

## RESEARCH ARTICLE

# Functional Disability in Women Submitted to Breast Cancer Treatment

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### Abstract

The objective of the study presented herein was to verify the prevalence of functional disability and its associated factors in women submitted to breast cancer treatment. A cross-sectional study was carried out, in 101 women diagnosed with malignant breast cancer neoplasm, who underwent cancer treatment at least 12 months before the study, and remained under clinical monitoring. Functional disability was measured by the DASH instrument. Data collection included variables related to socioeconomic characteristics, life habits, health conditions, clinical tumor characteristics and therapeutic approach. Bivariate analysis was carried out by Pearson's chi-square test or Fisher's exact test, calculating the prevalence ratio with a 95% confidence interval. Multivariate analysis utilized Poisson's Regression with robust variance. A statistical significance of 0.05 was considered. Prevalence of functional disability in the studied sample was 22.8% (CI95% 13.9-31.6). Functional disability was statistically significantly associated with age ( $p = 0.035$ ) and access to health services ( $p = 0.028$ ). It was concluded that younger patients suffered higher impact of breast cancer treatment on disability. Regarding access to health services, women that received public clinical monitoring reported higher occurrences of functional disability. This pointed towards the necessity of more organized, less bureaucratic, and effective health services in the assistance network, directed to the minimization of the impacts of cancer treatment on health and life conditions of breast cancer survivors.

**Keywords:** Oncology- breast cancer- functional disability- access to health services- public health

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### Introduction

Breast cancer presents high incidence rates and is, currently, the second most frequent type of cancer in the world (preceded by lung cancer), and the most incident in the female sex (Tao et al., 2015). Besides its high incidence, breast cancer is responsible for high mortality rates, presenting epidemiological relevance and important social impact (Toyoda et al., 2016). It is estimated that in 2020 this type of neoplasm will be responsible for a total of 20 thousand deaths in Brazil (Ferlay et al., 2013).

Nevertheless, a considerable increase is observed in the number of female breast cancer survivors; this fact is a consequence of increasing survival rates and decreasing mortality trends (Tao et al., 2015; Mathew et al., 2016). Mortality decrease was observed in several countries that implemented effective tracking programs, enabling early detection and uncomplicated and fast access to health services. Such actions allowed for the adoption of more effective and less aggressive therapeutic measures (Tao

et al., 2015), which reduced the occurrence of functional, emotional and social consequences on female survivors (Carvalho, Bergman, Koifman, 2014).

While an increment in survival of women with breast cancer is experienced, functional and life conditions are influenced by a series of symptoms and conditions that culminate in functional deficit of a considerable share of this population after cancer treatment (Peerawong et al., 2016).

Functionality is a wide and complex term that includes structures and body functions, the capacity of executing specific activities and participating in daily life situations, being affected by health conditions and environmental and personal factors (WHO, 2001). Maintaining and/or reaching a high level of functionality is, therefore, one of the main objectives of public health (Cieza et al., 2014).

Regarding breast cancer, studies demonstrate that the development of secondary complications to treatment are more prevalent (the most common are lymphedema and reduction in the amplitude of movement of the ipsilateral

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superior limb, as well as presence of pain and sensitive changes in the breast) and present high impact on the daily life of survivors, which results in severe damage to functionality (Assis et al., 2013).

In this way, morbidity associated with breast cancer and its treatment can cause functional, psychological, behavioral and physical damages, which potentially lead to limitations in the execution of daily life activities and social interaction of these patients (Peerawong et al., 2016). The necessity exists, as a consequence, of visualizing breast cancer within the perspective of integral care, taking into consideration the entire amplitude and repercussions of restoring the health state of women (Ramos et al., 2012).

Science has been searching for a better comprehension of all processes involved in breast cancer, a widely studied and debated subject (Batiston et al., 2011). In clinical practice, functional capacity can be utilized to correctly measure the impact of a specific health condition on the life of an individual, and also to plan interventions and evaluate their effects and benefits on the resolution and control of the issue (Cieza et al., 2014).

The study presented herein has the objective of verifying the prevalence of functional disability and its associated factors in female survivors to breast cancer treatment.

## Materials and Methods

A cross-sectional study is presented herein, with quantitative approach, where the unit of analysis is the female survivor to breast cancer.

