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Comparative analysis: QOL in breast cancer patients before and during the COVID-19 pandemic

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ABSTRACT

Introduction: The 2019 outbreak of coronavirus disease (COVID-19) posed unprecedented challenges of emotional matter for women diagnosed with breast cancer. This research aimed to compare the quality of life of patients who were diagnosed with breast cancer from 2014 to 2019, and patients who were diagnosed during the COVID-19 pandemic, from January to August 2020. **Methods:** A cross-sectional study was performed, including patients with breast cancer, associated or not with chronic pathologies, with no psychiatric disorders, aged over 18 years. The questionnaire developed by the European Organisation for Research and Treatment of Cancer (EORTC-C30) version 3.0 was used for the comparative analysis of quality of life. The study population consisted of 185 women, of which 43.2% (n = 80) were previously diagnosed and 56.7% (n = 105) were diagnosed during the pandemic, with a median age of 45 years (IQ = 15). **Results:** The EORTC-C30 quality of life score remained the same for both groups (33.33; 33.33). There was a decrease in the scores on the emotional (58; 50) and physical (60; 40) scales of patients diagnosed during the pandemic. **Conclusions:** Future longitudinal research should contribute to the understanding of the long-term effects of COVID-19 on the psychological health of patients with breast cancer.

KEYWORDS: breast neoplasms; coronavirus infections; quality of life.

INTRODUCTION

Cancer is considered one of the main causes of death worldwide, and, among the female population, the breast tumor is the most prevalent in Brazil and in the world[1]. According to the literature, approximately 50% of cancer patients suffer from psychiatric disorders, in such a way that anxiety and depression are generally considered to be the most important and prevalent psychopathological comorbidities[2]. This psychological morbidity is caused by changes in physical appearance after treatment, limitations in physical functioning and daily activities, limited functioning in previous roles, and the stigma of the disease, which compromise the patient's quality of life[3].

All the emotional overload due to a cancer diagnosis was enhanced by the coronavirus pandemic (Sars-CoV-2) and the resulting disease, COVID-19, which emerged in December 2019. Initial reports suggested that patients with a history of or active malignancy may be at increased risk of contracting the disease and developing complications related to COVID-19, as it is an immunocompromised group due to the effects of antineoplastic therapy and supportive drugs, in addition to the immunosuppressive properties of cancer itself[4,5].

Among factors related to the outcome of breast cancer, the quality of life of patients is an important parameter, considering that it influences the prognosis of the disease and can be used to manage the condition and treatment of the patient, assist in taking medical decisions, control symptoms, and plan supportive care interventions[6]. Although previous studies address the issue of COVID-19 and cancer patients, the literature does not present studies that assess the quality of life of patients diagnosed with breast cancer during the pandemic. This study aimed to compare the quality of life of patients who were diagnosed between 2014 and 2019 and of patients who were diagnosed during the COVID-19 pandemic from January to August 2020.

MATERIAL AND METHODS

Study design

A cross-sectional and epidemiological study was developed for analyzing data on the periods from 2014 to 2019, and from January to August 2020, provided by participants of the *Centro de Apoio ao Paciente com Câncer de Londrina* [Londrina Cancer

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Support Center] (state of Paraná, Brazil) and by patients of the *Centro de Tratamento Oncológico Pro Onco* [Pro Onco Oncological Treatment Center].

Study population

The study population included a convenience sampling consisting of 185 women who were diagnosed with breast cancer and underwent treatment between 2014 and August 2020. The eligibility criteria included patients with breast neoplasms associated or not with chronic pathologies, with no psychiatric alterations, aged over 18 years. Patients who underwent treatment prior to 2014 were excluded from the research. The interviews took place remotely, through telephone calls or an online questionnaire. In both instruments, the participants were asked to answer a questionnaire with objective questions. The Informed Consent Form was sent by a message application for signature before starting the study.

Study questionnaire

Questions from the questionnaire developed by the European Organisation for Research and Treatment of Cancer (EORTC-C30) version 3.0 were used to assess the quality of life of patients during the treatment of breast cancer. The EORTC-C30 is a multidimensional and self-administered questionnaire for patients with breast, esophageal, or lung cancer that includes a total of 30 questions addressing 5 functional scales (role, physical, emotional, social, and cognitive), 1 scale on overall quality of life, in addition to 3 symptom scales (fatigue, pain, and nausea/vomiting) and 6 additional items related to other symptoms (dyspnea, insomnia, loss of appetite, constipation, diarrhea, and financial impact). A final question was added to the EORTC-C30 for patients who underwent treatment during the year 2020 to assess the psychological impact of the pandemic on these women.

