ORIGINALES

Spatial distribution of breast cancer tracking in a rural area of the family health strategy

Distribuição espacial do rastreamento do câncer de mama em uma área rural da estratégia de saúde da familia

Distribución espacial del seguimiento de cáncer de mama en un área rural de la estrategia de salud familiar

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ABSTRACT:
Objective: To demonstrate by means of georeferencing micro-areas with weaknesses in screening of breast cancer in the area of the Caxirimbu Family Strategy, rural zone of Caxias, Maranhão state, Brazil.
Methods: Sectional epidemiological research. A total of 211 women aged 40 to 69 years were surveyed between April 1 and September 1, 2015. The georeferencing technique was used with the production of geographical coordinates using GPS equipment and the production of spatial distribution maps.
Results: In the spatial distribution, it was found that breast cancer screening in the area covered by Caxirimbu has greater reach in the micro areas on the margins of MA 034 and in micro areas close to the health unit. In this coverage, it was found that of the 211 women interviewed, 133 (63.0%) had already undergone mammography, being close to the parameter indicated by the Ministry of Health, which is at least 70.0%. 42.0% (n= 56) had already undergone one mammogram; 36.0% (n= 48), two to three mammograms and; 22.0% (n= 29) reported having performed more than four mammograms. The map showed that 11 locations that tracking is inaccessible to women. In the spatial distribution, there was a greater distribution for irregular mammography performance, converging with its frequency of 80.0%.

Conclusion: The spatial distribution of the intervals practiced by women for mammography exams demonstrated that most of the execution and occurrence of inadequate intervals, identifying the need to implement an organized screening.

Keywords: Breast Neoplasms, Mass Screening, Primary Health Care.

RESUMO:
Objetivo: Demonstrar por meio do georreferenciamento microáreas com fragilidades no rastreamento do câncer de mama em na área da estratégia de Família do Caxirimbu, zona rural de Caxias – Maranhão.
Métodos: Pesquisa epidemiológica do tipo seccional. Foram pesquisadas 211 mulheres de 40 a 69 anos entre 01 de abril a 01 de setembro de 2015. Utilizou-se a técnica do georreferenciamento com produção de coordenadas geográficas por meio de equipamento GPS e produção de mapas de distribuição espacial.
Resultados: Na distribuição espacial verificou-se que o rastreamento do câncer de mama na área de abrangência do Caxirimbu tem maior alcance nas microáreas as margens da MA 034 e em microáreas próxima a unidade de saúde. Nesta cobertura, verificou-se que das 211 mulheres entrevistadas, 133 (63,0%) já haviam realizado a mamografia ficando próximo do parâmetro indicado pelo ministério da saúde que é de no mínimo 70,0%. 42,0% (n=56) já haviam realizado 1 mamografia; 36,0% (n=48), 2 a 3 mamografias e; 22,0% (n=29) informou ter realizado mais de 4 mamografias. A execução da mamografia e sua regularidade teve uma frequência de 26,0% e 20,0%, respectivamente. O mapa mostrou que 11 localidades esse rastreamento está inacessível para as mulheres. Verificou-se na distribuição espacial maior distribuição para execução irregular da mamografia convergindo com sua frequência de 80,0%.
Conclusão: A distribuição espacial dos intervalos praticados pelas mulheres para a realização dos exames de mamografia demonstrou que a maioria da execução e ocorrência de intervalos inadequados, identificando a necessidade de implementação de um rastreamento organizado.

Palavras-chave: Câncer de mama, Programas de Rastreamento, Atenção Primária à Saúde.