The sample was constituted by women diagnosed with malignant breast neoplasm (C-50) according to the International Classification of Diseases (ICD-10) in 2013 and 2014, who were residents of the city of Natal (Northeast Brazil) and underwent cancer treatment at least one year before the study and were still clinically monitored by specialized assistance.

For calculation of the sample, a 16.7% prevalence rate was considered for functional disability in women submitted to breast cancer treatment, according to data collected and evaluated by the pilot study of this research project. An Error Factor (EF) of 7% was taken into consideration, leading to the inclusion of 107 patients in the composition of the study sample.

Sampling was carried out by systematic draws from the database of the Cancer Registry system, which records all patients that received diagnosis and treatment according to the type of cancer and still remain connected to the institution.

The study sample included women with satisfactory cognitive levels, which were evaluated by the multiprofessional team at the hospital unit. These women were capable of satisfactorily understanding the questionnaires applied during the interviews. Women that did not present debilitating/disabling pathologies unrelated to breast cancer were also included in the sample.

Data collection occurred between July/2015 and January/2016. This step was constituted by two main stages: initially, data collection was accomplished by

accessing the medical records of patients treated for breast cancer in the years 2013 and 2014. From the records, information was extracted: identification (full name, address, date of birth and telephone number), clinical breast cancer history (time elapsed since diagnosis, histopathological staging of tumor, selected therapeutics, types of definite, adjuvant and neoadjuvant treatments, axillary approach), data on clinical and diagnosis tests, as well as information on the monitoring of the patient by a multidisciplinary team.

All information collected from individual medical records of participants were transferred to a previously structured questionnaire, which included the identification and clinical variables described formerly. Data were obtained and collected without removal of files from the original hospital location. Individual interviews were scheduled by phone with participants to complete the questionnaire fields that were blank. All phone calls were made by the main study researcher, and included information on the objectives of the study and main points of the free informed consent form.

Data collection continued with individual interviews with patients, with average duration of 40 minutes, to measure the dependent variable of the study, functional capacity. Data were also collected on socioeconomic characteristics (race, level of education, employment before and after breast cancer treatment, and access to health services), life habits (dominance, consumption of alcohol and tobacco, regular practice of physical activity), and clinical history of the interviewed women (maternal history, specific breast care, personal and family history, data related to cancer treatment and possible secondary complications).

Functional capacity of women submitted to breast cancer treatment was measured by the "Disabilities of the arm and shoulder" questionnaire (DASH), translated and validated for use in Brazil by Orfale et al. in 2005. DASH is an instrument that aims to assess physical functionality and presence of symptoms in superior limbs, encompassing three domains: physical function, presence of symptoms, and social and occupational functions (Orfale et al., 2005; Assis et al., 2013). Although it was not a specific questionnaire for breast cancer (to evaluate functional consequences of breast cancer), this questionnaire has been applied to breast cancer patients in scientific studies and in clinical practice, as it assesses the damage to shoulder, arm and hand, as a consequence of musculoskeletal lesions that could have been caused by cancer treatment (Assis et al., 2013; Carvalho, Bergman, Koifman, 2014). Besides, this questionnaire also determine the impact of these limitations on the daily life activities and social relationships of the individual (Bulley et al., 2014). DASH is constituted by two components, one of which comprehends 30 general questions and two extra optional specific modules, to evaluate sport or music performance and labor activity practices (Orfale et al., 2005). Optional modules were not utilized herein, as these were not compatible with the studied sample.

Each question of the instrument was answered by a Likert-type scale (0-5), and answers were given on the basis of what was experienced by the patient within the

previous week (Carvalho, Bergman, Koifman, 2014). All questions of the questionnaire were verbally asked during individual interviews with the main researcher.

Of the 30 items, at least 27 must be answered, generating a final score between 0 and 100 points, where a high score indicates high disability. Scores were categorized as excellent (<20 points), good (20–39 points), regular (40–59 points) and bad (60–100 points) (Carvalho, Bergman, Koifman, 2014).

Information collected from questionnaires were organized, building a database from which statistical analysis was carried out.

For the quantitative variables, adequacy of data to normal distribution was evaluated by considering pre-established criteria: minimum and maximum values contained within an interval that corresponded to the average  $\pm$  three standard deviations, and modules of kurtosis and asymmetry lower than two times the standard errors.

