REFACS

Delay in the first medical appointment after noticing signs/symptoms of breast cancer*

Atraso na primeira consulta após percepção dos sinais/sintomas de câncer de mama

Retraso en la primera consulta después de la percepción de los signos/síntomas del cáncer de mama

Milena Edite Case de Oliveira[1]
Tiago Almeida de Oliveira[2]
Tácila Thamires de Melo Santos[3]
Lorena Sofia dos Santos Andrade[4]
Mathias Weller[5]

This is a quantitative and cross-sectional study carried out between 2016 and 2019, in two oncology reference centers in the state of Paraíba, Brazil, which aimed to identify factors that led to the delay between the perception of signs/symptoms of breast cancer and the first appointment with a healthcare professional. A delay was considered when this interval was greater than 60 days. 141 women participated in the research. For statistical analysis, Kaplan-Meier Analysis and Cox Regression were used. The results showed that women who had access to private health services (95% CI: 0.003-0.24, p <0.01), who underwent early detection (95% CI: 0.02-0.46, p <0.01) and who had their symptoms perceived through screening tests (95% CI: 0.05-0.79; p = 0.02) had a lower risk of delay. The study indicates barriers of access for women who used public services in the state of Paraíba, as well as the fact that going through screening tests is an important factor in reducing delay.
Descriptors: Breast Neoplasms; Delayed Diagnosis; Health Services.

Este é um estudo quantitativo e transversal realizado entre 2016 a 2019, em dois centros de referência em oncologia da Paraíba, que teve como objetivo identificar os fatores que levaram ao atraso entre a percepção dos sinais/sintoma do câncer de mama e a primeira consulta ao profissional de saúde. Foi considerado atraso quando esse intervalo foi maior que 60 dias. Participaram da pesquisa 141 mulheres. Para a análise estatística foram utilizadas a Análise de Kaplan-Meier e Regressão de Cox. Os resultados mostraram que mulheres que tinham acesso aos serviços de saúde particulares (IC 95%: 0.003-0.24, p<0,01), que realizavam exames de detecção precoce (IC 95%: 0.02-0.46, p <0,01) e que tiveram seus sintomas percebidos através de exames de rastreamento (IC 95%:0.05-0.79; p= 0,02) tinham menor risco de atraso. O estudo indica barreiras de acesso para as mulheres que utilizaram o serviço público do estado da Paraíba, bem como que a realização de exames de rastreamento apresenta-se como fator importante para a diminuição do atraso.
Descritores: Neoplasias da Mama; Diagnóstico Tardio; Serviços de Saúde.

Este es un estudio cuantitativo y transversal realizado entre 2016 y 2019 en dos centros de referencia en oncología de Paraíba, Brasil, cuyo objetivo fue identificar los factores que provocaron el retraso entre la percepción de los signos/síntomas del cáncer de mama y la primera consulta con el profesional de la salud. Se consideró un retraso cuando este intervalo fue superior a 60 días. Participaron 141 mujeres en la encuesta. El Análisis de Kaplan-Meier y la Regresión de Cox se utilizaron para el análisis estadístico. Los resultados mostraron que las mujeres que tenían acceso a servicios de salud privados (IC 95%: 0.003-0.24, p<0,01), que realizaban pruebas de detección temprana (IC 95%: 0.02-0.46, p <0,01) y que percibieron sus síntomas a través de pruebas de detección (IC 95%: 0.05-0.79; p= 0,02) tenían un menor riesgo de retraso. El estudio indica las barreras de acceso para las mujeres que utilizaron el servicio público en el estado de Paraíba, así como que la realización de pruebas de detección es un factor importante en la disminución del retraso.
Descriptores: Neoplasias de la Mama; Diagnóstico Tardío; Servicios de Salud.

