

## **Women's perspective on breast cancer screening: a cross-sectional observational study in the Southeast region**

### **Perspectiva da mulher sobre o rastreamento do câncer de mama: um estudo observacional transversal na região Sudeste**

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**ABSTRACT**

**Objective:** to analyze the knowledge of women in the Southeast region about breast cancer and its forms of early detection.

**Methods:** a semi-structured questionnaire filled out via an online platform was adopted, whose variables were related to women's knowledge about breast cancer screening.

**Results:** When assessing the knowledge about which exam is most used for screening in relation to the age variable, the most relevant result was that the majority of the interviewees, 57.5%, chose the correct option, that is, mammography. The option that addressed self-examination as the screening technique was also quite selected: among women aged 18 to 25 years and 35 to 45 years, it was, respectively, 31.2% and 28.9%. From 26 to 34 years old, this assertion was even more expressive, that is, 53.4% of the interviewees. When evaluating the participants' knowledge about the age group at which the first mammogram should be performed, in the general population, only 6.2% of the total participants selected the option from 50 to 69 years and in relation to the frequency only 16.6% of the total number of interviewees selected the correct option according to the Ministry of Health.

**Conclusion:** The data obtained show that most of the interviewees have doubts about the national protocols for the early detection of breast cancer. The efforts of preventive medicine suggest encouraging information through public policies that help educate the population about prevention and health promotion techniques.

**Keywords:** breast cancer, screening, disease prevention, mammography, breast self-examination

## RESUMO

**Objetivo:** analisar o conhecimento das mulheres da região Sudeste acerca do câncer de mama e suas formas de detecção precoce.

**Métodos:** foi adotado um questionário semiestruturado preenchidos via plataforma online, cujas variáveis estavam relacionadas ao conhecimento das mulheres sobre o rastreamento do câncer de mama.

**Resultados:** Quando se avalia o conhecimento sobre qual exame é mais utilizado para rastreio em relação à variável idade, o resultado mais relevante foi que do total de entrevistadas a maioria, 57,5%, escolheram a opção correta, ou seja, a mamografia. A opção que abordava o autoexame como a técnica de rastreamento também foi bastante selecionada: entre as mulheres de 18 a 25 anos e dos 35 a 45 anos foi de, respectivamente 31,2% e 28,9%. Dos 26 a 34 anos essa assertiva foi ainda mais expressiva, ou seja, 53,4% das entrevistadas. Ao avaliar o conhecimento das participantes, sobre a faixa etária com que o primeiro exame de mamografia deveria ser realizado, na população geral, somente 6,2% do total das participantes selecionaram a opção dos 50 a 69 anos e em relação a periodicidade apenas 16,6% do total de entrevistadas selecionou a opção correta segundo o Ministério da Saúde.

**Conclusão:** Os dados obtidos evidenciam que grande parte das entrevistadas tem dúvidas em relação aos protocolos nacionais de detecção precoce do câncer de mama. Os esforços de uma medicina preventiva sugerem incentivo à informação através de políticas públicas que auxiliem na educação da população acerca das técnicas de prevenção e promoção em saúde.

**Palavras-chave:** câncer de mama, rastreamento, prevenção, mamografia, autoexame das mamas.

## 1 INTRODUCTION

Breast cancer is the most frequently diagnosed malignant neoplasm in the world, accounting for more than two million cases each year.<sup>(1)</sup> In Brazil, excluding non-melanoma skin tumors, breast cancer is the most incident in women for all regions, the rates are higher in the more developed regions (South and Southeast) and the lowest is observed in the North region.<sup>(2)</sup> According to the National Cancer Institute, in 2019, breast cancer deaths ranked first in the country, accounting for 16.1% of the total. This pattern is similar for Brazilian regions, except for the North region, where breast cancer deaths rank second, with 13.2%. The highest percentages of proportional mortality from breast cancer were in the Southeast (16.9%) and Midwest (16.5%), followed by the Northeast (15.6%) and South (15.4%) and there is an upward trend over the last decades, with a certain deceleration in the South and Southeast regions and an increase in the other regions, between 2000 and 2015.<sup>(3)</sup>

Like other malignant neoplasms, breast cancer results from an uncontrollable proliferation of abnormal cells, such changes can cause changes in cell growth or

programmed cell death, leading to the appearance of the tumor.(4,5) Epidemiological data that guarantee Brazil's high incidence and mortality rates may be directly or indirectly related to risk factors for the development of the disease.