Initially, results were presented by descriptive statistics, using tables with absolute and relative data. Bivariate analysis followed, using Pearson's chi-square test or Fisher's exact test, where the magnitude of the association (PR) was verified for each of the nominal independent variables in relation to the dependent variable.

Poisson's Regression was carried out with robust variance for a 95% confidence interval, to verify the effect of associated factors on functional disability. The model included the variables that presented conceptual plausibility and p values under 0.20 in bivariate analysis.

The dependent variable was re-categorized into two categories: no functional decline (excellent and good) and with functional decline (regular and bad). Quantitative variables were categorized in tertiles or as dichotomous variables (categorization by the median), when required by bivariate analysis. Software SPSS version 20.0 was utilized for statistical analysis of data.

Following the determinations of Resolution 466/2012 of the Brazilian National Health Council (which regulates research involving humans), the project was submitted and approved under protocol n° 1.149.608 by the Human Research Ethics Committee.

## Results

In the period 2013–2014, a total of 1726 new breast

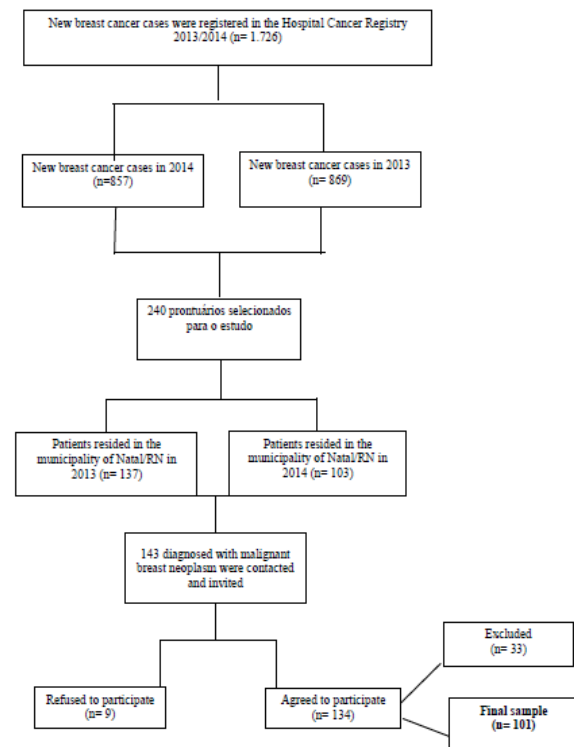


Figure 1. Flowchart of Sample

cancer cases were registered in the Hospital Cancer Registry. Of these, 869 were new cases in 2013 and 857 were new cases in 2014. Of all cases of breast malignant neoplasm notified in 2013 by the Cancer Registry system, 287 (33%) patients resided in the municipality of Natal/RN and received treatment and monitoring/follow-up at the reference hospital unit of the Rio Grande do Norte state. In 2014, there were 103 (12%) patients. Selection of women submitted to cancer treatment residing in the municipality of Natal is justified because this was the target population of the study.

The first phase of the study collected information from 240 medical records. This number was 85% superior to the calculated sample, and was justified by possible losses in the initial contact phase with patients. Of the 240 records, 143 women diagnosed with malignant breast neoplasm in the established period and clinically monitored at the institution were contacted and invited to participate in the study. Invitation was made during a phone call placed by the main researcher of the study,

Table 1. Women Excluded from the Study, in Accordance with Exclusion Criteria

Reason for exclusion	Quantitative	%
Patient resides in the interior region	9	21.4
Death	2	4.8
Patient was not diagnosed with breast cancer and/or did not undergo any treatment	4	9.5
Patient with cognitive deficit	4	9.5
Patient with SL limitation before breast cancer diagnosis	1	2.4
Patient with mobility limitations	6	14.3
Patients that presented disabling comorbidities not associated with breast cancer and its treatment (cerebrovascular accident, Fibromyalgia)	6	14.3
Hospitalized patients (palliative care)	1	2.4

Table 2. Bivariate Analysis between Socioeconomic Characteristics and Functional Capacity of Women Submitted to Breast Cancer Treatment

