Universidade Federal do Espírito Santo, Centro de Ciências da Saúde, Vitória, ES, Brasil

²Universidade Federal de Pelotas, Departamento de Nutrição, Pelotas, RS, Brasil

³Universidade Federal do Espírito Santo, Programa de Pós-Graduação em Saúde Coletiva, Vitória, ES, Brasil

⁴Universidade Federal do Espírito Santo, Departamento de Enfermagem, Vitória, ES, Brasil

Abstract

Objectives: to estimate prevalence and factors associated with having mammography examinations among adult women aged 40 to 59 years old in primary health care services. **Methods:** a cross-sectional study was performed in 26 health centers in Vitória, Espírito Santo, Brazil; data were collected from March to September 2014; the independent variables described sociodemographic, behavioral and reproductive characteristics, having mammography performed every two years as the outcome. **Results:** 400 users participated, 57.8% of whom undergo mammography every two years; having the examination was more prevalent among women aged 50-59 years (PR=1.48 – 95%CI 1.25;1.75), those belonging to economic class A/B (PR=1.81 – 95%CI 1.22;2.68) and those who no longer menstruate (PR=1.31 – 95%CI 1.08;1.60). **Conclusion:** although the proportion of mammography examinations performed is in keeping with recommended levels, a higher frequency was found among the 50-59 age group belonging to class A/B, suggesting unequal access to this examination.

Keywords: Mammography; Breast Neoplasms; Primary Health Care; Mass Screening; Health Services Accessibility.

* This article was derived from the bachelor degree course thesis entitled 'Mammography adherence prevalence and associated factors: a study with women primary health care service users', defended by Ranielle de Paula Silva at the Federal University of Espírito Santo Nursing Course in 2017. This study received funding from the Espírito Santo Research and Innovation Support Foundation (FAPES): Process No. 60530812/12.

Correspondence:

Franciele Marabotti Costa Leite – Av. Marechal Campos, No. 1468, Campus de Maruípe, Vitória, ES, Brazil. Postcode: 29043-900
E-mail: francielemarabotti@gmail.com

Introduction

Breast cancer is a Public Health problem not only because of its progressively increasing incidence but also owing to the high cost of treating it.¹ Statistics show that worldwide this class of neoplasm has the second highest incidence and is the highest cause of death among women.² Breast cancer also has high incidence and high mortality in Brazil: for the years 2018 and 2019, some 59,700 new cases are expected to occur, with risk of 56.33 cases per 100,000 women. In the state of Espírito Santo, 1,130 new cases are estimated for the same period, while in the state capital, Vitória, 140 new cases per 100,000 women are expected.³

According to the literature, high incidence of breast neoplasms is related to increased diagnosis, availability of technologies, lifestyle habits and population aging. Moreover, a high number of people are diagnosed at more advanced stages of the disease, thus demonstrating the need to improve cancer detection at its outset,⁴ since late diagnosis of this disease, as well as limited access to treatment, are important factors associated with lower patient survival.⁵

It is therefore essential to implement actions enabling timely detection as a fundamental strategy for breast cancer control.

It is therefore essential to implement actions enabling timely detection as a fundamental strategy for breast cancer control. In a document published in 2015 providing guidelines for early breast cancer detection in Brazil, the José Alencar Gomes da Silva National Cancer Institute (INCA) recommends that breast cancer screening should be done by means of mammography every two years in women in the 50-69 age range,⁶ while the Brazilian Mastology Society (SBM) indicates that women should have examinations with effect from 40 years of age.⁷ The examination should be performed systematically, among asymptomatic people, with the aim of discovering the disease in its pre-clinical stage, i.e. diagnosing cancer tumors at an initial stage, thus contributing to treatment being more effective and a greater chance of being cured.⁶

Given the magnitude of breast cancer and the importance of early detection, health professionals should include breast cancer screening in prevention program actions in a systematized manner, focusing on active tracing among the target population.⁸ To this end, it is fundamental that the health care network be structured in such a way as to enable the provision of quality mammography and adequate treatment to women who need it.⁹

Our study is justified in view of the reality presented here and the scarcity of studies on adherence to mammography by women who use public health centers, as well as the fact that some studies point to certain sociodemographic characteristics,⁷⁻¹⁰ and access to health services⁷ as factors that contribute to having the examination. The objective of our study is to analyze prevalence and factors associated with adherence to mammography by adult women aged 40-59 who use primary health facilities provided by the public health service.