RESUMEN:
Objetivo: Demostrar mediante georreferenciación micro áreas con debilidades en el cribado del cáncer de mama en el área de Family Strategy Caxirimbu, área rural de Caxias, Maranhão, Brasil.
Métodos: Investigación epidemiológica seccional. Se entrevistó a 211 mujeres, con edades entre 40 y 69 años, entre el 1 de abril y el 1 de septiembre de 2015. La técnica de georreferenciación se utilizó con la producción de coordenadas geográficas utilizando equipos GPS y la producción de mapas de distribución espacial.
Resultados: En la distribución espacial, se encontró que el cribado del cáncer de mama en el área de Caxirimbu tiene un mayor alcance en las micro áreas en los márgenes de MA 034 y en las micro áreas cercanas a la unidad de salud. En esta cobertura, se encontró que de las 211 mujeres entrevistadas, 133 (63.0%) ya se habían sometido a una mamografía, estando cerca del parámetro indicado por el Ministerio de Salud, que es al menos el 70.0%. 42.0% (n = 56) ya se había sometido a una mamografía; 36.0% (n = 48), dos o tres mamografías, y el 22.0% (n = 29) informó haber realizado más de cuatro mamografías. El mapa mostró que 11 lugares de este examen son inaccesibles para las mujeres. En la distribución espacial, hubo una mayor distribución para la mamografía irregular, convergiendo con su frecuencia del 80.0%.
Conclusión: La distribución espacial de los intervalos practicados por las mujeres para los exámenes de mamografía demostró la mayor parte de la ejecución y la ocurrencia de intervalos inadecuados, identificando la necesidad de implementar una detección organizada.

Palabras clave: Neoplasias de la Mama, Tamizaje Masivo, Atención Primaria de Salud.

INTRODUCTION

Worldwide breast cancer incidence rates reach 2,088,849 in 2020, representing 11.6% of the total cases. Its incidence varies worldwide, with the highest rates in Australia and New Zealand with 94.2/ 100 thousand followed by Eastern Europe (92.6/ 100 thousand); Northern Europe (90.1/ 100 thousand) and North America with 84.8/ 100 thousand. The lowest rates were recorded in Middle Africa (27.9/ 100 thousand) and in Central and South Asia (25.9/ 100 thousand) [1].

This process has the following stages of growth: initiation stage in which genes are affected by cancerous factors such as genetic and environmental factors; promotion, the stage in which the oncopromotor agents act in the altered cell; and progression, characterized by the uncontrolled and irreversible multiplication of the cell[2].

In epidemiology, breast cancer is the most incident and prevalent cancer among women in the world. It presents a magnitude with the same trend of rates in developed and underdeveloped countries. In 2018, 11.6.0% of the total number of cancer cases in the world were diagnosed and approximately 12.078.849 million new cases were identified, thus emphasizing that the majority of cases are not detected in the initial phase[1].

Worldwide, excluding non-melanoma skin cancers, breast cancer is the most frequent and common malignant tumor among women, with an estimate, for the year 2012, of 1.67 million cases newly diagnosed, which corresponds to 25.2% of all female malignant tumors and an incidence rate of 43.3/100 thousand. It is the leading cause of cancer death among women, with an estimated 522 thousand deaths for 2012, which represents 14.7% of all deaths. Although breast cancer has a higher mortality rate than any other cancer (12.9/ 100,000), it has relatively low lethality, given that the mortality rate is less than a third of the incidence rate. It is also the most prevalent, with approximately 8.7 million survivors expected in 2012 [2].

For the year 2012, 1.67 million new cases of this type of cancer were expected in the world, representing an index of 25.0% of cases among all neoplasms in women. In different regions of the world, different incidences were observed in 2012, in Western Europe they were 96/100 thousand, lower rates in Central Africa and East Asia with 27/100 thousand cases[3].

The incidence trend has increased in most regions of the world. However, in highly developed countries, the incidence has reached stability followed by a decline in the last decade. Still in these countries, mortality rates have shown a declining trend since the late 1980s and early 1990s, reflecting a combination of improved early detection, through population screening, and more effective therapeutic interventions[2].

Regarding breast cancer in 2018 according to global epidemiological data from the agency GLOBOCAN, 2.1 million new cases of the disease and 627 thousand deaths are expected, and in Brazil there will be 59,700 new cases[4,5].

Multiple factors are involved in the etiology of breast cancer: age at first menstruation less than 12 years; menopause after 55 years; women who never got pregnant or never had children (nulliparity); first pregnancy after 30 years; use of some contraceptives and Hormone Replacement Therapy (HRT) in menopause, especially if for a long time; exposure to ionizing radiation; consumption of alcoholic beverages; hypercaloric diets; sedentary lifestyle; and genetic predisposition (due to mutations in certain genes transmitted in the family genetic inheritance - mainly by two high-risk genes, BRCA 1 and BRCA 2) [2-5].

In Brazil, in 2014, 57,120 new cases of breast cancer were estimated and a risk estimate of 56.09 cases for every 100 women. Breast cancer was the most prevalent in the South and Southeast, followed by the North, Midwest, and Northeast [3]. In the period from 2009 to 2011, the proportion of elderly women admitted to SUS diagnosed

with breast cancer varied 0.6 in the 60 years age group. Only In 2011, R$ 98,531,587.00 was spent on hospitalizations for breast cancer in elderly women[6].