In addition to gender, aging is one of the most important risk factors for breast cancer, as its incidence is highly related to increasing age, besides that, genetic factors and family history also influence, since almost a quarter of all cases of breast cancer are related to family history, showing that women whose mother or sister has or had breast cancer, are prone to this disease.(6,7)

Other factors that influence the pathogenesis of the disease are hormonal factors such as early menarche (age of first menstruation less than 12 years old), late menopause (installed after the age of 50), first pregnancy after 30 years of age, nulliparity and postmenopausal hormone replacement, especially if prolonged for more than five years.(8) So far, the evidence on the increased risk of breast cancer with contraceptives use is conflicting. Modifiable factors also have an impact on the increased risk of developing the disease, including excessive use of alcohol, smoking, overweight, diabetes, high consumption and intake of dietary fat.(5,9) In association, some evidence shows some protective factors for breast cancer, especially lactation, regular physical activity, both in premenopausal and menopausal women, and the consumption of fruits, juices, beans, milk, and dairy products.(10-12)

However, the entire process of carcinogenesis has a slow evolution, and it can take several years for a cell to proliferate and give rise to a palpable tumor.(4,5) Besides this, other clinical signs, such as the presence of a fixed, painless nodule, is the main manifestation of the disease and can be present in around 90% of cases. Moreover, other changes can also be observed, such as reddened breast skin, retracted orange peel, breast changes, axillary or cervical nodules and abnormal breast expression.(13)

Given this slow and gradual progression, it is important to implement promotion and prevention techniques, since breast cancer when identified in early stages (lesions smaller than two centimeters in diameter) has a favorable prognosis.(4) Primary prevention consists of modifying modifiable and non-modifiable risk factors for the disease, and despite resulting in a reduction in mortality, primary prevention strategies are not yet widely used in practice due to the great variation in risk factors, genetic and biological characteristics, and available technological resources.(14,15) As for secondary prevention strategies, early detection is the main technique, since it aims to identify cancer at early stages, when the disease can have a better prognosis. Among the methods present

for the early identification of breast cancer, which do not reduce the incidence, but can reduce mortality from the disease, there are two main strategies: screening and early diagnosis.(15)

Early diagnosis is useful when identifying people with initial signs and symptoms of a given disease, prioritizing quality and ensuring comprehensive care at all stages of the disease's line of care. The strategy for early diagnosis of breast cancer that has been more accepted worldwide in recent years is formed by the tripod: a population alert to the signs and symptoms of suspected cancer; health professionals trained to evaluate the suspected cases; and health systems and services prepared to ensure timely diagnostic confirmation, with quality and guaranteed comprehensive care throughout the line of care. The screening is a strategy based on the performance of relatively simple tests in healthy people, in order to identify diseases in their pre-clinical phase (asymptomatic). Any screening method should only be recommended for the population after its effectiveness has been proven by scientific studies. At a minimum, the application of a screening test should be proven to decrease mortality from the disease in controlled studies.(4,16)

In Brazil, mammography is the only imaging method utilized, with capacity to screen and detect non-palpable lesions causing an impact on breast cancer mortality. Therefore, there is insufficient evidence about possible benefits of replacing conventional mammography by digital mammography or nuclear magnetic resonance (NMR) in the screening for this disease. In general, the sensitivity of mammography screening ranges from 77% to 95% and depends on factors such as: quality of technical resources and interpretation ability of the radiologist, besides the size and location of the lesion and breast tissue density, characteristics that influence the determination of the age range of the target population for the examination.(4)

