Early Diagnosis of Breast Cancer in Women with Palpable Lesions: Offer, Performance, and Need for Biopsies in the Municipality of Rio de Janeiro

Diagnóstico Precoce de Câncer de Mama em Mulheres com Lesões Palpáveis: Oferta, Realização e Necessidade de Biópsias no Município do Rio de Janeiro

Detección Precoz del Cáncer de Mama en Mujeres con Lesiones Palpables: Oferta, Realización y Necesidad de Biopsias en el Municipio de Rio de Janeiro

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ABSTRACT

Introduction: Breast cancer in Brazil has high incidence and mortality rates with diagnosis at advanced stage. **Objective:** Describe the offer and performance of breast biopsies in the National Health System (SUS) for women residing in the city of Rio de Janeiro, from 2017 to 2021. **Method:** A cross-sectional descriptive study based on data from the Outpatient Information System and the Regulation System of the Municipality of Rio de Janeiro, considering core needle biopsy (PAG) or surgical biopsy procedures. To assess the level of offer and utilization of procedures, the number of symptomatic women consulted by SUS was estimated. Data were evaluated by health clinics and programmatic area (PA). **Results:** For 2021, 21,687 symptomatic women and demand of 5,314 biopsies were estimated. In this same year, 2,541 breast biopsies were offered by 10 health clinics, 90.9% for female residents of which only 52.7% were performed. The offer and performance of biopsies by PA were uneven, only less than one fifth of the required volume were met revealing an important gap for diagnostic investigation of women with palpable lesions causing overburden on the annual demands and compromise of early diagnosis. **Conclusion:** The disparity in the performance of biopsies in PA must be overcome with strategies to include women with palpable lesions mostly.
Key words: breast neoplasms; early diagnosis; health information systems; women's health; signs and symptoms.

RESUMO

Introdução: O câncer de mama no Brasil apresenta elevadas taxas de incidência e mortalidade com diagnóstico em estadiamento avançado. **Objetivo:** Descrever a oferta e a realização de biópsias mamárias no Sistema Único de Saúde (SUS) para mulheres residentes no município do Rio de Janeiro, de 2017 a 2021. **Método:** Estudo descritivo transversal a partir de dados do Sistema de Informação Ambulatorial e do Sistema de Regulação do Município do Rio de Janeiro, considerando os procedimentos de biópsia por punção por agulha grossa (PAG) ou biópsia cirúrgica. Para avaliar a suficiência da oferta e utilização dos procedimentos, foi estimado o número de mulheres sintomáticas usuárias do SUS. Os dados foram avaliados por estabelecimento e área programática (AP). **Resultados:** Estimaram-se 21.687 mulheres sintomáticas e a necessidade de 5.314 biópsias para 2021. Nesse mesmo ano, foram ofertadas 2.541 biópsias de mama por dez estabelecimentos de saúde; 90,9% para mulheres residentes das quais apenas 52,7% foram realizadas. Observaram-se oferta e realização desigual de biópsias pelas AP no período com resultado anual inferior a um quinto do necessário. A oferta e a realização de biópsias são insuficientes para a investigação diagnóstica de mulheres com lesões palpáveis, gerando sobrecarga sobre as demandas anuais com comprometimento do diagnóstico precoce. **Conclusão:** A disparidade na realização das biópsias nas AP deve ser superada com estratégias que visem alcançar sobretudo mulheres com lesões palpáveis.
Palavras-chave: neoplasias da mama; diagnóstico precoce; sistemas de informação em saúde; saúde da mulher; sinais e sintomas.