For Brazil, 59,700 new cases of breast cancer are estimated for each year of the 2018-2019 biennium, with an estimated risk of 56.33 cases per 100,000 women. Without considering non-melanoma skin tumors, this type of cancer is also the first most frequent in women in the South (73.07/ 100 thousand), Southeast (69.50/ 100 thousand), Midwest (51.96/ 100 thousand) and Northeast (40.36/ 100 thousand). In the North Region, it is the second most incident tumor (19.21/ 100 thousand). In 2015, in Brazil, there were 15,403 deaths from breast cancer [2-7].

Gynecological consultation is an important work tool that the doctor and nurse of the Family Health Strategy have to exercise cervical cancer screening actions in women at risk. In this consultation they can advise women on the importance of screening tests, perform a clinical breast exam and collect the cytopathological exam. In addition, provide secondary prevention with mammography, so that, if there are any changes, such as nodules, cysts and microcalcifications, they can be identified early [8].

Mortality data shows that breast cancer, in Brazil, was the main cause of death in women in 2007, with data of 11.1 deaths per 100 thousand women. In the most developed regions of Brazil, South and Southeast, there were around 12.6 to 12.5 deaths per 100 thousand women only this year[3].

Biennial mammography for women aged 50 to 69 years is the recommended screening strategy, while early diagnosis is formed by the tripod: population alert to suspicious signs and symptoms; health professionals trained to assess suspected cases; and health systems and services prepared to ensure timely and quality diagnostic confirmation. In the second cycle of the National Program for the Improvement of Access and Quality of Primary Care (PIAQ), which had, in 2013, 88.7% of the primary care teams in Brazil, 90.8% of the teams reported that mammography it was requested by the team and carried out by the health services network. According to the 2013 National Health Survey, 60% of women aged 50 to 69 in the country had had a mammogram in the two years prior to the date of the survey. This proportion varied according to Regions, being 38.7% in the North, 47.9% in the Northeast, 55.6% in the Midwest, 64.5% in the South and 67.9% in the Southeast[9].

In the screening of breast cancer, the National Cancer Institute (NCI) guides the performance of a mammogram for women aged 50 to 69 years, with a maximum of one every two years. Women over 40 can undergo a clinical breast exam every year and, from 35 years onwards, women who are part of a risk group, must undergo mammography and clinical breast exam annually[10].

In the public health system in Brazil, the recommendations of the Brazilian Society of Mastology and American entities such as the American College of Radiology, American Society of Cancer and the American Society of Gynecology and Obstetrics follow, recommending that women over 40 years old should perform screening mammograms annually. These recommendations were also reinforced by Federal Law No. 11,664 of April 22, 2008 [11].

Currently, some debates have occurred about the benefits and harms of population mammographic screening as a strategy to reduce mortality. In analysis of the clinical trials carried out, screening for breast cancer performed with mammograms indicates

excessive tumorectomy, mammography and radiotherapy procedures, in addition to false positive results, increased costs, pain, anxiety, stress and psychological disorders. These reviews concluded that mammographic screening reduces mortality, however, some of them showed methodological flaws. These studies were insufficient and are closer to uncertainties, however, this information must be offered clearly so that the women selected for screening can make their decisions [12-13].

In the Caxirimbu Family Health Strategy in Caxias, state of Maranhão, Brazil, there is no systematization of records and alerts for breast cancer screening, and there are no organizational tools available to guarantee the recording of information on the interval between controls performed by women. area for the Family Health Strategy team. Thus, it is questioned how to qualify the control of women who perform a preventive exam for breast cancer in rural areas?

The objective of this study is to characterize the spatial tracking of breast cancer practiced by the Family Health Strategy of Caxirimbu, rural area of Caxias, Maranhão.

METHOD

Cross-sectional study of descriptive exploratory character. The research was performed in the Caxirimbu locality, rural area of Caxias, state of Maranhão, Brazil, located 20 kilometers from the urban perimeter, the southern region in the first district of Caxias.

