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Opportunistic mammography screening by the Brazilian Unified Health System in 2019

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ABSTRACT

Introduction: Mammography screening has been the best method for detecting early tumors and reducing breast cancer mortality according to different studies. In Brazil, the number of women who undergo mammography tests by the Brazilian Unified Health System (SUS) has been far below international recommendations. **Objective:** To describe the number of mammographies, mammography coverage, and the amount spent on this exam during 2019 by SUS, in Brazil. **Method:** Ecological study with data from the Department of Informatics of the Brazilian Unified Health System and the Brazilian Institute for Geography and Statistics in order to verify the number of mammographies performed by the SUS concerning the Brazilian female population in Brazil, in the age group of 50 to 69 years, in the states and in macro-regions during 2019. **Results:** In 2019, 2,660,469 mammographies were performed in the country out of the expected total of 12,154,979, accounting for a 21.9% mammography coverage by SUS at the cost of BRL 117,841,231.97. The lowest coverage rates were verified in the states of Amapá (0.6%) and the Federal District (4.9%), whereas the best rates were found in the states of Paraná (29.7%) and Alagoas (29.6%). **Conclusions:** The number of mammographies performed in Brazil in 2019 by SUS corresponded to almost ¼ of the country's need, with mammography coverage far below the target and being widely different among the many Brazilian states.

KEYWORDS: breast neoplasms; mass screening; mammography; Brazilian Unified Health System; Brazil.

INTRODUCTION

Mammography has been the most appropriate method for screening breast cancer to date, consisting in the only method that has shown a reduction in mortality from breast neoplasm[1], reduction in tumor size at diagnosis, and increased survival in patients who developed this type of cancer[2]. However, despite all the benefits, there are several criticisms regarding this method. Among them, we can mention: the non-reduction in the rate of cases of de novo stage IV breast cancer, the increase in detected cases that would not require treatment, in addition to the possibility of an increase in the number of cases of radiation-induced cancer[3,4].

Despite this worldwide discussion, the impossibility of detecting more aggressive tumors, including cases of interval cancer[5], together with the great difficulty of access to health services that exists in Brazil[6], certainly makes the model of opportunistic breast cancer screening to not be fully adopted in the country yet, with an effective reduction in mortality, as previously published[7,8].

In a recent study conducted by the *Rede Brasileira de Pesquisa em Câncer de Mama* [Brazilian Breast Cancer Research Network], following the recommendations of the Brazilian Ministry of Health, according to which women aged between 50 and 69 years must undergo a biennial mammography examination, it was observed that the rate of mammography coverage by the Brazilian Unified Health System (SUS) in this population increased from 14.4% in 2008 to 24.4% in 2012 and, since then, mammography coverage has been stabilized, accounting for 24.2% in 2017[9].

These numbers must be updated for 2019 and, therefore, the objective of this study was to analyze data from the Department of Informatics of the Brazilian Unified Health System (DATASUS) for the year 2019, considering, in addition to the absolute number of mammographies, the mammography coverage and the amount spent by SUS on these exams in 2019.

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METHODS

Study design

This is an ecological, descriptive study, with secondary data from the Brazilian Ambulatory Information System (SIA/DATASUS) and the Brazilian Institute for Geography and Statistics (IBGE) for 2019.

Target population

Women aged 50 to 69 years were considered the target population. Data on the number of surveyed women for the period from January 1 to December 31, 2019 were collected from SIA/DATASUS[10]. The IBGE projection of the Brazilian population for the year 2019 was considered[11].

Coverage estimates

Mammography coverage was estimated considering the biennial screening in order to reach 100% of the target population. It was expressed as percentage and calculated using the ratio between the number of performed tests and the number of expected tests.

Data on the number of tests performed from January 1 to December 31, 2019 were collected from SIA/DATASUS, according to procedure codes 0204030030 (Mammography) and 0204030188 (Bilateral Mammography for Screening).

To estimate the number of tests expected in the population aged 50 to 69 years, the recommendation of the National Cancer Institute José Alencar Gomes da Silva (INCA) was adopted. In scheduling procedures, it is necessary to predict that, in a given year, 50% of women aged 50 to 69 years shall undergo screening through clinical breast exam, in addition to a diagnostic mammography in 8.9% of this population, who will have an altered clinical breast exam; while the other 50% of women shall undergo a clinical breast exam and mammography screening, regardless of the result in the clinical breast exam[12].

RESULTS

According to data collected from SIA/DATASUS, in 2019 a total of 2,660,469 mammographies were performed in the country out of the expected total of 12,154,979, accounting for a 21.9% mammography coverage by SUS at the cost of BRL 117,841,231.97, as demonstrated in Table 1. Each of the values was repeated for the Brazilian states, the Federal District, and the country's macro-regions.

DISCUSSION

In addition to the current model of mammography screening used worldwide, performed by mammography and complemented by other exams, including breast ultrasound and breast magnetic resonance imaging, in cases of high-risk patients[1,2,13], we observed that some situations must be remedied if the current model prevails. The first one involves remedying the low productivity of mammography machines available at SUS. In a recent study conducted by the Brazilian Breast Cancer Research Network, the extremely low productivity of the machines was observed, which shows that, in the country, there is no lack of mammography equipment, but rather of an efficient operation in all states, considering that the effectiveness ranged between 1% in the Federal District to 40% in the state of Bahia[14]. These numbers evidence the urgent need to reorganize several services related to SUS, which alone can promote a considerable improvement in mammography coverage for SUS users.