Methods

This is a cross-sectional study conducted in all 26 health centers of the municipality of Vitória, capital of the state of Espírito Santo, covered by the Family Health Strategy and/or the Community Health Agents Program. According to the 2010 Demographic Census, the municipality of Vitória had 327,801 inhabitants¹¹ and a human development index of 0.845 in the same year.¹²

In order to calculate prevalence, we took the female population aged 40-59 years old living in the municipality of Vitória: 46,149 women according to the 2010 Census.¹¹ To this end we used a 95% confidence interval and 5% margin of error. When studying association between having mammograms and women's characteristics, we used a 95% confidence interval, statistical power of 80% and an exposed/non-exposed ratio of 1:1. This calculation was performed using OpenEpi software, version 3, based on a minimum sample of 381 women. The number of participants in each of the 26 health centers was defined by sampling proportional to the number of women registered with each health center. The interviews were conducted randomly with women aged 40-59 who used Brazilian National Health System (SUS) services and who were waiting for some kind of care at a SUS health center.

Data on these women were collected between March and September 2014, individually, by trained interviewers. A specific questionnaire was used, structured according to the women's sociodemographic, behavioral and reproductive characteristics:

Sociodemographic variables

- age (in completed years: 40-49; 50-59);
- race/skin color (White; Black; brown) – women who referred to themselves as Indigenous (n=5) or yellow (n=8) were excluded from the analyses because of the small number of participants in each of these categories –;
- marital status (with a partner; without a partner);
- schooling (in completed years: 0-8; 9-11; 12 or more);
- paid job (no; yes);

Behavioral variables

- tobacco smoker (no; yes);
- alcoholic drink consumption (no; yes);
- monthly breast self-examination (no; yes).

Reproductive variables

- age of menarche (before 12 years of age; at 12 years of age or over);
- currently menstruates (no; yes);
- number of pregnancies (none; 1-2; 3 or more).

In order to identify the economic class to which the women belonged, we used the instrument called the 'Brazilian Economic Classification Criterion' developed by the Brazilian Teaching and Research Association (ABEP), which categorizes an individual's economic class according to their purchasing power (economic classes: A/B; C; D/E).¹³

The outcome of the study was having a mammography examination every two years (yes; no). Given that the study was conducted in National Brazilian Health System (SUS) health centers, we opted for the two-yearly examination as this is the periodicity recommended by the Ministry of Health for breast cancer screening for women in the 50-69 age range.⁶

The data were input to an Excel spreadsheet and the analyses were performed using the STATA 13.0 statistical package. We performed univariate and bivariate analysis. Pearson's chi-square test was applied in the bivariate analysis. The data were arranged according to both crude and relative frequencies and respective 95% confidence intervals (95%CI). We used Poisson regression with robust variance for the multivariable analysis which included only those variables which had $p < 0.05$ in the bivariate analysis.

Variables with $p < 0.05$ were kept in the model. The variables were selected using the "backwards" selection technique.

The hierarchical model used in the adjusted analysis evaluated possible factors associated with the outcome. The sociodemographic and economic variables were evaluated on the first level; the behavioral variables on the second level; and the reproductive variables on the most proximal level.

The study project was approved by the Federal University of Espírito Santo (UFES) Research Ethics Committee on November 27th 2013, as per Certificate of Submission for Ethical Appraisal (CAAE) No. 21221513.4.0000.5060, in accordance with National Health Council (CNS) Resolution No. 466, dated December 12th 2012.

Results

Four hundred women took part in the study. There were no refusals. Table 1 shows the participants' sociodemographic, behavioral and reproductive characteristics: more than half of them (53.8%) were aged between 50-59 years old; 51.7% self-reported their skin color as being brown; 76.0% reported not having a partner; 42.7% had up to 8 years of schooling; 61.0% had a paid job; and their overriding economic class was class C (49.0%). Most of these women did not smoke (88.5%) or consume alcoholic beverages (65.0%). With regard to the age of menarche, 82.2% had their first menstrual period aged 12 or over, half of the interviewees no longer menstruated (50.8%) and 52.7% had had three or more pregnancies (Table 1).

A significant majority of the women (75.3%) did not perform monthly self-examination of the breasts. With regard to the prevalence of having mammography examinations, approximately six in every ten women had this examination every two years (57.8%).

Having a mammography examination every two years was more prevalent among women aged 50-59 years, with 12 or more years of schooling, belonging to economic classes A/B and who no longer menstruated ($p < 0.05$) (Table 2).