Ethical aspects

This study was carried out after approval by the Research Ethics Committee 35791720.0.0000.0020 by means of the participants' signed consent, after a detailed explanation of its development, in accordance with resolution No. 466/2012 of the National Health Council and the Declaration of Helsinki.

Statistical analysis

For data analysis, the Statistical Package for the Social Sciences (SPSS) program, version 22.0, was used, and the adopted level of significance was 5%. Data distribution was determined by Kolmogorov-Smirnov and Shapiro-Wilk tests. The median and interquartile range were used to indicate measures of central tendency and dispersion. Variables were submitted to Spearman's correlation analysis and were presented as correlation index and p-value. The EORTC-C30 Scoring Manual was used to calculate the medians of the questionnaire domains, which were transformed into a linear scale from 0 to 100 points. The interpretation of the manual scores implies that the score of zero is related to a worse health condition, whereas the score of 100 represents patients with better functioning levels. The exception is for the scoring of the symptom scales, in which the highest score represents the worst symptomatology.

RESULTS

From August to October 2020, 185 women were interviewed. The group diagnosed before the pandemic corresponds to n = 80 patients, and the group diagnosed during the pandemic corresponds to n = 105 patients. Table 1 shows the patients' sociodemographic data. The median age of the patients was 45 years (IQ = 15). Among them, 54% of the patients (n = 100) were white, 37.8% (n = 70) were black, and only 8.1% (n = 15) were Asian. Regarding marital status, 49% of patients (n = 92) were married, 34% (n = 63) were divorced, 10.81% (n = 20) were widows, and only 5.4% (n = 10) were single.

The clinical characteristics related to the treatment are shown in Table 2. Of the total sample, 95.13% of patients (n = 169) underwent surgery, 91.35% (n = 176) underwent chemotherapy, and 65.40% (n = 121) underwent radiotherapy. However, most patients underwent more than one treatment modality, which justifies the overlapping percentage.

Table 1. Sociodemographic data and clinical characteristics of patients.

	n = 185 (%)
Age	Median = 45 years (IQ = 15)
Ethnicity	
White	100 (54)
Black	70 (37.8)
Asian	15 (8.1)
Religion	
Have a religion	163 (88.1)
Have no religion	22 (11.8)
Marital status	
Married	92 (49)
Single	10 (5.4)
Divorced	63 (34)
Widow	20 (10.81)

Table 2. Clinical characteristics of patients.

Type of treatment	n (%)
Chemotherapy	169 (91.35)
Radiotherapy	121 (65.40)
Surgery	176 (95.13)

Table 3 shows the median and interquartile range of the scales and symptoms addressed in the EORTC-C30. Although the median quality of life remained the same for both groups (33.33), the results show that patients diagnosed during the pandemic had the lowest physical scale median (40) in relation to the patients diagnosed before the pandemic (60). In addition, the emotional scale of the group diagnosed during the pandemic was lower (50) than that of patients diagnosed before the pandemic (58).

To assess whether the pandemic influenced the quality of life of patients with breast cancer, Spearman's correlation analysis between the questionnaire variables was performed. The correlation analysis showed that there was no relationship with changes in quality of life among women treated before or during the pandemic (r = -0.016; p = 0.83). Nevertheless, there was a weak association between the treatment period and the patients' emotional function (r = -0.146; p = 0.047), demonstrating that the pandemic had a negative impact on the patients' emotional status. Chemotherapy is related to 11 of the 13 aspects analyzed by the EORTC-C30, which shows a worsening of the symptoms of women undergoing this treatment (Table 4).

Table 3. Median and interquartile range of the items of the functions and symptoms of the questionnaires of the European Organisation for Research and Treatment of Cancer.

Items	Period	Median	Interquartile range
Functions*			
Physical	Before the pandemic	60.00	60.00
	During the pandemic	40.00	60.00
Emotional	Before the pandemic	58.30	41.70
	During the pandemic	50.00	33.30
Cognitive	Before the pandemic	50.00	66.67
	During the pandemic	50.00	33.33
Financial impact	Before the pandemic	00.00	66.67
	During the pandemic	33.33	66.67
Role	Before the pandemic	50.00	100.00
	During the pandemic	50.00	37.50
Social	Before the pandemic	66.67	50.00
	During the pandemic	66.67	50.00
Quality of life	Before the pandemic	33.33	33.33
	During the pandemic	33.33	33.33
Symptoms**			
Insomnia	Before the pandemic	66.67	50.00
	During the pandemic	33.33	33.33
Loss of appetite	Before the pandemic	33.33	66.67
	During the pandemic	33.33	58.33
Constipation	Before the pandemic	33.33	66.67
	During the pandemic	33.33	66.67
Diarrhea	Before the pandemic	00.00	33.33
	During the pandemic	16.67	33.33
Fatigue	Before the pandemic	44.44	44.44
	During the pandemic	44.44	41.67
Pain	Before the pandemic	66.67	50.00
	During the pandemic	66.67	50.00
Nausea/ vomiting	Before the pandemic	83.33	50.00
	During the pandemic	66.67	50.00

*The closer to one hundred, the better the Overall Quality of Life; **The closer to zero, the worse the Overall Quality of Life.