For the application of screening techniques, the Ministry of Health (MH) recommends that women aged 50 to 69 years undergo mammography every two years and annual clinical breast examination (CBE), the latter being performed by a health professional at the time of the gynecological examination.(14) Recent systematic reviews confirm the best balance between risks and benefits of breast cancer screening in this age group, it is estimated that biennial screening causes approximately half the harm observed when the frequency is annual.(17,18) For women aged 40 to 49 years, the Brazilian recommendation is the CBE and diagnostic mammography in case of an altered result. According to the World Health Organization (WHO), the inclusion of this group in

mammography screening currently has limited evidence of mortality reduction, since the greater breast density of these women results in lower sensitivity of mammography. Besides these groups, there is also the recommendation for screening women at high risk of breast cancer, whose examination routine should begin at 35 years, with clinical examination of the breasts and annual mammography.(4) Patients who have a family history of breast cancer in a first-degree relative before the age of 50 or bilateral cancer or ovarian cancer at any age, family history of male breast cancer and histopathological diagnosis of proliferative breast lesion with atypia or lobular neoplasm in situ are considered as high risk.(19)

On the other hand, the Brazilian College of Radiology and Diagnostic Imaging, the Brazilian Society of Mastology and the Brazilian Federation of Gynecology and Obstetrics Associations, through the National Commission of Mammography in 2012, published the recommendations for imaging screening for breast cancer in Brazil, conflicting with the recommendations of the MH. Among the differences, in women with usual risk, they recommend annual screening with mammography for women between 40 and 74 years, preferably with digital technique. From 75 years old on, mammography screening is recommended for women who have a life expectancy greater than 7 years, based on comorbidities. As for women at high risk, they should undergo annual screening with mammography starting at age 30, and family history, syndromes, genetic mutations, and history of chest irradiation should be analyzed.(20)

In this study, a semi-structured questionnaire model was proposed to correlate variables such as gender, age, marital status, race or color, education, and number of children with women's knowledge about breast cancer screening, recommended age for initiation of follow-up, and frequency. In 2010, a group had already observed that the knowledge about breast self-examination still left doubts in most of the population of the interior of Paraíba - PB and concluded on the need for investment in public health policies with information and encouragement of the practice of self-care in the appropriate period, aiming at prevention and, consequently, the decrease in reported statistical data of breast cancer.(21) However, our study reproduced significant correlations in the variables age and education that will be widely discussed in order to signal the importance of knowledge about health and disease prevention. Therefore, governmental and community efforts need to be made to help primary and secondary prevention of breast cancer to reduce its impact, especially on mortality, since breast cancer when diagnosed early has a high chance of cure.(2)