After adjusting for confounding variables, schooling ceased to be associated with having mammograms. The frequency of having mammography examinations every two years was higher among women in the 50-59 age

Table 1 – Sociodemographic, behavioral and reproductive characterization of women using primary health care services (N=400) in Vitória, Espírito Santo, 2014

Variables	n (%)	95%CI ^a
Sociodemographic		
Age (in years)		
40-49	225 (46.2)	51.3;61.1
50-59	175 (53.8)	38.9;48.7
Race/skin color^b		
White	103 (26.6)	22.4;31.3
Black	84 (21.7)	17.9;26.1
Brown	200 (51.7)	46.7;56.6
Marital status		
Without a partner	304 (76.0)	71.5;79.9
With a partner	96 (24.0)	20.1;28.4
Schooling (in completed years)		
0-8	171 (42.7)	38.0;47.7
9-11	165 (41.3)	36.5;46.2
≥12	64 (16.0)	12.7;19.9
Paid job		
No	156 (39.0)	34.3;43.9
Yes	244 (61.0)	56.1;65.7
Economic class^c		
A/B	161 (40.3)	35.5;45.2
C	196 (49.0)	44.1;53.9
D/E	43 (10.8)	8.1;14.2
Behavioral		
Smoker		
No	354 (88.5)	85.0;91.3
Yes	46 (11.5)	8.7;15.0
Alcoholic drink consumption		
No	260 (65.0)	60.2;69.5
Yes	140 (35.0)	30.5;39.8
Monthly breast self-examination		
No	301 (75.3)	70.8;79.2
Yes	99 (24.7)	20.8;29.2
Reproductive		
Menarche (in years)		
<12	71 (17.8)	14.3;21.8
≥12	329 (82.2)	78.2;85.7
Currently menstruates		
No	203 (50.8)	45.8;55.6
Yes	197 (49.2)	44.4;54.2
Number of pregnancies		
None	30 (7.5)	5.3;10.5
1-2	159 (39.8)	35.0;44.7
≥3	211 (52.7)	47.8;57.6
Mammography every two years		
No	169 (42.2)	37.5;47.2
Yes	231 (57.8)	52.3;62.5

a) 95%CI 95% confidence interval.

b) N=387.

c) As per the 'Brazilian Economic Classification Criterion', developed by the Brazilian Teaching and Research Association (ABEP).

range (PR=1.48; 95%CI 1.25;1.75), when compared to those in the 40-49 age group. Women belonging to economic classes A/B had the examination 1.81 times more frequently (95%CI 1.22;2.68) than those in classes D/E. Another relevant finding occurred in the group of women who no longer menstruated: mammography prevalence was 1.31 times greater (95%CI 1.08-1.60) in this group when compared to the group that still menstruated (Table 3).

Discussion

Our study revealed that more than half the participants in the 40-59 age range had a mammography examination every two years. Mammogram prevalence was higher among women aged 50-59 who belonged to economic classes A/B and no longer menstruated.

Discussions have been taking place since the late 20th century about the use of mammography as a breast cancer screening method. According to INCA guidelines for early breast cancer detection, this examination should be performed every two years in women aged 50-69.⁶ A review study recommends extending mammography screening to the 40-49 age range.¹⁴ However, a recent study¹⁵ reinforces mammography screening in accordance with the INCA recommendation, as it found reduced frequency of breast cancer diagnosis in women aged 40-49, thus resulting in unnecessary interventions and increased Health costs, without proven reduction in mortality. On the other hand, it is important to consider that a short length of time between diagnosis and treatment is fundamental for reducing the risk of relapse and metastasis.¹⁶

The findings of our study show that approximately 58% of women health service users have a mammogram every two years. In 2010, according to Breast Cancer Information System (SISMAMA) data, some 71% of Brazilian women aged 40-59 had a mammography examination that year.¹⁷ With regard to mammography prevalence by age range, our study found higher prevalence of participants aged 50-59 having mammography examinations when compared to the 40-49 age group. This finding is similar to that found by a study conducted in the municipality of Pelotas, Rio Grande do Sul, where having mammography examinations was more prevalent in the 50-59 age group compared to women aged up to 50.¹⁸