	Functional decline		Capacity decline		p	PR	CI (95%)
	n	%	n	%			
Socioeconomic characteristics							
Age							
Up to 56 years old	18	33.3	36	66.7	0.007 <sup>*.a</sup>	3.1	1.3 - 7.8
57 years old or over	5	10.6	42	89.4		1.0	
Education level							
Illiterate/Fundamental	9	15.0	51	85.0	0.024 <sup>*.a</sup>	0.4	0.2 - 0.9
High school/Undergraduate	14	34.1	27	65.9		1.0	
Income							
Up to one minimum wage	15	44.1	19	55.5	<0.001 <sup>*.a</sup>	3.5	1.7 - 7.5
Two minimum wages or more	8	12.5	56	87.5		1.0	
Employment after treatment							
No	20	29.9	47	70.1	0.017 <sup>*.a</sup>	3.4	1.1 - 10.6
Yes	3	8.8	31	91.2		1.0	
Access to health services							
Public	19	37.3	32	62.7	<0.001 <sup>*</sup>	4.7	1.7 - 12.7
Private/Health Plan	4	8.0	96	92.0		1.0	
Life habits/ Health conditions							
Dominance							
Right-handed	21	21.4	77	78.6	0.129 <sup>b</sup>	0.3	0.1 - 0.8
Left-handed	2	66.7	1	33.3		1.0	
Physical activity							
No	16	31.4	35	68.3	0.037 <sup>*.a</sup>	2.2	1.0 - 4.9
Yes	7	14.0	43	86.0		1.0	
Health self-perception							
Negative	4	44.4	5	55.6	0.204 <sup>b</sup>	2.2	0.9 - 5.0
Postive	19	20.7	73	79.3		1.0	
Clinical and Tumor characteristics							
Clinical staging of tumor							
IIIa, IIIb, IV	4	36.4	7	63.6	0.284 <sup>b</sup>	1.6	0.7 - 4.0
0, I, IIa, IIb	19	22.1	67	77.9		1.0	
Tumor laterality							
Right-side/bilateral	19	32.8	39	67.2	0.005 <sup>*.a</sup>	3.5	1.3 - 9.6
Left side	4	9.3	39	90.7		1.0	
Dominance vs. Tumor laterality							
Ipsilateral	17	29.8	40	70.2	0.050 <sup>*.a</sup>	2.2	0.9 - 5.1
Contralateral	6	13.6	38	86.4		1.0	
Clinical approach and secondary complications to cancer treatment							
Surgical technique							
Non conservative	13	28.9	32	71.1	0.145 <sup>a</sup>	1.7	0.8 - 3.7
Conservative	9	16.7	45	83.3		1.0	
Time elapsed since surgery							
Between 6 and 26 months	14	26.4	39	73.6	0.281 <sup>a</sup>	1.5	0.7 - 3.3
Over 27 months	8	17.4	38	82.6		1.0	
Axillary approach							
axillary lymphadenectomy	16	31.4	35	68.6	0.037 <sup>*.a</sup>	2.2	1.0 - 4.9
No	7	14.0	43	86.0		1.0	

Table 2. Continued

	Functional n	decline %	Functional No functional n	Capacity decline %	p	PR	CI (95%)
Breast reconstruction							
No	16	26.7	44	73.3	0.187 <sup>a</sup>	1.7	0.7 – 4.0
Yes	6	15.4	33	84.6		1.0	
Neoadjuvant treatment							
Yes	10	45.5	12	54.5	0.004 <sup>*a</sup>	2.8	1.4 – 5.4
No	13	16.5	66	83.5		1.0	
Adjuvant treatment							
No	1	50.0	1	50.0	0.405 <sup>b</sup>	2.3	0.5 – 9.4
Yes	22	22.2	77	77.8		1.0	
Physiotherapeutical monitoring							
No	14	24.6	43	75.4	0.626 <sup>a</sup>	1.2	0.6 – 2.5
Yes	9	20.5	35	79.5		1.0	
Physiotherapy time							
Three or more months	7	31.8	15	68.2	0.071 <sup>*b</sup>	3.7	0.9 - 15.7
Up to two months	2	8.7	21	91.3		1.0	
Early complications							
Yes	6	27.3	16	72.7	0.569 <sup>a</sup>	1.3	0.6 – 2.8
No	17	21.5	62	78.5		1.0	
Late complications							
Yes	23	31.9	49	68.1	0.001 <sup>*a</sup>		0.6 – 0.8
No	0	0.0	29	100.0		1.0	

a, Chi-square test; b, Fisher's exact test; \*, statistically significant

with no ethical limitations, as all women participating in the study were undergoing monitoring/follow-ups at the institution. Nine women refused to participate in the study, and therefore were not accounted for in the final sample. Thirty-three women were excluded in accordance with inclusion criteria. The reasons for refusal are shown in Table 1. Figure 1 shows the flowchart of women submitted to breast cancer treatment, until reaching the final sample of 101 women participating in the study.