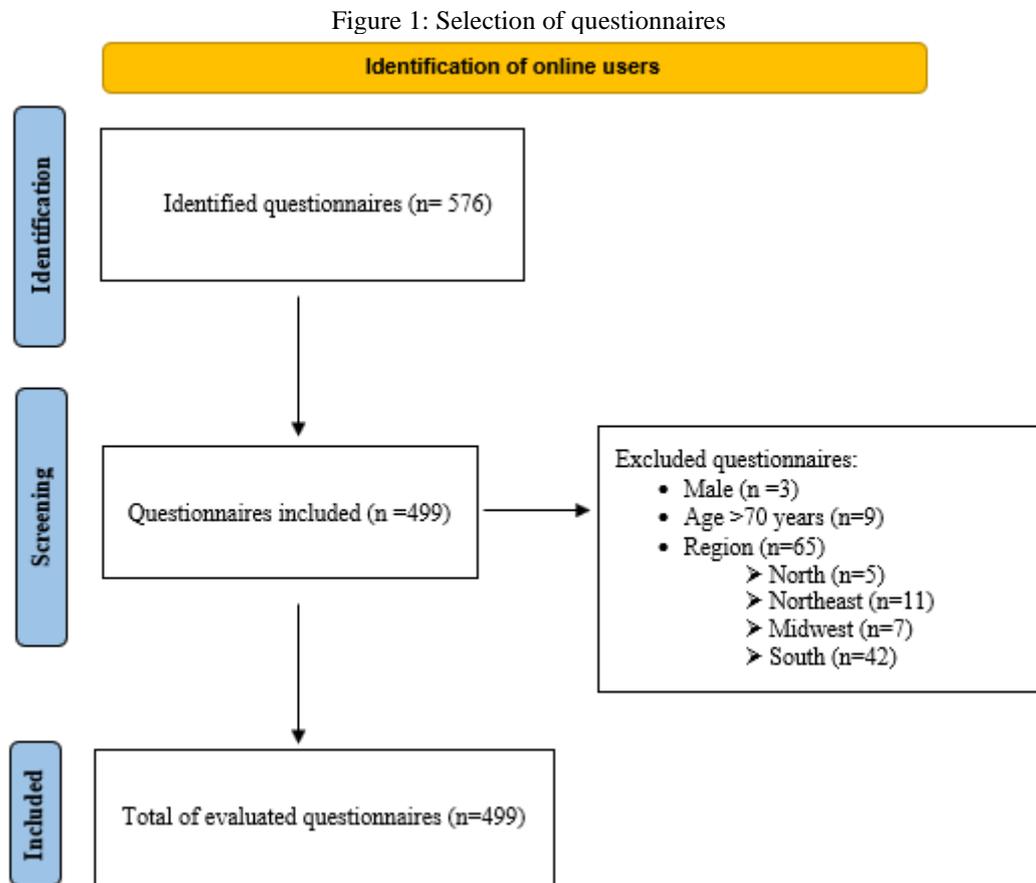
## **2 MATERIAL AND METHOD**

The present project presents as a general objective to analyze and describe the knowledge of women in the Southeast region about breast cancer and its forms of early detection, especially the screening techniques. About the specific objectives, the main ones are to know the population characteristics of a specific region, which performs breast cancer screening, from age, ethnicity, socioeconomic status, parity, education, and if there is prevalence of any more relevant characteristic related to knowledge of screening techniques. Understand the frequency with which women seek the gynecologist and, consequently, whether they undergo clinical examination of the breasts and understand the knowledge about the main screening test: mammography, and the frequency recommended for the general population.

This is an exploratory descriptive study, with a quantitative approach, developed with women from the southeastern region, from data collection in October 2020. The project was approved by the Research Ethics Committee of Centro Universitário das Faculdade de Ensino – FAE/UNIFAE under opinion number 4.236.57.

Regarding the application of the study, a semi-structured questionnaire was adopted, with closed questions, of simple and direct language, divided into two stages. The first part contained questions to characterize the study participants, with variables such as: sex, age, marital status, race or color, education, and number of children. The second part included questions directed to the project's objective, whose variables were related to the women's knowledge about breast cancer screening, its performance and periodicity. The questionnaires were filled out via online platform by the researchers themselves, and data collection was carried out using Google Forms. The questionnaires were answered confidentially, without identification and exposure that could lead to embarrassment. The principles proposed in Resolution 466 (12/12/2012), of the National Health Council, were respected, keeping the identity of the patients confidential. Moreover, the informed consent form was applied according to the pre-established standards. The inclusion criteria used were female volunteer participants, residents of the Southeast region and aged between 18 and 70 years old. Therefore, men and women who did not meet the eligibility criteria were excluded from the study, from the total of 576 questionnaires answered virtually, 499 met the eligibility criteria, corresponding to 86.63% of the sample. A total of 77 participants were excluded from the study, including 3 men, 9 participants over 70 years old, and 65 participants outside the Southeast region,

11 from the Northeast, 5 from the North, 7 from the Midwest, and 42 from the South (Figure 1).



The empirical data collected were initially organized in tables with the help of Microsoft Excel and then were treated with simple statistics. From them, the variables were crossed through the IBM SPSS STATISTICS program, whose results were computed in the form of graphs and tables to be analyzed and discussed according to the purpose of the project.