Although screening prevalence was in keeping with the recommendations, it is noteworthy that 28.6% of the women did not have two-yearly mammography examinations. Screening is an inherent part of Primary Care and health professionals working at this level of Public Health services should know the methods, periodicity and target population of the care to be provided.⁶ Poor knowledge of this process can contribute to failures in breast cancer screening.^{19,20} Furthermore, the fact of mammography screening in Brazil being predominantly opportunistic, i.e. conducted at the time of a medical appointment, lack of such knowledge on the part of the health professional responsible hinders women's adherence to mammography.²¹

Another important matter to be highlighted is the need for breast cancer control programs to achieve higher coverage of mammography examinations performed, according to the target population and recommended periodicity. In this sense, active tracing by health center professionals is a fundamental strategy for recovering women who fail to attend appointments or reaching those who do not use the health service.¹⁹

Regarding economic class, after adjusting the analysis we found that this variable remained associated with having a mammography examination every two years. This can be seen to increase progressively as economic class becomes higher, i.e.: women belonging to socio-economic levels A/B had the examination 1.8 times more than those in economic classes D/E. A similar finding has been found in other studies.^{10,22,23} Spanish women from higher economic classes, for instance, had 1.4 times more probability of having the examination than those in lower economic classes.²⁴

It is important to reflect on the extent to which socio-economic status has been an important factor for women's adherence to prevention practices.^{10,22,23} It can be seen that the higher a woman's socio-economic level, the greater the prevalence of medical appointments and, therefore, the greater the opportunity for requesting the health professional to perform the examination.²³ In order to promote equity in the use of preventive examinations, information on having mammograms should be made available to all women, regardless of their social and economic status.²²

Table 2 – Distribution of mammograms performed every two years according to the sociodemographic, behavioral and reproductive characterization of women using primary health care services in Vitória, Espírito Santo, 2014

Variables	Mammography every two years	
	n (%)	p-value ^a
Sociodemographic		
Age (in years)		<0.001
40-49	106 (47.1)	
50-59	125 (71.4)	
Race/skin color		0.322
White	64 (62.1)	
Black	43 (51.2)	
Brown	115 (57.5)	
Marital status		0.078
Without a partner	183 (60.2)	
With a partner	48 (50.0)	
Schooling (in completed years)		0,003
0-8	85 (49.7)	
9-11	99 (60.0)	
≥12	47 (73.4)	
Paid job		0.546
No	93 (59.6)	
Yes	138 (56.6)	
Economic class^b		<0.001
A/B	111 (68.9)	
C	104 (53.1)	
D/E	16 (37.2)	
Behavioral		
Smoker		0.147
No	209 (59.0)	
Yes	22 (47.8)	
Alcoholic drink consumption		0.414
No	154 (59.2)	
Yes	77 (55.0)	
Monthly breast self-examination		0.507
No	171 (56.8)	
Yes	60 (60.6)	
Reproductive		
Menarche (in years)		0.289
<12	37 (52.1)	
≥12	194 (59.0)	
Currently menstruates		<0.001
No	141 (69.5)	
Yes	90 (45.7)	
Number of pregnancies		0.158
0	14 (46.7)	
1-2	100 (62.9)	
≥3	117 (55.5)	

a) Pearson's chi-square test.

b) As per the 'Brazilian Economic Classification Criterion', developed by the Brazilian Teaching and Research Association (ABEP).

Table 3 – Crude and adjusted analysis of the effects of the sociodemographic, behavioral and reproductive variables on having mammograms every two years among women using primary health care services (N=400) in Vitória, Espírito Santo, 2014

Variables	Crude analysis ^a			Adjusted analysis ^a		
	PR ^b	95%CI ^c	p-value	PR ^b	95%CI ^c	p-value
Sociodemographic						
Age (in years)						
40-49	1.00		<0.001	1.00		0.001
50-59	1.52	1.28;1.79		1.48	1.25;1.75	
Marital status						
Without a partner	1.00		0.099	1.00		0.221
With a partner	0.83	0.67;1.04		0.92	0.84;1.06	
Schooling (in completed years)						
0-8	1.00		0.001	1.00		0.239
9-11	1.21	0.99;1.47		1.12	0.91;1.37	
≥12	1.48	1.20;1.82		1.23	0.97;1.58	
Economic class^d						
A/B	1.85	1.24;2.77	<0.001	1.81	1.22;2.68	0.001
C	1.42	0.94;2.15		1.46	0.97;2.16	
D/E	1.00			1.00		
Behavioral						
Smoker						
No	1.00		0.189	1.00		0.664
Yes	0.81	0.59;1.11		0.98	0.89;1.08	
Reproductive						
Currently menstruates						
No	1.52	1.27;1.82	<0.001	1.31	1.08;1.60	0.007
Yes	1.00			1.00		
Number of pregnancies						
0	1.00		0.174	1.00		0.494
1-2	1.35	0.90;2.01		1.27	0.84;1.89	
≥3	1.19	0.79;1.78		1.21	0.80;1.82	

a) Poisson regression with robust adjustment.

b) PR: prevalence ratio.

c) 95%CI 95% confidence interval.

d) As per the 'Brazilian Economic Classification Criterion', developed by the Brazilian Teaching and Research Association (ABEP).