RESUMEN

Introducción: El cáncer de mama en Brasil tiene altas tasas de incidencia y mortalidad con diagnóstico en etapa avanzada. **Objetivo:** Describir la provisión y realización de biopsias de mama en el Sistema Único de Salud (SUS) para mujeres residentes en la ciudad de Río de Janeiro, de 2017 a 2021. **Método:** Estudio descriptivo transversal a partir de los datos del Sistema de Informaciones Ambulatorias y del Sistema de Regulación del Municipio del Rio de Janeiro, considerando procedimientos de biopsia con aguja gruesa (PAG) o biopsia quirúrgica. Para evaluar la suficiencia de la oferta y uso de los procedimientos, se estimó el número de mujeres sintomáticas usuarias del SUS. Los datos fueron evaluados por establecimiento y área programática (AP). **Resultados:** Se observó un estimado de 21687 mujeres sintomáticas y la necesidad de 5314 biopsias para 2021. Ese mismo año, diez establecimientos de salud ofrecieron 2541 biopsias de mama; 90,9% para mujeres residentes de las cuales solo se realizó el 52,7%. Hubo una oferta y realización desigual de biopsias por AP en el período con una realización anual inferior a la quinta parte de las necesarias. La oferta y realización de biopsias son insuficientes para la investigación diagnóstica de mujeres con lesiones palpables y produce una acumulación creciente de necesidades anuales, comprometiendo el diagnóstico precoz. **Conclusión:** La disparidad en la realización de biopsias en AP debe ser superada con estrategias que apunten a llegar principalmente a mujeres con lesiones palpables.
Palabras clave: neoplasias de la mama; diagnóstico precoz; sistemas de información en salud; salud de la mujer; signos y síntomas.

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INTRODUCTION

Breast cancer is the most frequent cancer in women in the world, except for non-melanoma skin cancer, and the most frequent cause of cancer death in this population[1]. In Brazil, 74,000 new cases of breast cancer are estimated for each year of the 2023-2025 triennium[2]. About mortality, it is the leading cause of cancer death in women[3].

The incidence and mortality from breast cancer in the country tend to grow from the age of 40[4,5], and inequalities are observed within the country[6]. This scenario contrasts with that observed in developed countries where, despite the upward trend in breast cancer incidence, mortality and five-year survival show a decreasing trend[7].

Strategies for early detection of breast cancer make it possible to identify suspected cases and carry out diagnostic investigations. The earlier an invasive tumor is detected and treatment initiated, the greater the probability of cure. To this end, actions and services aimed at the care of people with cancer should be offered in a timely manner, allowing their continuity, as established by the National Policy for the Prevention and Control of Cancer (PNPCC)[8] . However, the difficulties of women's access to diagnostic methods and treatment lead to the advancement of the disease, compromising the prognosis[9,10].

The line of care for breast cancer goes through all levels of care and depends on the articulation between them for the best result of the actions. The referral of the user, when necessary, must be made through the Regulation System, to ensure the resoluteness of the service through adequate and timely referral.

Preventive actions and early detection of breast cancer should be carried out in Primary Care, given the capillarity of this level of attention[11]. Mammography is the test used in early detection, both in screening for asymptomatic women aged 50 to 69 years and every two years, and in early diagnosis for symptomatic women of any age that should be investigated. Primary Care must be organized to correctly recognize this population and refer them for the necessary tests, prioritizing women with signs and symptoms suggestive of breast cancer[12].

In addition to mammography, ultrasound is also used to investigate suspected breast cancer changes[13]. In cases of palpable lesions, breast biopsies must be performed by means of core needle biopsy (PAG)[12,13], also called *core* biopsy, performed by needle coupled to a type of clinical gun that allows the removal of a few millimeters of tissue and is done in an outpatient setting under local anesthesia. Surgical biopsy can also be performed, a more traditional outpatient and hospital procedure, which can be incisional, when part of the lesion is removed, and

excisional, when the lesion is completely removed. Almost always the patient is under general anesthesia, allowing total removal of the nodular area[14]. The collected material should be sent for histopathological analysis for diagnostic confirmation. Once the cancer is confirmed, the women are referred for treatment in a referral hospital unit.

A study carried out in Brazil, in a municipality in the interior of the State of São Paulo, on the delay in the diagnosis and treatment of breast cancer, showed that 8.9% of women received the diagnosis within 60 days and that the average time between medical consultation and diagnosis was 142.6 days, being 2.4 times longer than that recommended in the 60-day Law[15,16].

Although the line of care for breast cancer is well established, there are barries for diagnostic confirmation that compromise disease control actions[17,18], especially in the case of symptomatic women who need agility in the investigative process. In view of the above, the objective of this article is to describe the offer and performance of breast biopsies in the Unified Health System (SUS) for women living in the city of Rio de Janeiro, from 2017 to 2021.

METHOD

A cross-sectional descriptive study on the supply, performance and estimation of the need for breast biopsies for women with suspected breast cancer lesions in the SUS in the city of Rio de Janeiro, from 2017 to 2021.