### 3 RESULTS

When the knowledge about which test is more utilized for breast cancer screening is evaluated in relation to the variable age, the most relevant result was that, from the total number of women interviewed, the majority, 57.5%, chose the correct option, i.e., mammography. Among all age groups evaluated, the older age groups showed a higher rate of correct answers, corresponding to 70.7% of women aged 46 to 60 years and 70% between 61 and 70 years. In addition, the option that addressed self-examination as a

screening technique was also selected by most of the women interviewed, especially those younger than 45. The concentration of answers with this alternative among women aged 18 to 25 and 35 to 45 was 31.2% and 28.9%, respectively. From 26 to 34 years of age, this assertion was even more expressive, i.e., 53.4% of the women interviewed; more than half of the participants in this age group erroneously indicated self-examination as the main alternative, and among the interviewees from 46 to 60 years of age and from 61 to 70 years of age, approximately 20% still believe that self-examination is the most correct alternative. As for breast ultrasonography, only 10.8% of the women interviewed believed that it was the main screening test, and this percentage was not very relevant when compared among the age groups 18 to 25 years (9.7%), 26 to 34 years (10.3%), 46 to 60 years (5.7%) and 61 to 70 years (12.5%), however, from 35 to 45 years of age, the percentage of participants who chose breast ultrasound as the main screening test was twice as high as the other age groups, corresponding to 21.1%. The other exams were selected with less frequency, being nuclear magnetic resonance (NMR), Computed Tomography (CT), and the option don't know, which together totaled 3% of the answers (Table 1).

Table 1 - Analysis of descriptive statistics of the comparative percentage of the variants age and main examination used in breast cancer screening

**What is the main test used in the SCREENING of breast cancer?**

		SCREENING EXAMS					
		Breast self exam	Mammography	Don't know	Magnetic Resonance	Computed tomography	Breast ultrasonography
AGE	18-25 years	31,2%	56,5%	2,6%	0,0%	0,0%	9,7%
	26-34 years	53,4%	32,8%	3,4%	0,0%	0,0%	10,3%
	35-45 years	28,9%	46,7%	2,2%	1,1%	0,0%	21,1%
	46-60 years	19,7%	70,7%	0,6%	2,5%	0,6%	5,7%
	61-70 years	17,5%	70,0%	0,0%	0,0%	0,0%	12,5%
Total		28,7%	57,5%	1,8%	1,0%	0,2%	10,8%

When evaluating the participants' knowledge about the age range at which the first mammography exam should be performed, in the general population, only 6.2% of the total participants selected the option from 50 to 69 years of age, the age range recommended by the MH. Of this total, 14.3% were women between 18 and 25 years of age, 5.2% from 26 to 34 years of age, 2.2% from 35 to 45 years of age, 2.5% from 46 to 60 years of age, and no answers were obtained from participants 61 to 70 years of age for this alternative. The age range with the highest concentration of answers was 30 to 40 years old, which totaled 39.5%, followed by 20 to 30 years old, with 28.3%, and finally 40 to 50 years old, with 26.1% (Table 2).

Table 2 - Analysis of descriptive statistics of the comparative percentage of the variants age and the age group of the first mammogram exam

**Regarding mammography, at what age do you think the first exam should be performed, in the general population?**

		AGE OF PERFORMANCE OF THE FIRST EXAM			
		20-30 years	30-40 years	40-50 years	50-69 years
AGE	18-25 years	17,5%	35,1%	33,1%	14,3%
	26-34 years	15,5%	39,7%	39,7%	5,2%
	35-45 years	30,0%	41,1%	26,7%	2,2%
	46-60 years	35,7%	44,6%	17,2%	2,5%
	61-70 years	55,0%	32,5%	12,5%	0,0%
Total		28,3%	39,5%	26,1%	6,2%

In the analysis of the participants' age in relation to the periodicity of the mammography exam, the answers focused on the assertion that the exam must be performed annually, totaling 79.8%, of which 69.5% are women between 18 and 25 years of age, 75.9% between 26 and 34 years, 88.9% between 35 and 45 years, 88.5% between 46 and 60 years and 70% between 61 and 70 years. Only 16.6% of the total respondents selected the correct option according to the guidelines of the Ministry of Health, which recommend that mammograms should be repeated every two years, and of these, 26% are in the 18-to-25-year age group, 20.7% in the 26-to-34-year age group, 8.9% in the 35 to 45 year age group, 9.6% in the 46 to 60 year age group, and 20% in the 61 to 70 year age group. The remaining answer options that suggested frequency every three and every five years totaled 3.6% of the total sample (Table 3).