This result leads to reflection on the impact of economic inequality on having mammography examinations. Women health service users from lower economic classes appear to have fewer opportunities for accessing this examination. This reinforces the defense of the principles of equal and universal access to health services, as well as the need for health professionals to have an egalitarian approach to this group of vulnerable women.^{10,18} Mammography is the main method for breast neoplasm screening and early detection and health services must ensure access to it.¹⁰

Another important finding of our study is that the prevalence of women who no longer menstruate having mammograms every two years was around 1.31 times higher compared to those who still menstruate. It is important to bear in mind that the menopause may contribute to increased breast cell density, which is a significant cancer risk factor. A population-based study followed 61,844 women over an average period of 3.1 years in order to estimate the risk of breast cancer according to mammographic categories of breast density. Its results showed that the risk of developing breast cancer was four times greater among women with

extremely dense breasts when compared to the same risk among women who did not have dense breasts. Mammography therefore reveals itself to be a useful examination for assessing risk of this neoplasm.²⁵

A further finding of our study was that a large part of the participants (75.0%) did not self-examine their breasts on a monthly basis. This prevalence rate is greater than that found in a population-based study conducted in the state of Maranhão between July 2007 and January 2008, in which 66.2% of the women studied did not self-examine their breasts.²⁶ A study conducted in Aracaju, capital of the state of Sergipe, with women who had breast cancer, points to only 35.3% of them having self-examined their breasts.²⁷ Research published in 2016, showed that in Juiz de Fora, a city in the state of Minas Gerais, 62.4% of interviewed women receiving care at the city's University Hospital reported monthly breast self-examination (BSE).²⁸

The difference found in the literature as to percentage BSE is worthy of reflection. It is important to highlight that BSE is not recommended by INCA or by the Ministry of Health as a breast screening strategy. Notwithstanding, BSE is a specific, systematic and time-defined method for women to examine themselves monthly, looking at and feeling their own breasts with the aim of identifying alterations or abnormalities suggesting cancer; its sensitivity varies between 26.3 and 28.2%; while its specificity varies between 92.2 and 96.2%.^{6,29} Feeling one's own breasts is also important for being familiar with one's own body and, therefore, contributes to early identification of breast alterations. Doing this can make women aware of the normal aspect and structure of their breasts, increasing their ability to notice the appearance of signs and symptoms suggesting breast cancer.⁶ If a woman finds her breasts to be altered, she can seek her primary health care service and thus avoid greater harm to her health.^{8,30}

Once again the importance must be highlighted of health professionals, above all those working in Primary Health Care, undertaking educational actions to provide information on and encourage BSE. Health professionals need to help women health service users to understand the importance of self-care and knowing their own body, as well as encouraging them as to the need to seek medical care if alterations to their breasts occur. Health service professionals therefore need capacity building in order to be able to assist, provide guidance and perform necessary procedures in response to this stimulated demand.³⁰

With regard to the limitations of this study, first of all the reliability of self-reported information as to having mammograms every two years needs to be considered, as it can be subject to recall and information bias, thus causing its regularity to be overestimated: the participant may be mistaken as to the length of time since they had the examination and thus cause its regularity to be overestimated. Notwithstanding, the interview technique has usually been adopted by other studies on this theme.^{10,17} Secondly, the study's cross-sectional design, which limits the definition of temporality between outcome and exposure, does not enable causal relationships to be established, as can be seen in the relation between economic class and having mammograms. Another limitation of our study lies in the fact of it only having been conducted with women health service users, so that it is not possible to generalize its findings to women who do not use Public Health facilities. Despite these limitations, the data presented serve as a basis for a better understanding of access by women health service users to mammograms.