The biopsy offer information was obtained from the Transparency Portal of the Regulation System (SisReg) of[19] the Municipality of Rio de Janeiro, the information of the biopsies performed was obtained from the Outpatient Information System (SIA/SUS)[20] and the estimate of women with palpable lesions was carried out according to the Technical Parameters for Early Detection of Breast Cancer[13].

For the diagnostic investigation of suspicious breast lesions, the biopsy procedures performed in the public system were considered according to the SUS Management System of Table of Procedures, Medicines and Orthotics, Prostheses and Special Materials (OPM)[14] : PAG or core biopsy (code 02.01.01.060-7) and surgical biopsy, also called breast lump biopsy/excision (code 02.01.01.056-9).

Through SisReg[19], the number of breast biopsies for palpable lesions made available in the municipal network per health facility was obtained. According to the rules of SisReg, patients with palpable lesions are included in this system to perform breast biopsies in the municipal network[21]. The procedure is presented only as an offer of breast biopsy for palpable lesion, making no distinction between PAG or surgical biopsy. The biopsies offered are

presented in vacancies agreed in the Agreed and Integrated Program (PPI) or not. The PPI is an instrument that enables agreements of intermunicipal references in order to guarantee the integrality of care[22].

The years 2017 to 2021 were considered to mitigate the possible effect of the COVID-19 pandemic on the performance of biopsies. The biopsy offer information in SisReg was only available from the year 2021 and, for this reason, it was used only in that year.

To evaluate the production of PAG and surgical biopsy, the production presented for females, available in the SIA/SUS, was considered. It was decided to consider the production presented to minimize the undersizing of production[23]. The surgical biopsy procedure is also recorded as a secondary procedure in the hospital admission authorization (AIH)[14], but there was no record of this procedure in the AIH during the study period.

The following variables were considered: year of the procedure; municipality of residence of the user (resident or non-resident, according to the municipality of the establishment that informed the performance of the procedures); place of the examination (inside or outside the municipality of residence); number of the National Registry of Health Establishments (CNES) that performed the procedure; programmatic health area (PA) of the municipality of Rio de Janeiro where the establishment is located, which is currently divided by ten PA (1.0, 2.1, 2.2, 3.1, 3.2, 3.3, 4.0, 5.1, 5.2, 5.3).

To assess whether the PAG and surgical biopsy procedures offered and performed in 2021 in the municipality of Rio de Janeiro were sufficient for women with palpable lesions, the Technical Parameters for Early Cancer Detection were used[13]. The female resident population of 2021 and the crude estimate of breast cancer incidence in the municipality of Rio de Janeiro for the year 2023[2] were used to obtain the estimate of the population of symptomatic women living in the municipality and the need for biopsies.

Only women living in the municipality and SUS users were considered. To obtain the SUS-dependent female population, the estimate of the female population in the municipality of Rio de Janeiro for the year 2021 was multiplied[24] by the coverage of women of supplementary health[25] in the municipality of the same year and subtracted from the estimated female population, obtaining the population of women not covered by supplementary health.

Data were grouped by establishments, PA and year, according to the study period. A thematic map was used to spatially evaluate the distribution of the types of biopsy procedures reported in the SIA/SUS, according to the location of the establishment.

Two indicators were calculated: the average biopsy production per PA in the period and the average production of PA services.

Average biopsy production:
Total biopsies per type reported in PA in the period

_____

Number of years

Average production of services:
Total biopsies per type reported in PA per period

_____

Number of facilities which reported procedures

Data analysis was performed using descriptive tables. All information used is publicly accessible, available on the pages of SisReg[19], DATASUS[20] of the National Health Agency (ANS)[25]. According to CNS Resolution 510/2016[26], studies with secondary data, of public access, are exempt from the need for ethical analysis.

Excel, *Tab* for *Windows* (TabWin)[27] and QGIS[28] software were used to group the establishments into PA.

RESULTS

The estimated female population for 2021 was 3,581,447[29] women and the coverage for women in supplementary health in that year was 49.9%, so the population of women living in the municipality of Rio de Janeiro and dependent on SUS corresponded to 1,794,305 (Chart 1).