Table 3 - Analysis of descriptive statistics of the comparative percentage of the variants age and frequency of the mammograms

**After the first mammogram, how often do you think it should be repeated, in the general population?**

		PERIODICITY OF PERFORMING MAMMOGRAPHY			
		Every five years	Every two years	Every three years	Annually
AGE	18-25 years	0,6%	26,0%	3,9%	69,5%
	26-34 years	1,7%	20,7%	1,7%	75,9%
	35-45 years	0,0%	8,9%	2,2%	88,9%
	46-60 years	0,6%	9,6%	1,3%	88,5%
	61-70 years	2,5%	20,0%	7,5%	70,0%
Total		0,8%	16,6%	2,8%	79,8%

According to the education variable related to the screening test, it is observed that for complete elementary school, 42.9% chose mammography and 28.6% chose breast self-examination. For incomplete elementary school, 80% of the women chose mammography and the rest (20%) chose breast self-examination. Among the answers for complete high school, 56.5% of the participating women chose mammography and 30.6% chose breast self-exam. For incomplete high school, 62.5% chose mammography, and breast self-examination, together with the others, was chosen by 12.5% of the women. For complete college education, 56% selected mammography and 29.6% selected breast self-examination. Finally, in relation to incomplete college education (undergraduate), 62.1% of the women chose mammography and 26.2% chose breast self-examination (Table 4).

Table 4 - Analysis of descriptive statistics of the comparative percentage of the variants education and main examination used in breast cancer screening

**What is the main test used in the SCREENING of breast cancer?**

		SCREENING EXAMS					
		Breast self-examination	Mammography	Don't know	Magnetic Resonance	Computed Tomography	Breast Ultrasonography
Schooling	Complete elementary school	28,6%	42,9%	0,0%	0,0%	0,0%	28,6%
	Incomplete elementary school	20,0%	80,0%	0,0%	0,0%	0,0%	0,0%
	Complete high school	30,6%	56,5%	2,4%	3,5%	0,0%	7,1%
	Incomplete high school	12,5%	62,5%	12,5%	12,5%	0,0%	0,0%
	Complete college education	29,6%	56,0%	0,3%	0,3%	0,3%	13,4%
	Incomplete college (undergraduate)	26,2%	62,1%	4,9%	0,0%	0,0%	6,8%
<b>Total</b>		<b>28,7%</b>	<b>57,5%</b>	<b>1,8%</b>	<b>1,0%</b>	<b>0,2%</b>	<b>10,8%</b>

When relating schooling to the age at which the first exam was performed, in complete elementary school, 42.9% of the women chose 40 to 50 years, and 57.2% was the value for both options less than 40 years, relatively early ages (20 to 30 years and 30 to 40 years). For the incomplete elementary school, 80% chose age less than 40 and only 20% chose age 40 to 50. Regarding the complete high school, 74.2% of the women chose ages under 40 and 25.9% ages 40 to 69. In the incomplete high school, 75% selected the option of earlier ages and 25% was the value for 40 to 50 years. In the complete college education, 72.5% chose ages under 40, and only 27.5% were older than 40. Finally, in the incomplete college education (undergraduate), the inversion of the percentages on education occurred, 51.5% of the women chose ages 40 years or older and 48.6% selected ages less than 40 years (Table 5).

Table 5 - Descriptive statistics analysis of the comparative percentage of the variants education and the age group of the first mammogram exam

**Regarding mammography, at what age do you think the first exam should be performed, in the general population?**

		AGE OF PERFORMANCE OF THE FIRST EXAM			
		20-30 years	30-40 years	40-50 years	50-69 years
Schooling	Complete elementary school	28,6%	28,6%	42,9%	0,0%
	Complete high school	40,0%	40,0%	20,0%	0,0%
	Complete high school	31,8%	42,4%	15,3%	10,6%
	Incomplete high school	50,0%	25,0%	25,0%	0,0%
	Complete college education	29,2%	43,3%	23,7%	3,8%
	Incomplete college (undergraduate)	20,4%	28,2%	40,8%	10,7%
Total		28,3%	39,5%	26,1%	6,2%