The work we developed enabled us to identify that the prevalence of women in the 50-59 age group having mammograms is in keeping with World Health Organization (WHO) recommendations, and that certain sociodemographic and reproductive factors may be associated with breast cancer screening. Prevalence of having mammography examinations every two years is greater among women aged 50-59 belonging to economic classes A/B and who are in the menopause.

Finally, it is appropriate to recall that this screening method does not reach all women in the target population, so that investments need to be made in building the capacity of health professionals to develop educational actions on the importance of having mammograms for the early detection of breast cancer. Health services should facilitate the provision of this examination, focusing on equity and access, scaling up its coverage among women SUS service users.

Authors' contributions

Silva RP contributed to interpreting the data and writing the manuscript. Gigante DP and Amorim MHC contributed to the critical review of the study and the final version of the manuscript. Leite FMC contributed to conceiving and designing the study, as well as data analysis and interpretation. All the authors declare their responsibility for all aspects of this paper, ensuring its accuracy and integrity.

References

- Hyeda A, Costa ESM. Uma análise preliminar dos custos em quimioterapia ambulatorial no sistema de saúde suplementar. *J Bras Econ Saude* [Internet]. 2015 ago [citado 2019 jan 17];7(2):99-109. Disponível em: <http://files.bvs.br/upload/S/2175-2095/2015/v7n2/a4973.pdf>
- World Health Organization. International Agency for Research on Cancer. *Globocan 2012: estimated incidence, mortality and prevalence worldwide in 2012* [Internet]. Geneva: World Health Organization; 2012 [cited 2019 Jan 17]. Available from: <http://publications.iarc.fr/Databases/Iarc-Cancerbases/GLOBOCAN-2012-Estimated-Cancer-Incidence-Mortality-And-Prevalence-Worldwide-In-2012-V1.0-2012>
- Ministério da Saúde (BR). Instituto Nacional de Câncer José Alencar Gomes da Silva. *Estimativa 2018: incidência de câncer no Brasil* [Internet]. Rio de Janeiro: Instituto Nacional de Câncer José Alencar Gomes da Silva; 2017 [citado 2018 jun 28]. 128 p. Disponível em: <http://www.inca.gov.br/estimativa/2018/estimativa-2018.pdf>
- Peres VC, Veloso DLC, Xavier RM, Salge AKM, Guimarães JV. Câncer de mama em mulheres: recidiva e sobrevida em cinco anos. *Texto Contexto Enferm* [Internet]. 2015 jul-set [citado 2017 abr 25];24(3):740-7. Disponível em: http://www.scielo.br/pdf/tce/v24n3/pt_0104-0707-tce-24-03-00740.pdf. Doi: 10.1590/0104-07072015000600014
- Jemal A, Bray F, Center MM, Ferlay J, Ward E, Forman D. Global cancer statistics. *CA Cancer J Clin* [Internet]. 2011 Mar-Apr [cited 2019 Jan 17];61(2):69-90. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/21296855>. Doi: 10.3322/caac.20107