The estimated crude incidence rate of breast cancer in Rio de Janeiro in 2023 was 130,80 new cases per 100.000 women. Applying the parameter of the proportion of estimated symptomatic cases (74%), it is estimated that 96,79 cases in every 100,000 women will be symptomatic, of which 1.55/100,000 in women under 30 years of age and 95.24/100,000 in women 30 years of age or older. It is estimated that 21,687 women living in the municipality of Rio de Janeiro and SUS-dependent will have symptoms related to breast cancer, 1,816 women under 30 years of age and 19,871 women aged 30 years or older (Chart 1).

The estimated need for biopsy (PAG and surgical biopsy) for the female population of the municipality of Rio de Janeiro, SUS-dependent, was 5,314 procedures.

In 2021, 2,541 breast biopsies were offered by SisReg to patients with palpable lesions in the municipality of Rio de Janeiro, distributed among ten health facilities and six PA. There was no offer of biopsy by SisReg in PA 3.1, 3.3, 4.0 and 5.1. Of the vacancies offered, 2,310 (90.1%) were for residents and 231 (9.1%) were agreed in the PPI, that is, for non-residents of the municipality, and offered in three PA (1.0, 2.1 and 2.2). The total

Chart 1. Estimation of symptomatic cases between the estimate of new cases, of symptomatic women in the population, and the need for biopsies to investigate palpable lesions. Municipality of Rio de Janeiro, 2021

Female population living in the municipality	3,581,447
SUS-dependent female population	1,794,305
Estimated crude breast cancer incidence rate in the municipality of Rio de Janeiro for 2023	130.80/100 thousand
Symptomatic case rate between estimated incidence of breast cancer[a]	96.79/100 thousand
Symptomatic case rate among the estimated incidence of breast cancer by age group[b]: ● Women under 30 ● Women aged 30 and over	1.55/100 thousand 95.24/100 thousand
Number of symptomatic women in the SUS-dependent population by age group[c]: ● Women under 30 ● Women aged 30 and over	1,816 19,871
Estimation of PAG procedures and surgical biopsy for investigation of palpable lesion[d]	5,314

Captions: SUS = Unified Health System; PAG = core needle biopsy.
[a]Considering parameter13 that 74% of the estimated cases will be symptomatic: (130.80*0.74).
[b]Considering parameter9: 1.6% of women under 30 years of age (1.6%*0.9679) and 98.4% of women aged 30 years or older will be symptomatic (98.4%*0.9679).
[c]According to the parameter13, to calculate the number of symptomatic women in the population, the percentage of cancer cases estimated among symptomatic women by age group is used: 1.53% in the group under 30 years of age and 8.60% in the group over 30 years of age. Thus, 0.101% (1.55*100/1.53%) of women under 30 years of age and 1.107% (95.24*100/8.6%) of women aged 30 years or older will be symptomatic in the SUS-dependent population in the municipality of Rio de Janeiro. These proportions apply to the SUS-dependent female population (1,794,305 *0.101%) and (1,794,305 *1.107%).
[d]Parameter for symptomatic women13: 18.07% of core biopsy (18.07%*1,816) and 13.03% of surgical biopsy (13.03%*1,816) in women under 30 years of age and 17.74% of core biopsy (17.74%*19,871), and 6.16% of surgical biopsy (6.16%*19,871) in women 30 years of age or older.

number of biopsies (PAG and surgical biopsy) performed in 2021 by establishments with vacancies made available by SisReg was 1,510 procedures, representing 59.4% of breast biopsies for patients with palpable lesions offered by SisReg. The proportion of procedures performed among those offered by PA ranged from 3.4% to 199.5%. Of the biopsies performed, 796 (52.7%) were for women living in the municipality (Table 1).

According to the SIA/SUS, between 2017 and 2021, 7,356 PAG were performed in women with palpable breast lesions, in 14 health facilities located in the municipality and distributed in eight PA. A total of 4,279 procedures (58.2%) were performed on women living in the municipality and the others (41.8%) on non-resident women. In PA 1.0 and 2.2, three establishments informed the procedure, followed by PA 2.1 and 3.1 with two establishments each. The average PAG production in the five years of the study was 1,471 procedures and ranged from 9.2 (PA 3.2) to 1,037 (PA 1.0), while the average service production was 525 procedures and ranged from 46 (PA 3.2) to 1,728 (PA 1.0) (Table 2).