In a generic assessment of the profile of the interviewees, it can be concluded that our sample is composed mostly of white women (88.2%), 95% completed basic education, more specifically: 16.5% finished high school, 20.5% are in college education and the majority, 58% have complete college education. In addition, less than 2% of the sample has 4 or more children, the majority, 45% have no children, 17% 1 child, 29.5% 2 children and only 6.6% with 3 children. Another important fact is that less than 10% of the interviewees do not usually have regular gynecological follow-up and the clinical examination of the breasts is still not performed by the doctor in 15.6% of the sample.

#### 4 DISCUSSION

When correlating the age of the interviewees with the knowledge about the most used screening tests for breast cancer diagnosis, some results are noteworthy. Among them, 57.5% of the sample chose the correct option, i.e., the mammography exam. However, there was a concentration of a large number of answers that considered breast self-examination as the best alternative for screening (28.7%), these results suggest that basic prevention and health promotion information is outdated and/or not very accessible. According to the Brazilian Society of Mastology, breast self-examination is currently recommended only in places where there is no mammography or other diagnostic method, since it is not able to identify premalignant lesions.(22) Moreover, the Brazilian Federation of Gynecology and Obstetrics reinforces that this practice is no longer recommended as a form of breast cancer screening, since there is no effect of breast self-examination on the reduction of mortality from breast cancer.(23) It is noteworthy that a significant representation of the sample (10.8%) opted for breast ultrasonography, such

choice may be clarified, since ultrasonography is a widespread diagnostic method, of low cost, easy access and noninvasive, however this test is indicated as adjuvant to mammography in cases of abnormal clinical and mammographic findings, or as the first choice in special situations, such as in pregnancy, lactation, young women and during breast inflammatory states.(24) The conclusion that ultrasonography in conjunction with mammography should not be used in women at average risk of breast cancer is in accordance with the WHO recommendation that no screening program should be implemented without solid evidence of a reduction in morbidity and mortality. Since an unnecessary complementary examination may cause subsequent interventions and investigations without evidence of health benefits.(25) Another test to be discussed is that even though it is a difficult method to access and high cost, 1.1% of the women surveyed chose NMR as their first choice in breast cancer screening. About this test is very true that the NMR has been considered the test of higher sensitivity for the cancer in question, this is justified in the fact that it is not ionizing radiation, as mammography, and its sensitivity does not depend on the density of breast tissue. However, it does have a disadvantage, due to its relatively low specificity, this provides a high false-positive rate, leading to unnecessary diagnostic procedures. Therefore, the criteria for image classification must strictly follow the standards established today, keeping mammography as the first examination of choice when it comes to breast cancer screening.(23)

In all age groups, most of the interviewees answered that mammography is the main screening test, except for those aged 26 to 34 years who selected breast self-examination (53.4%) and mammography as the second choice (32.8%). Although the samples aged 18 to 25 years and 35 to 45 years chose mammography as the first choice, a large portion of the interviewees aged 18 to 25 years (31.2%) and 35 to 45 years (28.9%) chose breast self-exam, reinforcing that a large part of the young adult population does not have access to updated information and protocols, even though breast cancer is the most incident cancer in women worldwide. A considerable portion of all ages, from 18 to 25 years (9.7%), 26 to 34 years (10.3%), 35 to 45 years (21.1%), and 46 to 60 years (5.7%) opted for breast ultrasonography, especially in the young adult population, who eventually need to complement the recommended screening test (mammography) with ultrasonography. Furthermore, the higher rate of correct answers in the sample aged 46 to 60 years (70.7%) suggests that these women have a perception of the correct option, not because of theoretical knowledge but because of practical experience, since they are

probably already experiencing this secondary prevention technique, since they are within the age range recommended by the Ministry of Health.(4)