1. Psychologist. Master in Public Health. PhD student in Cognitive Neuroscience and Behavior at the Universidade Federal da Paraíba, Joao Pessoa, PB, Brazil. ORCID: 0000-0003-2266-5890 E-mail: milacdo1@gmail.com
2. Statistican. Master and PhD in Statistics and Agronomic Experimentation. Professor at the Department of Statistics at the Universidade Estadual da Paraíba (UEPB), Campina Grande, PB, Brazil. ORCID: 0000-0003-4147-7721 E-mail: tadolive84@gmail.com
3. Nurse. Master in Public Health. Professor at the Centro Universitário Maurício de Nassau and Substitute Professor at the Nursing Department at UEPB, Campina Grande, PB, Brazil.ORCID: 0000-0001-7487-0605 E-mail: tacimelotj@hotmail.com
4. Biologist. Nurse. Master in Public Health. Campina Grande, PB, Brazil. ORCID: 0000-0003-4766-1482 E-mail: lorena_sofiacg@hotmail.com
5. Biologist. Master in Biology. PhD in Genetics. Associate Professor of the Postgraduate Program in Public Health at UEPB, Campina Grande, PB, Brazil. ORCID: 0000-0002-5881-4256 E-mail: mathiasweller@hotmail.com

INTRODUCTION

Breast cancer is considered a public health problem and one of the main causes of female mortality in the world[1]. For the year 2018, the estimate is 2,088,849 new cases of female breast cancer in the world, with an estimated 626,679 deaths in the same year[2]. The change in lifestyle and longer life expectancy can lead to an increase in the incidence of breast cancer in developing countries, while the rates in developed countries have been showing stability[3].

In Brazil, there are an estimated 59,700 new cases of breast cancer for the 2018-2019[4] biennium. In the southern regions of Brazil, including the country's largest urban centers, São Paulo and Rio de Janeiro, the incidence of breast cancer remained stable. This contrasts with the Northeast region, which showed an increase in the disease between 2005 and 2018, from 27.23 to 63.98 new cases per 100,000 women[4,5].

Treatment delays are considered one of the main reasons for high breast cancer mortality rates in developing countries, and refer to the time interval between recognition of symptoms and start of treatment[6].

The delay in diagnosis can be subdivided into four stages, namely: (1) The date of the first symptom, defined as the moment when the first bodily changes are noticed; (2) The date of the first presentation, which consists of the referral of a health professional to the investigation of possible pathologies; (3) Referral date, where there is a transfer of responsibility from a health professional to a specialized service; (4) Date of diagnosis, referring to any time interval that begins or ends with the diagnosis[7]. The date of the first symptom is considered: the date when the first bodily change was noticed, the date on which the first symptom was noticed, the date when the person perceives a reason to discuss the symptom with a health professional, and the date when the high-risk symptom was perceived[7].

Brazilian studies show a relationship between delayed diagnosis and advanced stages of the disease (III and IV), which leads to a worse prognosis[8,9]. As factors that lead to the delay of the patient, it is considered: educational level, marital status, not recognizing signs and symptoms, fear of death and not having a health service at the place of residence[8,10,11].

There are studies that sought to analyze the delay for the first medical appointment in Brazil[9,11,12]. A survey showed that, in the state of Paraíba, 41% of women start treatment for breast cancer in advanced stages[11,13]. In addition, the studies that analyzed this time interval focused on the analysis of risk factors such as the woman's perception of illness and sociodemographic factors. However, other variables were not analyzed to explain the delay, such as: the difference between public and private health services in the interference of time before the diagnosis of the disease.

The Brazilian population can have access to free health through the Unified Health System (*Sistema Único de Saúde - SUS*), or, a part of it, can invest in private health services[14]. However, most of the Brazilian population depends exclusively on the public health service[15].

It is assumed that women who depend exclusively on the public health service have a higher risk of delay. Thus, the objective of this study was to identify factors that led to the delay between the perception of the signs/symptoms of breast cancer and the first appointment with a health professional. A delay was considered when this interval was greater than 60 days.

METHOD

This is a quantitative, analytical and cross-sectional study[16], in which we sought to analyze the time interval between the perception of the signs/symptoms of breast cancer and the first consultation with the health professional in women with breast cancer in the state of Paraíba.