479 surgical breast biopsies were performed on women in the period by nine health establishments in the municipality and distributed in four PA. Of these, 67.4% were women living in the municipality. The PA 2.2 performed 66.8% of surgical biopsies. The mean production of surgical biopsies was 96 procedures and ranged from 1.6 (PA 3.1) to 66.8 (PA 2.2). The average

production of the services was 53 procedures and ranged from four (PA 3.1) to 111 (PA 2.2) (Table 2).

The SIA/SUS presents the performance of biopsy in PA 3.1 and 5.3, which are not included in establishments with biopsy offer for palpable lesion in SisReg in 2021. It was found that, in PA 3.1, PAG was performed in all years of the study, while surgical biopsy was reported in this PA in 2017 (n=2) and 2021 (n=6). As for PA 5.3, there is information on PAG only in 2017 (n=569).

The procedures performed by the establishments per PA in the municipality of Rio de Janeiro present a heterogeneous pattern: the performance of PAG is concentrated in establishments located in PA 1.0, responsible for 70.5% of this procedure, and there is no registration of PAG in PA 3.3 and 4.0. Surgical biopsy was performed in a few PA, with the greatest performance of the procedure in PA 2.2 (69.7%) and without information on the procedure in PA 1.0, 3.3, 4.0, 5.1, 5.2 and 5.3 (Figure 1). The scenario of performance by procedure was also different: of the 7,835 biopsies performed, 93.9% were PAG and 6.1%, surgical biopsy. This distribution was similar to biopsies performed on resident women: of the 4,602 (58.7%) biopsies, 93.0% were PAG and 7.0% were surgical biopsies.

The performance of PAG for women living in the municipality, between 2017 and 2021, decreased, while the performance of surgical biopsy increased until 2019. PAG and surgical biopsy for female residents

Table 1. Offer of breast biopsies for palpable lesions and biopsies performed by health facility, CNES, PA and PPI Municipality of Rio de Janeiro, 2021

Health care facility	CNES	AP	SisReg				SIA/SUS		
			PPI[1]		(n)	%	PPI[1]		(n)
			Yes	No			Yes	No	
Diagnostic Imaging Center	6918417	1.0	100	480	580	22.8	685	472	1,157
Institute of Gynecology[2]	2296594								
Federal Hospital of Lagoa	2273659	2.1	75	389	464	18.3	3	13	16
Polyclinic Rocha Maia[2]	9264612								
Rocha Maia Municipal Hospital	2273489								
Gaffrée and Guinle University Hospital	2295415	2.2	56	62	118	4.6	19	65	84
Piedade Municipal Hospital	2269481	3.2	0	511	511	20.1	6	74	80
Municipal Hospital Salgado Filho	2296306								
Polyclinic Manoel Guilherme da Silveira	2270048	5.1	0	412	412	16.2	1	131	132
Polyclinic Carlos Alberto Nascimento	2270331	5.2	0	456	456	17.9	0	41	41
Total	-	-	231	2,310	2,541	100	714	796	1,510

Sources: SisReg[19], SIA/SUS[20].
Captions: CNES = National Registry of Health Establishments; PA = Programmatic Area; PPI = Agreed and Integrated Programming; PAG = core needle biopsy.
[1]PPI: SIA/SUS provides the information by resident or non-resident population. The procedures performed on non-resident women in the municipality were considered as yes in the PPI.
[2]Establishments without information on procedures (PAG or surgical biopsy) informed in the SIA/SUS in the year.

were performed mostly in an establishment within the municipality with percentages ranging from 91.4% to 100% (Table 3).

DISCUSSION

The study identified that breast biopsies performed and informed are insufficient for women with palpable lesions living in the city of Rio de Janeiro. The number of biopsies for palpable lesions offered by SisReg in 2021 does not include the estimated need to investigate these lesions in this group of women. The GWP and surgical biopsy procedures performed and informed in the SIA/SUS in 2021 are lower than the quantity offered for investigation of palpable lesion in the establishments indicated in the SisReg.

The PAG and surgical biopsy procedures performed in the municipality are mostly located in PA 1.0 and 2.2. The PA 1.0 concentrates more than 70% of the performance of PAG, highlighting the State Center for Diagnostic Imaging compared to other establishments. The performance of PAG was 15 times higher than the performance of surgical biopsy. The high performance of PAG biopsy can be partially explained by the lower complexity of this procedure: it can be performed on an outpatient health service, with local and minimally invasive anesthesia; it allows samples of breast tissue fragments to be obtained, which improves diagnostic capacity; it makes it possible to perform an immunohistochemical study, essential for

therapeutic programming in cases of breast cancer[30]; and, for palpable lesions, it can dispense imaging exams[31].