Prevalence of functional disability in the studied female breast cancer survivors was 22.8% with CI between 13.9 and 31.6.

Bivariate analysis is described in Table 2. Regarding socioeconomic variables, functional capacity was statistically associated with age (RP 3,1; p 0,007), education level (RP 0,4; p 0,024), income (RP 3,5; p <0,001), return to employment after cancer treatment (RP 3,4; p 0,017) and type of access to health services (RP 4,7; p<0,001). Concerning life habits of breast cancer survivors, it was observed that only regular practice of physical activity was statistically associated (RP 2,2; p 0,037) with functional capacity.

Laterality of the tumor (RP 3,5; p 0,005 )and the relationship dominance/laterality of tumor (RP 2,2; p 0,05)were the only variables related to clinical and tumor characteristics that were statistically significantly associated with the functional capacity of women submitted to breast cancer treatment (Tabela 2).

The selection of the neoadjuvant treatment for breast

cancer presented statistically significant association (RP 2,8; p 0,004) with the functional capacity of women who underwent this treatment. It was also observed that axillary approach (RP 2,2; p 0,037) was associated with functionality. Regarding the secondary morbidities to breast cancer treatment, it was verified that the characteristic complications in immediate post-surgery were not associated with the functional capacity of the survivors. However, late morbidities were statistically associated with functionality, as shown in Table 2.

Table 3 shows the results of multivariate analysis. The final model included the following variables: access to health services, age, education level, relationship dominance/laterality of tumor, and surgery technique. Functional capacity was statistically significantly associated with type of access to health services and age. Some variables that presented statistical significance in bivariate analysis were not inserted into the multiple model due to collinearity with other variables already included in the analysis. Although the variable related to the selected surgery technique for cancer treatment was not statistically significant, it was inserted in the multiple model due to its theoretical plausibility.

## Discussion

The results of this study showed a 22.8% prevalence of functional disability in women submitted to breast cancer treatment, revealing a statistically significant association

Table 3. Results of Multivariate Analysis. Natal/RN, 2016

	With functional decline		Functional capacity decline		p	PR	CI (95%)	p	PRadj	CI (95%)
	n	%	n	%						
Access to health service										
Public	19	37.3	32	62.7	<0.001	4.7	1.7 – 12.7	0.028	2.9	1.1 – 7.6
Private/Health plan	4	8	96	92		1			1	
Age										
Under 56 years old	18	33.3	36	66.7	0.007	3.1	1.3 – 7.8	0.035	2.6	1.1 – 6.5
57 years old and over	5	10.6	42	89.4		1			1	
Education level										
Illiterate/Fundamental	9	15	51	85	0.024	0.4	0.2 – 0.9	0.14	0.6	0.3 – 1.2
High school / Graduate studies	14	34.1	27	65.9		1			1	
Dominance x Tumorlaterality										
Ipsilateral	17	29.8	40	70.2	0.05	2.2	0.9 – 5.1	0.112	1.9	0.9 – 4.4
Contralateral	6	13.6	38	86.4		1			1	
Surgical technique										
Non conservative	13	28.9	32	71.1	0.145	1.7	0.8 – 3.7	0.075	1.8	0.9 – 3.3
Conservative	9	16.7	45	83.3		1			1	

Model adjustment ( $\chi^2$ ); p,0.679

with age, type of access to health services, and independent from education levels, relationship dominance/tumor laterality and from the surgical technique employed. According to these findings, younger women presented higher functional deficit when compared with older female breast cancer survivors. Regarding the nature of health service, it was observed that patients assisted and monitored by public services evolved, after cancer treatment, to a higher degree of functional disability in comparison with those treated by private clinics.