Data were collected at two oncology reference centers, which are responsible for more than 90% of all breast cancer patients in the state of Paraíba, between October of 2016 and March of 2019.

The following inclusion criteria were used: women, over the age of 18, who were diagnosed with breast cancer in the last three years from the date of data collection, who were undergoing treatment at one of the two reference centers analyzed and whose the first perception of signs/symptoms came from themselves, from a family member, or from screening tests. Those who were undergoing treatment for disease recurrence and who had cognitive deficits that prevented data collection were excluded from the study.

The data collected were: sociodemographic and information on the dates of perception of the signs/symptoms and the first appointment with a health professional were collected through the application of a form constructed by the researchers, in this case through interviews. Data on the clinical characteristics of the disease were consulted through clinical records.

Patients were asked about preventive behavior, age, education, marital status, occupation, family income, health insurance status, whether they had symptoms before diagnosis, the type of symptom, the type of health service they had access to and whether they knew how to recognize symptoms. A delay of more than 60 days was considered[11] between the first recognition of signs/symptoms and the first consultation with the health professional.

Statistical analysis was performed using software R (version 3.4.3). The p-values were determined by likelihood ratio tests. The selection of variables for the adjusted model was obtained through stepwise.

The Kaplan-Meyer test was used for the descriptive analysis of the data, the time interval >60 days was defined as an event. The follow-up time considered patients between the years 2016 and 2019. Cox regression was used for multiple analysis, obtaining the risk ratio (RR) and confidence interval (95% CI), considering $p < 0.05$.

The research was approved by the National Research Ethics Committee (CONEP; CEP-UEPB, under filling number: 2.201.826, CAEE: 63083816000005187). Written informed consent was obtained from each participant in order for them to take part in the study and subsequent publication of data. As this is a research carried out with human beings, this study followed the guidelines of the Declaration of Helsinki, from 2000.

RESULTS

141 women were interviewed. Most of the sample consisted of women aged 50 or over, with educational lever greater than or equal to 12 years of study and with monthly income between 1 and 2 minimum wages (Table 1).

The median time interval between the perception of signs/symptoms and the first consultation with a health professional was 41 days (range: 0-1,592). It was considered 0 days for women who had their first consultation with the health professional on the same day they noticed the signs/symptoms. A total of 81 (57.4%) women had their first consultation with the health professional within 60 days after the perception of symptoms and 60 (42.6%) women sought this service after 60 days of perception (Table 1).

Regarding clinical signs/symptoms presented before diagnosis of the disease, 85 (60.1%) reported having a node, 26 (18.4%) women reported not having any apparent symptoms, but signs were perceived by screening tests, 20 (14.2 %) women had other symptoms, not including the presence of a node, and 10 (7.1%) had both a node and other symptoms (Table 1).

Among other symptoms presented were reported: pulmonary hemorrhage, transparent fluid, breast depression, swollen breast with areolar retraction, painful breast abscess,

inverted areola, breast with inflamed aspect, breast pain, breast regurgitation, "breast burning", inflammatory signs in the left breast, breast protuberance, breast fissure".

Table 1. Sociodemographic and clinical data of women with breast cancer. Paraíba, 2019.

Variables	No e %	Events^{variable*} (%)	Median
Age			
< 40 years	14 (9.9)	10 (71.4)	170
≥ 40 years < 50 years	40 (28.4)	14 (35.0)	144
≥ 50 years	87 (61.7)	36 (41.4)	152
Educational level			
Illiterate	12 (8.5)	8 (66.6)	182
< 12 years of education	50 (35.5)	19 (38.0)	143
≥ 12 years of education	79 (56.0)	33 (41.7)	144
Marital status			
Has a partner	80 (56.7)	33 (41.3)	133
No partner	61 (43.3)	27 (44.3)	182
Work			
Yes	50 (35.5)	24 (48.0)	154
No	91 (64.5)	36 (39.5)	150
Family income			
< 1 minimum wage	6 (4.3)	3 (50.0)	120
≥ 1 < 2 minimum wages	91 (64.5)	40 (44.0)	154
≥ 2 minimum wages	44 (31.2)	17 (39.0)	144
Had any symptoms before diagnosis			
Yes	115 (81.6)	53 (46.1)	148
No	26 (18.4)	8 (5.7)	194
Which symptoms?			
None	26 (18.4)	8 (30.8)	194
Node	85 (60.1)	36 (42.6)	148
Node and others	10 (7.1)	4 (40.0)	194
Others	20 (14.2)	12 (60.0)	110