On the other hand, surgical biopsy, despite admitting outpatient and hospital health service[14], was performed only on an outpatient health service and by a few establishments, and among nine, seven were units qualified in oncology[32]. The predominance of surgical biopsy in qualified units suggests that this procedure did not have a diagnostic purpose, that is, possibly these were performed in patients already enrolled in these institutions. Another factor that can contribute to the understanding of the disparity in the supply of the two procedures is the payment amount: PAG remunerates twice the value of the surgical biopsy[14]. Even so, the procedures performed and reported annually are very far from the estimated need, representing less than a fifth of what is needed.

PA 3.3 and 4.0 did not present PAG or surgical biopsy procedures and there was no offer provided for by SisReg, demonstrating inequality in the spatial distribution of the locations where women can perform diagnostic confirmation in SUS. PA 3.1 also had no provision for establishment by SisReg, offering biopsy for palpable lesions, but it was found that PAG and surgical biopsy procedures were performed by two oncology qualified establishments (*Hospital Universitário Clementino Fraga Filho* and *Hospital Mário Kröeff*).

PA have different characteristics regarding health and education services, economic activity, mobility and morbidity-mortality profile[32]. These particularities should

Table 2. PAG procedures and surgical biopsy performed in a health facility and by PA. Municipality of Rio de Janeiro, 2017 to 2021

Health care facility	CNES	AP	Resident		Non-resident		Total	Average production	Number services	Average production of services
			n	%	não	%				
Coarse needle puncture										
Diagnostic Imaging Center	6918417									
UFRJ - Institute of Gynecology	2296594	1.0	2,412	46.5	2.772	53.5	5,184	1,037	3	1.728
Polyclinic Antonio Ribeiro Netto	2280299									
Polyclinic Rocha Maia	9264612	2.1	228	68.7	104	31.3	332	66.4	2	166
IFF - Fiocruz	2708353									
Federal Hospital of Andaraí	2269384									
INCA - Cancer Hospital III	2273462	2.2	223	76.4	69	23.6	292	58.4	3	97
Gaffrée and Guinle University Hospital	2295415									
Mario Kröeff Hospital	2269899	3.1	354	73,9	125	26.1	479	95.8	2	240
Hospital Universitário Clementino Fraga Filho	2280167									
Piedade Municipal Hospital	2269481	3.2	42	91.3	4	8.7	46	9.2	1	46
Polyclinic Manoel Guilherme - PAM BANGU	2270048	5.1	187	99,5	1	0.5	188	37.6	1	188
Polyclinic Carlos Alberto Nascimento	2270331	5.2	265	99,6	1	0.4	266	53.2	1	266
Lincoln de Freitas Filho Polyclinic	2280191	5.3	568	99.8	1	0.2	569	113.8	1	569
Total 1			4,279	58.2	3,077	42	7,356	1,471	14	525
Surgical biopsy										
Federal Hospital of Lagoa	2273659									
Polyclinic Rocha Maia	9264612	2.1	39	81.3	9	18.8	48	9.6	3	16
Ipanema Hospital	2269775									
Federal Hospital of Andaraí	2269384									
INCA - Cancer Hospital III	2273462	2.2	197	59.0	137	41.0	334	66.8	3	111
Gaffrée and Guinle University Hospital	2295415									
Mario Kröeff Hospital	2269899	3.1	5	62.5	3	37.5	8	1.6	2	4
Hospital Universitário Clementino Fraga Filho	2280167									
Municipal Hospital Salgado Filho	2296306	3.2	82	92,1	7	7.9	89	17.8	1	89
Total 2			323	67.4	156	32.6	479	95.8	9	53

Source: SIA/SUS[20].