The majority of breast cancer survivors reported health conditions that were compatible with those of a healthy individual. However, a significant share of these patients, approximately 20%, developed significant, chronic health issues, which were considered to be late effects of cancer treatment (Bellury et al., 2013). The long-term effects on physical and psychological morbidities are underestimated in most breast cancer survivor cases (Khan, et al., 2012). However, a study has showed that even after one year since surgery as definite breast cancer treatment, patients did not present satisfactory recovery in functional and physical activity levels (Devoogdt, et al., 2010).

In scientific literature, several studies have reproduced the acceptance of breast cancer as a long term illness, that causes short- and long-term impacts on functionality, psychological well-being, life and health conditions, as well as on the social interaction of female survivors (Khan, et al., 2012; Peerawong et al., 2016).

Regarding functional capacity, a similar result can be found in recent literature, where it was observed that 21.9% of treated patients evolved to a stage of damaged function of the ipsilateral superior limb. It was also estimated that such functional deficit was associated with post-surgery late morbidities, such as pain and

lymphedema (Bulleyet al., 2014), which corroborates the findings herein presented. Other late complications can be associated with the functional disability of women submitted to breast cancer treatment, such as limitation of joint movements, cervical pain, paresthesia and muscular weakness (Khan et al., 2012; Assis et al., 2013).

Carvalho et al. observed that functional disability was present in, approximately, 57% of women submitted to breast cancer treatment and this prevalence was associated with the execution of activities that required greater strength and/or muscular resistance, such as domestic activities and sports (Carvalho, Bergman, Koifman, 2014). However, these researchers utilized seven specific core sets of the International Classification of Functioning, Disability and Health (ICF), which can justify the high prevalence of functional disability in the studied sample and also the data found when comparing results.

Regarding the evaluated socioeconomic factors, age presented important association with functional capacity. It is assumed that breast cancer, encompassing all its dimensions, presents higher impact on the functional capacity of younger women, with the occurrence of larger, more aggressive tumors, which culminates in the selection of therapeutic approaches that will cause greater secondary impacts on functionality and life conditions of the survivors (Mcquireet al., 2015).

Younger women, when submitted to breast cancer treatment, start rebuilding their daily lives, and the return to instrumental daily life activities requires not only an extended recovery time but also higher physical and psychological effort. Such limitation causes a reduction in socio-economic participation of young breast cancer survivors (Fangel et al., 2013). In this way, the women evaluated herein, who lived a contemporary lifestyle,

were inserted in the work force, and were socially and financially independent, suffered a higher impact of breast cancer therapeutic approach on their functionality, which can be visualized in the low rates of return to employment after cancer treatment ended.

During the rehabilitation period, basic activities of daily life (considered simple and demanding lower levels of physical effort) were resumed early on the development of self-care activities (Fangel et al., 2013). When executed by elderly breast cancer survivors, these activities carried out in the home environment provide great psychological satisfaction and, consequently, lower impact on the functionality of these women, as observed herein. However, the increasing number of elderly breast cancer survivors is a world trend, which follows the directives of integral, continued care to the cancer patient (Bellury et al., 2013; Toyoda et al., 2016).

Better functionality of elderly breast cancer survivors, as observed herein, can be explained by some important factors. Specific and characteristic declines that are inherent to the aging process, such as the increase in the number of comorbidities suffered by the elderly and decrease of physical activity levels, present higher impact on the functionality of the elderly, in comparison with diagnosis and treatment of breast cancer (Bellury et al., 2013).

Increases in incidence and in the number of comorbidities in the elderly causes reductions in survival, functional capacity and tolerance to cancer treatment (Pasket et al., 2009). In this way, most of the women evaluated herein suffered from only one comorbidity and presented a reasonable level of physical activity, which justifies maintenance of functionality in these women. Also, literature highlights that cancer history in the life of an elderly survivor can be considered to present lower emotional priority against other preoccupations that have a more immediate meaning (urgent resolution) (Bellury et al., 2013).

Regarding the type of access to health services, the results of the study show a higher prevalence of functional disability among the survivors that utilize the Brazilian public health system. Brazil presents an universal-type health system, but cannot satisfactorily assist the entire population, generating greater demands than the available offer of services. These findings point towards the fragile nature of assistance to breast cancer patients by public health services, which can be associated with late diagnosis, difficulty in accessing adequate treatment and rehabilitation, and the barriers that exist when attempting to manage actions and services within the health assistance network (Barros, Uemera, Macedo, 2013).