*People with interval higher than 60 days

After stepwise selection and estimation of the Risk Ratio of the adjusted final model, considering the delay greater than 60 days between the perception of signs/symptoms and the first consultation with a health professional, data indicate that the group of women included in the age group greater than or equal to 50 years old presented 3.21 times more risk of delay when compared to women under the age of 40 years (95% CI: 0.66-4.58; p = 0.024) (Table 2).

Women who claimed to have access to private services or in both types of services (public and private) decreased the risk of delay, by 97% (95% CI: 0.003-0.24) and 98% (95% CI: 0.003-0.25 respectively)), when compared to those who only had access to the public health service (p <0.01) (Table 2).

Participants who reported performing early detection tests reduced the risk of delay by 90% when related to those who did not perform the tests (95% CI: 0.02-0.46; p <0.01). In relation to early detection exams, those who claimed to perform the breast self-examination at least once a year decreased the risk of delay by 91% when compared to those who rarely performed the self-examination (95% CI: 0.02-0.34, p <0.01). And those who underwent mammography at least once a year decreased the risk of delay by 80% when compared to those who rarely underwent mammography (95% CI: 0.05-0.74; p = 0.01) (Table 2).

Regarding the perception of signs/symptoms, women who claimed that the first person to notice the symptoms was a family member, decreased the risk of delay 68% when compared to those who reported that they themselves noticed the symptom (95% CI: 0.08-1.16; p = 0.08). And women who reported that signs/symptoms were perceived through screening tests decreased the risk of delay by 79% compared to those who perceived it themselves (95% CI: 0.05-0.79; p = 0.02) (Table 2) .

Table 2. Risk Ratio (RR) and confidence interval (95% CI) of the Cox regression analysis for variables before the first consultation with the health professional. Paraíba, 2019.

Variable	N (%)	Events[variable*] (%)	Median	RR[adjusted] (95%IC)	P
Age					
< 40 years	14 (10.0)	10 (71.4)	170	Ref.	
40 to 49 years	40 (28.3)	14 (35.0)	144	1.74 (0.66-4.58)	0.261
≥ 50 years	87 (61.7)	36 (41.4)	152	3.21 (1.16-8.89)	0.024**
Has Private Health Insurance					
No	15 (10.6)	6 (40.0)	98	Ref.	
Yes	126 (89.4)	54 (42.8)	166	0.30 (0.07-1.29)	0.107
Services patient had access					
Public	5 (3.5)	2 (40.0)	90	Ref.	
Private	99 (70.2)	43 (43.4)	182	0.03 (0.003-0.24)	0.001*
Both	37 (26.3)	15 (40.5)	102	0.02 (0.003-0.25)	0.001*
Knew how to recognize symptoms					
No	76 (53.9)	30 (39.5)	144	Ref.	
Yes	65 (46.1)	30 (46.2)	169	0.50 (0.24-1.03)	0.062
Did early detection exams					
No	85 (60.3)	34 (40.0)	120	Ref.	
Yes	56 (39.7)	26 (46.4)	179	0.10 (0.02-0.46)	0.002*
Performs Breast Self-Examination					
Rarely	83 (58.9)	40 (48.2)	150	Ref.	
At least once a year	58 (41.1)	20 (34.4)	183	0.09 (0.02-0.34)	<0.001*
Does Mammography exam					
Rarely	90 (63.8)	40 (44.4)	154	Ref.	
At least once a year	51 (36.2)	20 (39.2)	138	0.20 (0.05-0.74)	0.016*
Who noticed it first?					
The patient	114 (80.9)	53 (46.5)	144	Ref.	
Family member	6 (4.2)	3 (50.0)	302	0.32 (0.08-1.16)	0.084
Screening exams	21 (14.9)	4 (19.0)	380	0.21 (0.05-0.79)	0.021*

*People with interval higher than 60 days   ** p < 0.05

DISCUSSION

The results indicated that women over 50, who only had access to the public health service, who did not perform early detection tests and who noticed their symptoms themselves had a higher risk of delay.