- Ministério da Saúde (BR). Instituto Nacional de Câncer José Alencar Gomes da Silva. *Diretrizes para a detecção precoce do câncer de mama no Brasil* [Internet]. Rio de Janeiro: Instituto Nacional de Câncer José Alencar Gomes da Silva; 2015 [citado 2017 mai 12]. 168 p. Disponível em: http://www1.inca.gov.br/inca/Arquivos/livro_deteccao_precoce_final.pdf
- Aguillar VLN. Sociedade Brasileira de Mastologia. *Rastreamento mamográfico em mulheres com idade entre 40 e 49 anos*. Rio de Janeiro: Sociedade Brasileira de Mastologia; 2012.
- Ohl ICB, Ohl RIB, Chavaglia SRR, Goldman RE. Ações públicas para o controle do câncer de mama no Brasil: revisão integrativa. *Rev Bras Enferm* [Internet]. 2016 ago [citado 2018 mar 6];69(4):793-803. Disponível em: <http://www.scielo.br/pdf/reben/v69n4/0034-7167-reben-69-04-0793.pdf>. Doi: 10.1590/0034-7167.2016690424i
- Silva GA. O aumento de acesso à mamografia e os desafios para a política de controle do câncer de mama no Brasil. *Ciênc Saúde Coletiva* [Internet]. 2011 set [citado 2012 mar 6];16(9):3665-70. Disponível em: <http://www.scielo.org/pdf/csc/v16n9/a03v16n9.pdf>. Doi: 10.1590/S1413-81232011001000003
- Amorim VMSL, Barros MBA, César CLG, Carandina L, Goldbaum M. Fatores associados a não realização da mamografia e do exame clínico das mamas: um estudo de base populacional em Campinas, São Paulo, Brasil. *Cad Saúde Pública* [Internet]. 2008 nov [citado 2017 jun 18];24(11):2623-32. Disponível em: <http://www.scielo.br/pdf/csp/v24n11/17.pdf>. Doi: 10.1590/S0102-311X2008001100017
- Instituto Brasileiro de Geografia e Estatística. *População no último censo*. Vitória, Espírito Santo [Internet]. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística; 2010 [citado 2018 abr 15]. Disponível em: <https://cidades.ibge.gov.br/brasil/es/vitoria/panorama>
- Atlas do Desenvolvimento Humano no Brasil. O atlas: consulta [Internet]. 2010 [citado 2018 abr 15]. Disponível em: <http://www.atlasbrasil.org.br/2013/pt/consulta/>
- Associação Brasileira de Empresas de Pesquisa. *Critério de classificação econômica Brasil: dados com base no levantamento sócio econômico 2013*. São Paulo: ABEP; 2013.
- Urban LABD, Schaefer MB, Duarte DL, Santos RP, Maranhão NMA, Kefalas AL, et al. Recomendações do Colégio Brasileiro de Radiologia e Diagnóstico por Imagem, da Sociedade Brasileira de Mastologia e Federação Brasileira das Associações de Ginecologia e Obstetrícia para o rastreamento do câncer de mama. *Radiol Bras* [Internet]. 2012 nov-dez [citado 2018 jul 3];45(6):334-339. Disponível em: <http://www.scielo.br/pdf/rb/v45n6/09.pdf>. Doi: 10.1590/S0100-39842012000600009
- Silva FX, Katz L, Souza ASR, Amorim MMR. Mamografia em mulheres assintomáticas na faixa etária de 40 a 49 anos. *Rev Saúde Pública* [Internet]. 2014 dez [citado 2018 dez 22];48(6):931-39. Disponível em: http://www.scielo.br/pdf/rsp/v48n6/pt_0034-8910-rsp-48-6-0931.pdf. Doi: 10.1590/S0034-8910.2014048005349
- Souza CB, Fustinoni SM, Amorim MHC, Zandonade E, Matos JC, Schirmer J. Estudo do tempo entre o diagnóstico e início do tratamento do câncer de mama em idosas de um hospital de referência em São Paulo, Brasil. *Ciênc Saúde Coletiva* [Internet]. 2015 dez [citado