In the town of Caxirimbu, in 2015, there was a population of 2,949 inhabitants, 1,484 of which correspond to the population of women, and of these 465 were aged between 40 and 69 years. The sample size was based on the population of 465 women aged 20 to 59 years, registered in 2014 at the in the Family Health Strategy of Caxirimbu. Data collection was carried out randomly and for convenience, according to the distribution of residences in the health districts of the researched rural location. The sample size was 211 participants, with a confidence level of 95.0% and a margin of error of 5.0%.

Women aged> 25 to <65 years were included; have registration on the registration form by the Community Health Agent (CHA) and be a resident of the household in the locality before January 1, 2012. Women with temporary residence in the locality were excluded; family visitors during the collection period and who do not belong to the locality and those who have some functional difficulty (memory, cognitive, speech) to answer the interview.

The research was carried out from June 1 to August 1, 2015 based on a schedule programmed by the CHA. The tool used in the interview was a questionnaire containing questions related to sociodemographic data, risk factors and information related to the mammographic screening data practiced.

The research was carried out at home with the aim of facilitating the participation of selected women. During the collection, an environment of privacy for the woman was promoted. In order to achieve the goal of producing the georeferencing of tracking practiced by women, the signal of latitude and longitude points was captured by GPS equipment (Global Positioning System) as a previous procedure when arriving at home for tabulation and production of distribution maps space. The georeferencing

technique was used, obtaining geographic information with Regular and Irregular mammography exams.

The georeferencing maps produced from the captured latitude and longitude points were created using the website http://www.garmin.com.br/br/mapas/. From the identification of the coordinates in the Garmim site map, the juxtaposition with the area map was made. Then these were paired where the overlap was made and with the location points in black and gray the information regularity and irregularity respectively.

After completing the collection in the area, the questionnaires were reviewed, stored in the SSPSS version 2.1 program, and then data were generated and analyzed through absolute and relative frequency and discussed according to the bibliographic reference and other research published in the area.

The research was submitted to and approved by the Research Ethics Committee of the UNISINOS: Vale do Rio do Sinos University in Porto Alegre, State of Rio Grande do Sul, Brazil under approval number 1.011.293, according to Resolution nº 466/2012 of the Brazilian National Health Council.

RESULTS

Among the characteristics of the interviewees, 154 (73.0%) were aged between 40 and 50 years; 165 (78.0%) had incomplete primary education and were not literate. 81.0% (n= 171) lived with spouses; 61.0% (n= 128) had an income below the minimum wage and 88.0% (n= 185) had afro-descendant ethnicity.

Graphic 1: Distribution of women who underwent and did not undergo cancer and breast screening in Caxirimbu, rural Caxias- MA, 2015.
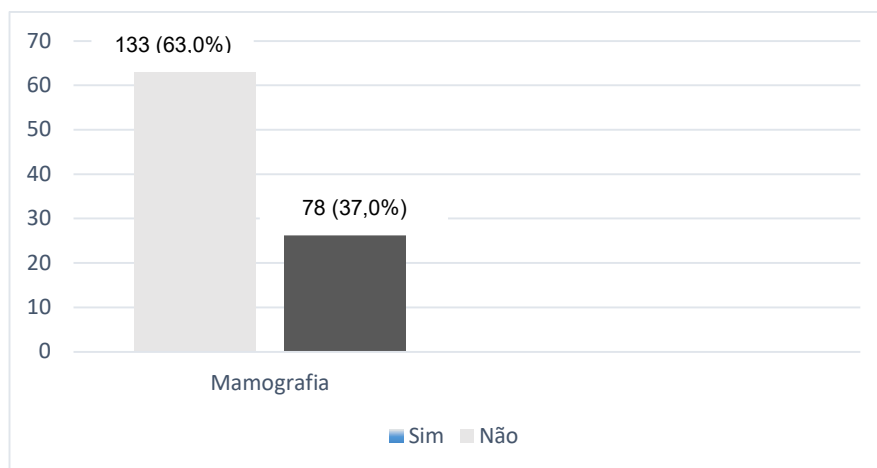

Source: Research data (2015).

The interviewees who performed the most mammograms were characterized as: older than 50 years, married, with incomplete primary education, with income above 2 minimum wages and white. Those who underwent mammography were less than 50 years old, stable, with incomplete primary education, without income and black color.

The Caxirimbu Family Health Strategy needs to improve the mammography exam registration information, in order to provide a solid basis for monitoring and evaluating

the status of the area's screening, especially to the community health agent, for the organized recruitment of these women.