Another aspect that must be addressed is the issue of bureaucracy in undergoing the mammography test by SUS. In places where there is an organized population screening, women in the age group in question receive an invitation letter to do the mammography, and that is enough for them to undergo the exam. Then, the test result is evaluated by a doctor and they receive a new letter informing the result and already scheduling a new exam for the next round of tests, as recommended in different countries[1,5,15]. In Brazil, despite financial and time-related difficulties existing among the population served at SUS, women must first have a medical prescription for undergoing a mammography, which is usually prescribed by doctors working in Health Units or, eventually, in the Family Health Strategy program, which is a Brazilian program aiming at reorganizing primary healthcare services, promoting the quality of life of the Brazilian population, and preventing factors that pose risk to their health. Then, they must go to a location selected by the Brazilian Department of Health to get an authorization for undergoing procedures of low-to-medium complexity, and only then they shall schedule the mammography. Another time, these women will spend more time undergoing the exam. As if that were not enough, they must get the test result and then take it to a doctor. Only based on the exam the professional can reassure them or, when necessary, request some complementary exam such as imaging tests or even biopsy.

In Flanders, Belgium, for women aged between 50 and 69 years, the debureaucratization and change from an opportunistic screening to an organized, biennial screening model increased mammography coverage from 14%, in 2002, to 64%, in 2016[5]. This indicates that such organized and unbureaucratic model may be a good option for the Brazilian public health.

The clear need for improving the quality of the exams itself cannot be disregarded. Accordingly, the increase in radiation levels and the patient's poor positioning on the mammography machine are factors that have been observed and that, among others, may generate the poor quality of the mammography, increasing the possibility of false-negative mammograms, as well as false-positive ones, and further reducing the accuracy of the exam in its general context[16,17].

Concerning the mammography coverage, the year 2019 reflects what happened in the previous years, from 2012 to 2017[9], when there was no increase in mammography coverage in the female population aged 50 to 69 years who use the SUS services. This probably reflects a political issue, with greater emphasis on the economic and financial situation in which Brazil was immersed in the period under analysis.

Table 1. Resident population, number of tests expected and performed, mammography coverage, and value approved by the Brazilian Unified Health System (SUS), in Brazil and in the states, in 2019.

Federation Unit / Macro-region	Resident population	No. of expected tests	No. of performed tests	Coverage	Approved value in Brazilian currency (BRL)
Rondônia	142,254	83,788	7,053	8.4	282,271.40
Acre	50,350	29,656	4,983	16.8	216,135.00
Amazonas	251,965	148,407	20,233	13.6	903,645.20
Roraima	31,838	18,753	2,544	13.6	112,270.40
Pará	569,845	335,639	28,818	8.6	1,272,678.90
Amapá	45,579	26,846	149	0.6	6,230.20
Tocantins	114,284	67,313	5,899	8.8	256,145.50
North Region	**1,206,115**	**710,402**	**69,679**	**9.8**	**3,049,376.60**
Maranhão	486,906	286,788	25,127	8.8	1,101,064.05
Piauí	286,053	168,485	39,231	23.3	1,891,496.80
Ceará	797,849	469,933	53,040	11.3	2,337,265.40
Rio Grande do Norte	321,350	189,275	34,222	18.1	1,705,435.60
Paraíba	370,021	217,942	37,873	17.4	1,697,252.30
Pernambuco	885,113	521,332	129,864	24.9	5,743,554.65
Alagoas	279,667	164,724	48,723	29.6	2,185,020.40
Sergipe	195,138	114,936	22,847	19.9	1,023,714.80
Bahia	1,253,851	738,518	207,571	28.1	10,703,861.41
Northeast Region	**4,981,403**	**2,934,046**	**598,498**	**20.4**	**28,388,665.41**
Minas Gerais	2,233,182	1,315,344	311,008	23.6	13,363,522.17
Espírito Santo	406,091	239,188	58,817	24.6	2,571,096.00
Rio de Janeiro	1,987,179	1,170,448	170,219	14.5	7,338,582.60
São Paulo	4,982,976	2,934,973	817,050	27.8	35,369,659.45
Southeast Region	**9,609,428**	**5,659,953**	**1,357,094**	**24.0**	**58,642,860.22**
Paraná	1,233,399	726,472	215,671	29.7	9,483,834.50
Santa Catarina	751,272	442,499	101,027	22.8	4,392,800.90
Rio Grande do Sul	1,369,087	806,392	212,135	26.3	9,232,842.64
South Region	**3,353,758**	**1,975,363**	**528,833**	**26.8**	**23,109,478.04**
Mato Grosso do Sul	258,313	152,146	28,194	18.5	1,207,360.50
Mato Grosso	287,850	169,544	19,025	11.2	841,474.00
Goiás	644,129	379,392	50,684	13.4	2,230,190.10
Federal District	295,640	174,132	8,462	4.9	371,827.10
Midwest Region	**1,485,932**	**875,214**	**106,365**	**12.2**	**4,650,851.70**
Brazil	**20,636,636**	**12,154,979**	**2,660,469**	**21.9**	**117,841,231.97**

Hence, the year 2019 clearly indicates the need for greater allocation of financial and, mainly, organizational resources, in order to increase the number of mammographies performed in the country. This adjustment should include the reduction in the existing bureaucracy for undergoing the exam, as well as the improvement in the promptness of each step, in such a way that women do not waste time with so many steps and can access the diagnosis quickly and effectively.

AUTHORS' CONTRIBUTION

R.F.-J., D.C.N.R., R.S.C., L.F.P.C., L.S.C., L.A.B.D.U., R.M.S.R.: Concept, research, methodology.

R.F.-J., D.C.N.R.: Data processing, formal analysis, writing of the article and its first version.

R.S.C., L.F.P.C., L.S.C., L.A.B.D.U., R.M.S.R.: Data validation, methodology review, writing review and editing.

R.F.-J., D.C.N.R., R.S.C., L.F.P.C., L.S.C., L.A.B.D.U., R.M.S.R.: Review and approval of the final version.

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