The correlation between the age of the interviewees and the knowledge regarding the age at which the first screening test should start had a surprising result, with only 6.8% of the total population surveyed being between 50 and 69 years old, which is the current recommendation established by the MH for women without signs and symptoms of breast cancer.(4) Most of the Brazilian population benefits only from the Unified Health System, consequently, the most used guideline should be that of the MH, however most of the interviewees chose the alternative that the exam should be started from 30 to 40 years of age (40.1%), a completely mistaken choice, since when the woman is younger, the excess of glandular tissue can disturb the exam report, besides overloading the system with an excess of inconclusive exams (BI-RADS 0).(26) According to the Brazilian Society of Mastology, the Brazilian College of Radiology and Imaging Diagnosis and the Brazilian Federation of Gynecology and Obstetrics Associations, the beginning of screening for breast cancer in Brazil should be at the age of 40 and remain in follow-up until the age of 69, even so, and considering these references, only 27.2% of the interviewees answered correctly, a fact that demonstrates the lack of knowledge and information about secondary prevention.(27)

When asked how often mammography should be done in the general population of women, 80.6% believed that the correct interval to perform the exam would be annually, 16.3% voted every two years, 2.4% answered every three years, and 0.7% every five years. According to the Brazilian Society of Mastology, breast cancer screening should be performed annually.(27) On the other hand, the Ministry of Health, represented by the National Cancer Institute, recommends every two years.(4) The results reveal that none of the age groups followed the most widely applied protocol in the national territory, which is from the MH. On the contrary, the higher the age bracket, the choice for the exam with a one-year interval was proportionally higher and demonstrates that the patients themselves submitted to the exam do not recognize the protocol they are following. These results can be explained by the divergences between the guidelines that generate a certain degree of confusion in the population. In this sense a single and definitive regulation could contribute to a more uniform management.

When relating schooling to knowledge about the main breast cancer screening test, it can be seen that the assertive answers increase proportionally according to the level of schooling. As expected, mammography was chosen as the main screening exam

(56.4%). However, a fact that drew attention was the significant number of interviewees who, regardless of their level of education, believe that breast self-examination is still recommended both at home and in consultations, and that currently this recommendation has been modified and replaced by mammography, since evidence has already confirmed that self-examination does not reduce mortality and may lead women to an undefined diagnosis, besides triggering anguish and anxiety, furthermore, studies show that the rate of breast biopsy for benign disease was significantly higher among women taught to perform breast self-examination.(28,29) It is important to highlight that in the correlation education versus knowledge of the participants about the recommended age to start the mammography screening, results diverging from the expectation were obtained, since the great majority of the interviewees with complete college education believed that the first mammography exam should be performed before 40 years of age (44.8%), while the age recommended by the Brazilian Ministry of Health is 50 to 69 years and only 4.2% of the interviewees had this knowledge. Furthermore, a significant portion of the interviewees (66%) chose an early age, i.e., before 40 years of age, as the initial age for the first mammography test, which goes against the recommendations of the Ministry of Health and the Brazilian Society of Mastology, since the main risk factor for breast cancer is advanced age, starting the screening early can cause consequences with more risks than benefits.(4,27)

Finally, the results obtained in the first part of the questionnaire characterize the profile of the interviewees: white women, complete higher education, and family planning. Based on these data, it can be inferred that this is a sample with a privileged socioeconomic and intellectual level and that despite having regular gynecological consultations, they do not reflect the knowledge expected for the intellectual elite, corroborating that information about prevention is below of the ideal.

Another point of discussion is based on the fact that professionals, even receiving training to perform a complete gynecological consultation with physical examination of the breasts, sometimes do not do it, and with this they can compromise the diagnosis and follow-up, or worse, request unnecessary exams from the patient to compensate for the clinical evaluation not performed.

## 5 CONCLUSION

The data obtained show that most of the interviewees have doubts about the national protocols for early detection of breast cancer and outdated information is still disseminated, generating a negative impact on the health of the population, such as the overvaluation of breast self-examination. The efforts of a preventive medicine based on scientific evidence suggest encouragement of information through public policies that help educate the population about the techniques of prevention and health promotion that are proven to contribute to reducing the incidence, morbidity and mortality of breast cancer.

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