Women who used only the public health service before the first medical appointment, showed greater delay when compared to those who used private services, or private and public services concurrently. These findings are similar to those found in other Brazilian states, where women who used public health services had more delays compared to private health services[8,9,12,17].

The delay between perception of signs/symptoms and the first appointment with a health professional was associated with a lack of financial resources in a recent study conducted in Mexico[6]. This is often due to lack of guidelines for referral or request for subsidiary exams by a health professional, due to the lack of knowledge of signs and symptoms of neoplasia[18,19].

Women who reported having undergone early detection tests, and those who reported performing breast self-examination and mammography at least once a year, reduced the risk of delay in the first medical appointment when compared with those who did not perform any

tests. The Ministry of Health contraindicates the teaching of breast self-examination as a method of screening for breast cancer, as it considers that the possible damages outweigh the possible benefits[20].

Thus, mammography remains the most indicated, as it allows detection even in the asymptomatic phase of the disease, reducing the risk of late diagnosis[21,22]. The favorable result, therefore, may indicate that women who perform breast self-examination have greater preventive attitudes related to detection of breast cancer.

These results corroborate another study[23], in which barriers associated with non-adherence of mammography at an individual level may be related to the knowledge of signs and symptoms and the patient's attitude towards the perception of symptom. There is a deficiency in health education actions, as it does not emphasize the importance of carrying out screening tests by women[23]. There are other factors that are interrelated with this problem, such as the lack of mammography devices available by SUS. In this sense, the health system is identified as one of the determinants of the population's access barrier to mammographic examination[23].

Women who had their signs perceived through screening tests decreased the risk of delayed diagnosis, compared with those who noticed their own symptoms. A study suggests the type of breast symptom and emotional stress as factors that influence the woman's delay in seeking a diagnosis after the perception of signs/symptoms[24]. Many women relate breast cancer to the perception of a breast lump, disregarding other signs and symptoms from the disease. Thus, the presence of partial and erroneous knowledge about the risk of breast cancer by women, and of the various symptoms that involve cancer, minimizes the benefit of early diagnosis[24].

Most of the sample consisted of women aged 50 or over, and women in this age group had a higher risk of delay in the first medical appointment when compared to women under the age of 40. This is justified since it is the age group with the highest risk of breast cancer incidence[4].

CONCLUSION

The limitations of this study are the low number of participants and the bias in the reliability of some information, due to the fact that women were questioned by events in the past. As a way of minimizing the limitations, we sought to collect women who started treatment with a maximum period of three years until the date of collection. In turn, this work corroborates the existing research on the delay in the first medical appointment, after the detection of signs/symptoms of breast cancer, as well as raises directions regarding the public policies of the state of Paraíba, since it deals with of a complex and multifactorial problem.

Despite the existence of public policies aimed at the early detection of breast cancer, data show a greater delay in women who used exclusively the public health system, showing the social vulnerability of these women and the difficulty in promoting equity with effective actions that enable the diagnosis of neoplasia in early stages.

Thus, it is considered necessary to propose interventions aimed at facilitating access to the first medical appointment, mammography, in addition to health education in the face of signs and symptoms of breast cancer, with a view to promoting an increase in women's adherence to diagnostic tests and importance of early diagnosis, as well as early recognition of signs and symptoms of breast cancer.

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CONTRIBUTIONS
Milena Edite Case de Oliveira contributed to data collection and analysis, writing and revision. **Tiago Almeida de Oliveira** worked in data collection and analysis. **Mathias Weller** and **Tácila Thamires de Melo Santos** collaborated in the design and revision. **Lorena Sofia dos Santos Andrade** participated in data collection and analysis and revision.

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