The diagnosis period for breast cancer, comprehended between execution of the mammogram and the biopsy, represented the main delay verified in cancer assistance. This can result in delays to start treatment and in the selection of more aggressive therapeutic approaches, with consequent worse prognosis, lower survival and higher impact on the life condition of these women (Barros, Uemera, Macedo, 2013). However, the results presented herein showed that independently from the selected surgical technique (conservative or radical), the users of

the public health system presented higher prevalence of functional disability.

In the practical reality of the services, there is a lack of integration between all levels of attention, as well as absence of active communication between health equipment and professionals involved in care, which culminates difficult referral and counter-referral processes for the breast cancer patient in the public system (Barros, Uemera, Macedo, 2013).

Scientific literature shows that women, when submitted to breast cancer treatment and rehabilitation, report that the organizational or health system-related barriers result in difficult access to cancer monitoring, related to: 1) waiting lists or unavailability to schedule appointments, tests, and procedures; 2) misdiagnosis; 3) delay in receiving test results, and 4) appointments being cancelled (Gonçalves, et al., 2014). Therefore, it is necessary to analyze how the cancer attention network is structured and if it is able to satisfactorily assist patients, regarding access to diagnosis and treatment services and also post-treatment rehabilitation services.

Concerning cancer rehabilitation assistance, implementation of multidisciplinary teams to clinically monitor breast cancer patients optimizes the rehabilitation process, promotes reductions in mortality rates, and contributes to improve survival rates (Barros, Uemera, Macedo, 2012). Multidisciplinary monitoring must be carried out integrally and continuously, focusing on giving support to life and health conditions in women undergoing treatment and in breast cancer survivors (Güller, Cantürk, 2015).

Within the multidisciplinary team, the physiotherapeutical monitoring of women diagnosed with breast cancer must be highlighted. When started in the pre-treatment period, the specific objectives are to diagnose previous alterations, and estimate risk and post-treatment prognosis factors, contributing decisively to improve functionality of cancer treatment survivors (Silva et al., 2014). However, it is observed that the majority of these women, when referred to physiotherapy services, focus on treating previous complications. Referrals with the objective of preventing secondary complications to cancer treatment are actually rarely carried out in health service practice (Silva et al., 2014).

Regarding private cancer rehabilitation assistance, literature shows that breast cancer survivors achieve better physiotherapeutical monitoring; however, there is a limited number of supervised sessions (Silva et al., 2014). The study presented herein reinforces these findings, emphasizing that women treated for breast cancer by private health services evolve to better functionality levels when compared with those assisted by the public service. It is assumed that private health plan users have better assistance in cancer rehabilitation.

There is a clear necessity of improving assistance and access to rehabilitation of breast cancer survivors, with emphasis on physiotherapeutical approaches. This need is intimately associated with strengthening primary health attention, responsible not only for prevention and early detection of the disease, but also for guiding the user throughout the processes of treatment and rehabilitation,

maximizing access to services and adhesion to treatment, as well as reducing the occurrence of delays in cancer assistance (Barros, Uemera, Macedo, 2013).

The study presented herein contributes, primordially, to assistance in breast cancer rehabilitation through the provision of data that can subsidize organizational and practical changes in the health system, strengthening cancer assistance networks.

The limited sample size for statistical associations can be indicated as a limitation of the study, justified by the difficulty in recruiting participants by phone. Also, delimitation of residence to the municipality of Natal restricted access to the sample, as a considerable share of patients originate from other municipalities in the interior of the State and travel to the capital for cancer treatment. In this way, access barriers related to difficulties in traveling to another city and public transport access made available by the Municipal Health Secretaries could not be analyzed herein.

Based on the results herein presented, it can be concluded that functional disability is a health issue that affects a considerable share of female breast cancer survivors, and is present as a late effect of cancer treatment.

Overall, socioeconomic conditions of the studied sample presented higher association with functionality than the clinical and therapeutic characteristics evaluated. Functional disability was more common among younger female breast cancer survivors and those assisted by public health services, independently of education levels, dominance/tumor laterality relationship, and surgical technique utilized. These findings point to possible flaws and barriers that exist in cancer assistance. However, the impacts of this rehabilitation process on the life conditions, health and functionality of women become serious problems that require special attention and immediate resolution.

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