Figure 1: Geographic distribution of the visited households of women who performed and did not perform the mammographic examination, in Caxirimbu, rural area of Caxias- MA, 2015.
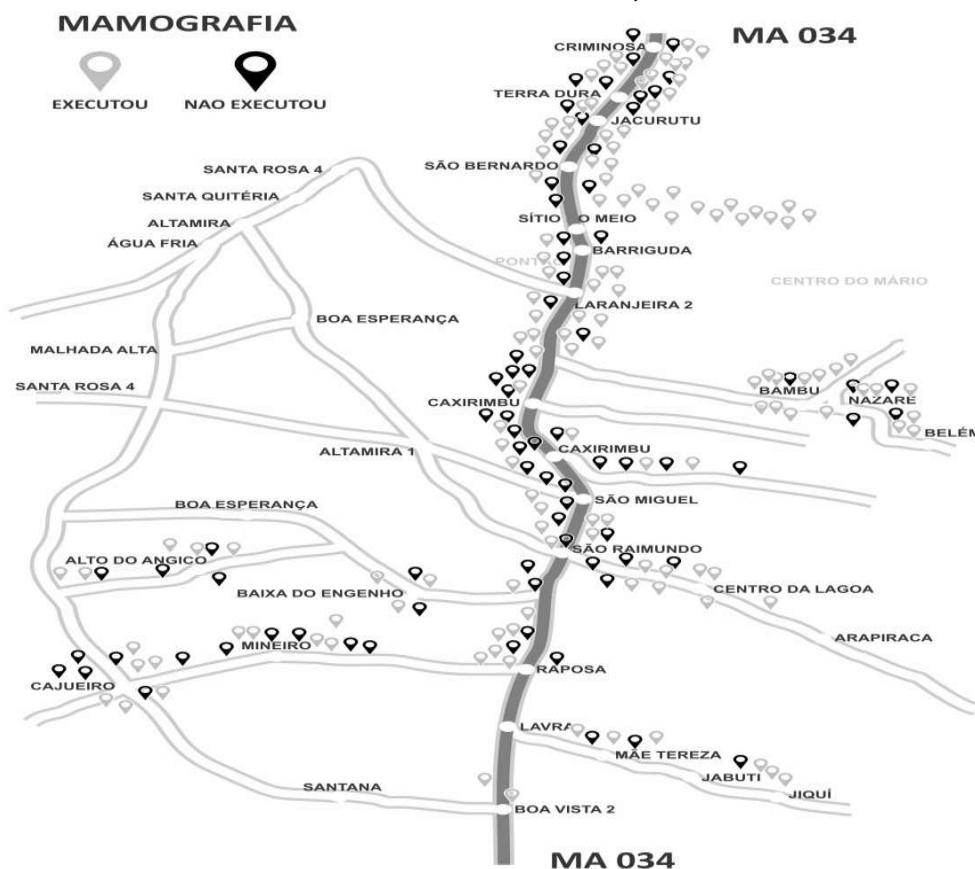

The women interviewed concentrated more on the micro areas close to the state highway (MA 034), which can be justified by the fact that this important route facilitates access to the basic family health unit. A higher concentration of households/ women without mammography was observed in the nearby areas than in the distant ones. In 65 households surveyed and located near the reference unit, it was found that 34 women did not perform the screening. Thus, living close to the service is not a condition that guarantees the execution of the screening of these women, the health team being aware of this fact in order to elaborate a strict control of the executions and their respective intervals. (Figure 1).

In general, a tendency towards adherence to breast cancer screening in the age group 41 to 60 years was observed among the women surveyed. However, among those who performed with those women who did not, there was an oscillation of 1.0% more for the non-performance of mammograms in this age group from 41 to 60 years old with a prevalence of 73.0% and 74.0%, respectively.

The positive indicator in the age group of 51 to 60 years old was the level of occurrence of mammograms that was higher in relation to those who did not undergo the exam, in the proportion of 2.7 women who undergo mammography for each one woman who did not take this exam.