Captions: CNES = National Registry of Health Establishments; PA = Programmatic Area; PAG = core needle biopsy.
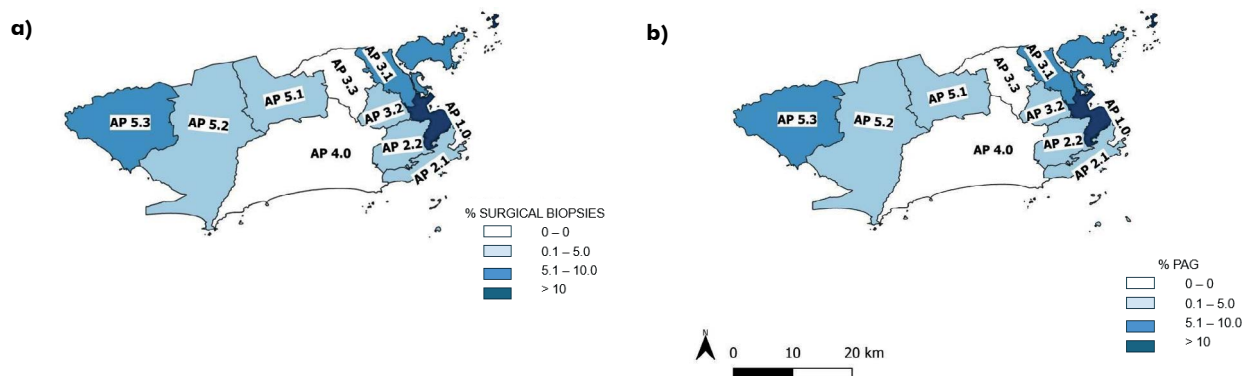

Figure 1. Distribution of the proportion of surgical biopsies (a) and PAG (b) performed in the municipality of Rio de Janeiro according to the PA of the health facility. Municipality of Rio de Janeiro, from 2007 to 2021

Source: SIA/SUS[20].

Captions: PA = Programmatic Area; PAG = core needle biopsy.

Table 3. PAG procedures and surgical biopsy performed on women living in the city of Rio de Janeiro, according to the location of the establishment. Municipality of Rio de Janeiro, 2017 to 2021

		Core needle puncture			
Year	Total	Establishment within the municipality of Rio de Janeiro		Establishment outside the municipality of Rio de Janeiro	
		n	%	n	%
2017	998	985	98.7	13	1.31
2018	883	860	97.4	23	2.6
2019	871	868	99.7	3	0.3
2020	624	623	99.8	1	0.2
2021	911	905	99,3	6	0.7
		Surgical biopsy			
Year	Total	Establishment within the municipality of Rio de Janeiro		Establishment outside the municipality of Rio de Janeiro	
		n	%	n	%
2017	38	38	100	0	-
2018	35	32	91.4	3	8.6
2019	82	75	91.5	7	8.5
2020	62	61	98,4	1	1.6
2021	119	117	98.3	2	1.7

Source: SIA/SUS[20].

be considered in the evaluation of the offer of biopsy procedures, especially as strategies to reach women with palpable breast lesions. PA 1.0 concentrates the highest proportion of people living in favelas (29.0%) and the largest public health apparatus installed in the city[32], and the one that performs the most PAG in this PA. PA 2.1 and 2.2, on the other hand, have the largest population of elderly people with high Human Development Index, with the exception of Rocinha. PA 3.1, 3.2 and 3.3 together are characterized as the most populous area of the city (37.9%), with half of the residents living in favelas[32]. The performance of PAG in these regions did not reach 8%, which demonstrates the need for specific strategies to ensure the diagnostic confirmation of women with palpable lesions in these regions. PA 4.0 is the second largest in area, concentrates middle and high incomes[33], and does not present health facilities with information on biopsies or vacancies provided for in SisReg. Finally, PA 5.1, 5.2 and 5.3, in demographic terms, constitute the second most populous area of the municipality, accounting for 27% of the city's population[33], and performed less than 15% of the procedures for the definitive diagnosis of breast cancer.

The diagnostic confirmation of breast cancer has been associated in the literature with the delay in starting treatment[9,15,34,35]. The disparity in the offer and the performance of the procedure in the territory, more located in some PA of the municipality of Rio de Janeiro, promote greater displacements and possibly contribute to the delay of the diagnostic investigation, if there is no a strongly structured system for following and monitoring these cases. Besides the heterogeneity in the performance of biopsies, it is noteworthy that all production recorded for women living in the municipality, between 2017 and 2021, was lower than the estimated need for the year 2021. Sociodemographic, cultural, geographical and health service-related barriers can influence its use, making it difficult for the population to access, contributing to the late diagnosis of breast cancer and to the delay in starting treatment[9].