- 2018 jul 3];20(12):3805-16. Disponível em: <http://www.scielo.br/pdf/csc/v20n12/1413-8123-csc-20-12-3805.pdf>. Doi: 10.1590/1413-812320152012.00422015
17. Moreira CB, Bezerra KC, Mendes IC, Santos MCL, Oriá MOB, Fernandes AFC. Prevalência do exame mamográfico em mulheres brasileiras no período de 2009 a 2010. *Rev Enferm UERJ* [Internet]. 2013 abr-jun [citado 2018 jul 3];21(2):151-5. Disponível em: <https://docplayer.com.br/12554092-Prevalencia-do-exame-mamografico-em-mulheres.html>
 18. Scowitz ML, Menezes AMB, Gigante DP, Tessaro S. Condutas na prevenção secundária do câncer de mama e fatores associados. *Rev Saúde Pública* [Internet]. 2005 jun [citado 2017 jun 21];39(3):340-9. Disponível em: <http://www.scielo.br/pdf/rsp/v39n3/24786.pdf>. Doi: 10.1590/S0034-89102005000300003
 19. Moraes DC, Almeida AM, Figueiredo EN, Loyola EAC, Panobianco MS. Rastreamento oportunístico do câncer de mama desenvolvido por enfermeiros da Atenção Primária à Saúde. *Rev Esc Enferm USP* [Internet]. 2016 fev [citado 2017 jun 21];50(1):14-21. Disponível em: http://www.scielo.br/pdf/reeusp/v50n1/pt_0080-6234-reeusp-50-01-0014.pdf. Doi: 10.1590/S0080-623420160000100002
 20. Prolla CMD, Silva PS, Oliveira Netto CB, Goldim JR, Ashton-Prolla P. Conhecimento sobre câncer de mama e câncer de mama hereditário entre enfermeiros em um hospital público. *Rev Latino-Am Enfermagem* [Internet]. 2015 jan-fev [citado 2017 jun 21];23(1):90-7. Disponível em: <https://www.lume.ufrgs.br/bitstream/handle/10183/129671/000974018.pdf?sequence=1>. Doi: 10.1590/0104-1169.0185.2529
 21. Silva RCF, Hortale VA. Rastreamento do câncer de mama no Brasil: quem, como e por quê? *Rev Bras Cancerol* [Internet]. 2012 [citado 2017 mar 23];58(1):67-71. Disponível em: http://www.inca.gov.br/rbc/n_58/v01/pdf/10b_artigo_opiniao_rastreamento_cancer_mama_brasil_quem_como_por_que.pdf
 22. Schneider IJC, Giehl MWC, Boing AF, D'Orsi E. Rastreamento mamográfico do câncer de mama no Sul do Brasil e fatores associados: estudo de base populacional. *Cad Saúde Pública* [Internet]. 2014 set [citado 2017 jun 21];30(9):1987-97. Disponível em: <http://www.scielo.br/pdf/csp/v30n9/0102-311X-csp-30-9-1987.pdf>. Doi: 10.1590/0102-311X00162313
 23. Matos JC, Pelloso SM, Carvalho MDB. Fatores associados à realização da prevenção secundária do câncer de mama no Município de Maringá, Paraná, Brasil. *Cad Saúde Pública* [Internet]. 2011 maio [citado 2017 jun 21];27(5):888-98. Disponível em: <http://www.scielo.br/pdf/csp/v27n5/07.pdf>. Doi: 10.1590/S0102-311X2011000500007
 24. Carmona-Torres JM, Cobo-Cuenca AI, Martín-Espinosa NM, Piriz-Campos RM, Laredo-Aguilera JA, Rodríguez-Borrego MA. Prevalencia em la realización de mamografias em España: análisis por comunidades 2006-2014 y factores que influyen. *Aten Primaria* [Internet]. 2017 Apr [cited 2017 Oct 10];50(4):1-10. Available from: <https://www.sciencedirect.com/science/article/pii/S021265671630539X>. Doi: 10.1016/j.aprim.2017.03.007
 25. Vacek PM, Geller BM. A prospective study of breast cancer risk using routine mammographic breast density measurements. *Cancer Epidemiol Biomarkers Prev* [Internet]. 2004 May [cited 2019 Jan 17];13(5):715-22. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/15159301>
 26. Lima ALP, Rolim NCOP, Gama MEA, Pestana AL, Silva EL, Cunha CLE. Rastreamento oportunístico do câncer de mama entre mulheres jovens no Estado do Maranhão, Brasil. *Cad Saúde Pública* [Internet]. 2011 jul [citado 2017 jun 21];27(7):1433-9. Disponível em: <http://www.scielo.br/pdf/csp/v27n7/18.pdf>. Doi: 10.1590/S0102-311X2011000700018
 27. Gonçalves LLC, Lima AV, Brito ES, Oliveira MM, Oliveira LAR, Abud ACE, et al. Mulheres portadoras de câncer de mama: conhecimento e acesso às medidas de detecção precoce. *Rev Enferm UERJ* [Internet]. 2009 jul-set [citado 2017 mar 24];17(3):362-7. Disponível em: <http://www.facenf.uerj.br/v17n3/v17n3a11.pdf>
 28. Rodrigues TCGE, Brum IV, Santos JLCT, Juste AM, Laporte EGJ, Laporte BEP. Conhecimento de 820 mulheres atendidas no Hospital Universitário da Universidade Federal de Juiz de Fora sobre autoexame das mamas. *Rev Bras Mastologia* [Internet]. 2016 abr-jun [citado 2017 mar 24];26(2):60-4. Disponível em: <http://pesquisa.bvsalud.org/portal/resource/pt/biblio-875433>
 29. Santos JA. Breast self-examination on breast cancer screening: evidence increases as uncertainty fades away. *Acta Obstet Ginecol Port*. 2013;7(2):113-7.
 30. Leal EM, Almeida LMN, Lima AGS. Knowledge and practice of breast self examination in users of a health centre. *Rev Enferm UFPI* [Internet]. 2014 Jul-Sep [cited 2017 Oct 10];3(3)39-45. Available from: <http://www.ojs.ufpi.br/index.php/reufpi/article/view/1676>. Doi: 10.26694/reufpi.v3i3.1676

Received on 23/04/2018
Approved on 13/01/2019