Figure 2: Geographic distribution of the visited households of the women who performed the mammographic exam on a regular and irregular basis, in Caxirimbu, rural area of Caxias - MA, 2015.
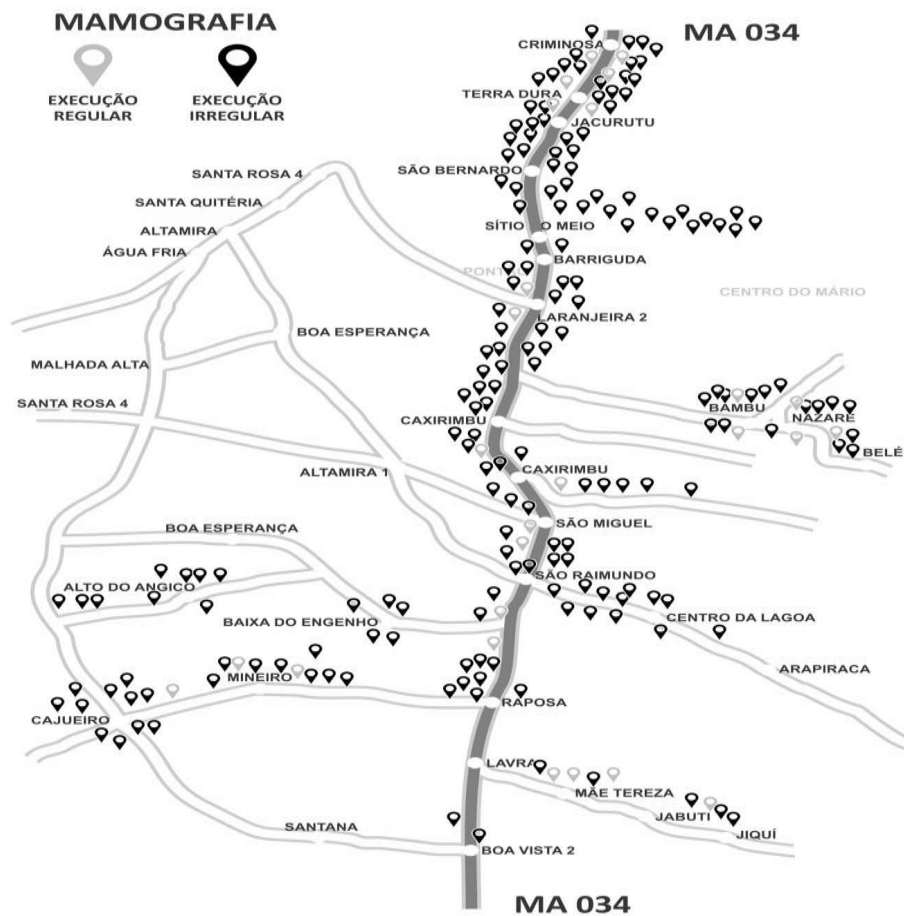
The performance of mammography and its regularity had a frequency of 26.0% and 20.0% respectively. The sample showed a greater tendency for non-execution and irregularity on mammography with a frequency of 37.0% and 80.0%, respectively (Figure 2).

Women in the sample over 60 years old represented 25.0% (n= 33), with an interval between one to three years of examination with 20.0% (n= 28). Only 3.5% (n= 5) of these performed their screening mammogram in an interval of 3 to 10 years. The 41 to 60 age group had a wide variety of intervals, however, they tended not to perform mammography in the interval of three and ten years, or to report any intervals performed.

In the aspect of deficit and inadequate screening, there was a greater tendency for non-execution and irregularity in mammography with a frequency of 37.0% and 80.0%, respectively.

DISCUSSION

Regarding the variable mammography, the study in the Caxirimbu locality, rural zone of Caxias- MA in 2015, revealed that out of a total of 211 women, 133 had already

undergone the screening mammography, and therefore had a coverage of 63.0%, different from the parameters recommended by the United States Preventive Services Task Force, which recommends a minimum 70.0% coverage of screening mammograms, which may reduce mortality by 15.0% to 23.0% [14].

In the period from 2010 to 2014, the production of mammograms in Brazil increased by 33.0%, with the type of screening mammography not increasing by 36.0% and those of diagnosis fell by approximately 25.0% [15].

A study published in 2011 highlighted that in Maranhão (Brazil) 62.8% of women do not undergo breast self-examination; 64.8% of the interviewees aged 10 to 49 years old do not undergo a clinical breast exam and; 92.5% never underwent mammography.[14] In general, the interviewees performed more cervical oncotic cytology than mammograms. Thus, the parameter verified was 6 mammograms not performed for each cytology not performed in the risky age group.