A study with 600 women with breast cancer, carried out in the Federal District, identified that the delay in starting treatment was greater when the examination was performed by SUS[34]. It is recommended that breast diagnostic services have their vacancies regulated in order to prioritize the care of patients with suspicious signs and symptoms[36].

The high proportion of women with advanced clinical staging at diagnosis and the high mortality rate from breast cancer indicate that the actions established for the control of breast cancer in Brazil may not be effective.

Brazilian researchers have observed that, in most cases, the first cancer treatment of patients is started late[37], and studies have shown that the long time intervals between diagnosis and the start of the first treatment are associated with a worse prognosis[9].

The findings of this article indicate a component prior to the start of treatment that acts compromising the entire prognosis of breast cancer: the gap between the biopsies performed and the estimated need generates an increasing accumulation on the needs of each year, which potentially produces diagnoses in advanced stages. These, in turn, will still be affected by the waiting time to start treatment.

It is noteworthy that the procedures performed and informed in the official information systems include the diagnostic investigation of symptomatic and asymptomatic cases, that is, the diagnostic confirmation procedures performed in symptomatic women are the same as those performed in screened women, and there is no distinct code for registration in the information systems. It is estimated that 1.6% of the population of women aged 50 to 69 years also needs to undergo biopsy[38], representing a considerable increase on the need for the estimated procedures for the symptomatic population. Therefore, the deficit of biopsies observed in the municipality is even greater, and the necessary quantity of biopsies for screened women and for those patients under treatment, who need to undergo follow-up exams, should be added to the estimated need[10]. In addition, there is a need for procedures for high-risk women and for breast cancer in men who are not included in the early detection parameters.

Vacancies allocated to the PPI are an essential step in the process of reorganizing the SUS care and management model, allocating resources, and explaining the pact established between the spheres of government. The program reflects the responsibilities of each municipality with the guarantee of access of the population to health services: by the existing offer in the municipality itself or by the referral to other municipalities[22,39]. It appears that even if the entire biopsy offer were directed to women living in the municipality, the deficit would still remain very large. Therefore, in order to guarantee women's access to the diagnostic investigation of breast cancer, it is necessary to review the dimensioning of the offer of breast biopsy, especially for palpable lesions.

As limits, it should be considered that the study uses the procedures informed in the official SUS information systems and there is a possibility that an establishment has performed the procedure, but not informed in the system, causing an under-registration of the exams performed. To calculate the proportion of symptomatic women in the municipality of Rio de Janeiro, the study used the parameter established for Brazil, which indicates that 74% of the estimated cases will be symptomatic[13], and it is possible that a specific parameter for the municipality of Rio de Janeiro differs from this. It is also possible that some health plans do not include medium complexity,

and, in this case, the supplementary health coverage used may underestimate the number of symptomatic women in SUS.

CONCLUSION

Distinguishing line-of-care procedures for symptomatic and asymptomatic women can contribute to ensuring the provision and prioritization of diagnostic investigation in women with signs and symptoms of breast cancer.

The number of biopsies performed in 2021 and vacancies for palpable breast lesions made available in SisReg, given the estimates of symptomatic women users of SUS and the need for biopsies, points to the municipal failure to ensure the diagnostic investigation of breast cancer for women living in the municipality. And, simultaneously, it presents and cumulatively projects an unfavorable scenario of the need for breast biopsies, which is verified in the late stages of breast cancer referred to in the literature and in the high mortality rates.

The results indicate the need to seek strategies to expand the offer of breast biopsy and to re-discuss its Health Care Network. Ensuring breast biopsy, following sufficiency parameters and prioritization criteria, including the diagnostic urgency for women with palpable lesions, can be an alternative to shorten the time of diagnosis and consolidate effective breast cancer control actions.

It is noteworthy that, although the study is restricted to the city of Rio de Janeiro and the limits presented, the number of symptomatic women estimated is significant and the results found can contribute to the planning of breast cancer control actions.

CONTRIBUTIONS

All authors contributed substantially in the design and/or planning of the study; in the collection, analysis and interpretation of data; in the writing and critical review; and approved the final version to be published.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interest to declare.

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