In the present study, the prevalence of women over 50 years old without a mammographic exam was 27.0% (n= 21) and with the execution of the mammographic exam this prevalence was 44.0% (n = 58). Thus, among women identified without mammographic screening and with a family history of risk for breast cancer, the frequency was 5.0% (n = 4).

The opportunistic screening model practiced in the Caxirimbu Family Health Strategy does not favor the reach of the tracking coverage in line with the fragile results identified. Thus, although it has shown proximity to the recommended goal, the screening mammograms indicator was outside the standardized by the Ministry of Health of Brazil.

The positive indicator of coverage in the age group 51 to 60 years of age was the level of mammograms performed higher than those who did not undergo the examination, in the proportion of 2.7 women who perform for each woman who did not undergo this examination.

The NCI directs the execution of a screening mammogram for women from 50 to 69 years old, at the maximum limit of one every two years; women over 40 years of age can undergo a clinical breast exam every year and; women 35 years of age and older, who are part of an increased risk group for breast cancer must undergo mammography and clinical breast examination annually [10].

Thus, it was found that 29.0% (n= 39) of women aged 40 to 50 years underwent mammographic screening without being in the highest risk age group. The Brazilian Society of Mastology recommends mammograms for women over 40 and the World Health Organization does not condemn this practice in countries that are able to offer it.

An important population-based study in several cities in Maranhão showed that, in the age group of 40 to 49, 16.7% (n= 487) of participants had mammographic screening. In the 10 to 34 age group, none of the participants had undergone mammograms. Over the age of 34, 767 women participated in this study, with only 28.4% (n= 218) reporting having already had mammograms. Of the 3,370 women interviewed in the 10 to 49 age range, 86.57% (n= 2,888) had already performed some method of breast

cancer screening among them, the following stand out: breast self-examination (35.2%), clinical breast examination (35.2%) and mammograms (7.5%) [16].

Screening for breast cancer is one of the main health care policies for women, in which nurses actively participate in all actions within this process effectively, favoring women's access to the health care network and also developing other health education actions, encouraging women to access mammograms, working individually and in a multidisciplinary team[17].

Aligning the study carried out in 2014 with research in the Caxirimbu locality in the rural area of Caxias- MA according to the positive parameters of the National Cancer Institute, it was found that the performance of the exam with an interval of one year and three years was higher in the Caxirimbu sample and lower in the interval two years. The interviewees who reported having already undergone a mammographic screening test (133), of these 42% (n= 56) had already undergone a mammogram; followed by 36% (n= 48) who had undergone two to three mammograms and the minority 22% (n = 29) reported having performed more than four mammograms[18].

This study sets a precedent so that in the future managers and professionals of primary health care in particular, nurses produce tools (applications, software) to analyze within their territory the reality of this spatial distribution and thus identify points in this territory/ area that need to be concentrated efforts to improve and implement organized tracking. These produced maps can compose the situation rooms for the monitoring of their respective health teams. In this aspect, this study becomes relevant and promotes the needs of these reflections.

Corroborating with our reflections, the Pan American Health Organization (PAHO) reports on the situation room as a physical (and virtual) space, where a work team analyzes health information to support health management, having a transcendent role during health contingencies. The work team first elaborates the Health Situation Analysis (HSA) of a population or groups of populations. From the presentation and discussion of HSA, health priorities are established, defined in health plans and linked to technical goals. The health situation room is a tool that favors the use of health information for decision making. A tool, since it is a work proposal that facilitates the task of analyzing health information and linking it to government health management. Thus, the health situation room supports decision-making processes in two directions: on the one hand, it serves the manager (usually a municipal, state secretary or Minister of Health itself) for monitoring or evaluating health policies and programs; and on the other hand, it supports the decision that the team makes and which culminates in the basic health units, where the primary data is generated.[19]

CONCLUSION

Analyzing the spatial distribution of the intervals practiced by women for the performance of mammography exams, most demonstrated the execution of inadequate intervals, identifying the need to implement an organized screening. The analysis of the spatial distribution showed irregular tracking in the different mapped geographic points where the proximity of residence to the service is not a guarantee of the performance and regularity of the mammographic examination by parts of the women who lived there.

Organizing screening can reduce the incidence of breast cancer. Thus, the early diagnosis of breast cancer combined with health promotion actions can impact on the social determinants of the health-disease process, promoting quality of life for the population of vulnerable women. Information and easy access to the service are paramount issues for the control of this cancer.

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