DISCUSSION

In this study, between January and August 2020, the impact of breast cancer diagnosis on the patients' quality of life, before the pandemic (2014–2019) and during the new coronavirus pandemic (from January to August 2020), was compared. Although the assessment of quality of life was the same in both groups, as it is a sample of young patients (median = 45 years), the literature pinpoints that women under 50 years of age are more likely to have a lower quality of life because they are in a very active age group, in which they need to reconcile motherhood, their occupation, and loving and social relationships, in comparison with older women[7]. Thus, age is directly related to greater concerns regarding self-image, sexuality, menopause, and loss of fertility[8], which justifies the low score in the quality of life of both groups (33.33).

Previous studies have also associated faith and spirituality, characteristics of the Brazilian culture, as coping mechanisms that act in the perception of quality of life[9]. In addition to the age group and cultural aspects, another factor associated with quality of life and reported during the interviews is the disease itself, which requires distancing measures and hygiene care similar to those imposed by the pandemic, due to the immunosuppressive properties of cancer and the antineoplastic therapy[4,5]. Thus, the limitations that the group diagnosed during the pandemic encountered did not differ from the restrictions experienced by previously diagnosed and treated patients.

Nevertheless, the analysis demonstrates a worsening in the emotional state of the patients who were diagnosed during the year 2020. Previous studies report that the population with breast cancer is at high risk of developing emotional disorders due to the disturbing nature of the diagnosis, treatments, and long-term adverse effects[10]. In addition to the already known risks, the result is also related to the fear of contracting the virus (Sars-CoV-2) and the subsequent impact on treatment, besides the concern with access to oncology services during the pandemic. As a result, patients carry the emotional burden of doubt about whether their treatments will be delayed and what would be the implications for their outcome. In addition to these uncertainties, there are measures of social distancing and the limitations of

Table 4. Correlations between the scales of the European Organisation for Research and Treatment of Cancer and quality of life, treatment period, and therapeutic modalities.

	Treatment period	QOL	Chemotherapy	Radiotherapy	Surgery
Physical					
Spearman	-0.032	-0.250**	-0.057	-0.145	-0.105
p	0.669	0.001*	0.43	0.04*	0.15
Emotional					
Spearman	-0.146	-0.049	-0.114	-0.123	-0.073
p	0.04*	0.504	0.124	0.095	0.324
Loss of appetite					
Spearman	–0.028	0.119	0.184*	0.177*	0.221**
p	0.701	0.106	0.012*	0.016*	0.002*
Dyspnea					
Spearman	0.007	0.148*	0.232	0.154*	0.015
p	0.925	0.044*	0.001*	0.036*	0.836
Insomnia					
Spearman	-0.117	0.011	0.173*	0.121	0.027
p	0.114	0.879	0.019*	0.101	0.714
Constipation					
Spearman	0.134	0.178*	0.190**	0.095	-0.090
p	0.069#	0.015*	0.010*	0.200	0.222
Diarrhea					
Spearman	0.067	-0.060	0.141	0.166*	0.060
p	0.363	0.420	0.056*	0.024	0.417
Role					
Spearman	-0.044	-0.152*	-0.203**	-0.195**	-0.033
p	0.553	0.039*	0.006*	0.008	0.654
Cognitive					
Spearman	0.038	-0.150*	-0.240**	-0.046	0.046
p	0.605	0.041*	0.001*	0.532	0.539
Social					
Spearman	-0.142	-0.175*	-0.229**	-0.193**	0.054
p	0.054	0.017*	0.002*	0.009*	0.468
Fatigue					
Spearman	0.062	-0.192**	-0.240**	-0.284**	-0.065
p	0.398	0.009*	0.001*	0.000*	0.376
Pain					
Spearman	0.040	-0.108	-0.150*	-0.293**	-0.079
p	0.592	0.142	0.041*	0.000*	0.286
Nausea/vomiting					
Spearman	-0.009	-0.167*	-0.262**	-0.160*	-0.090
p	0.906	0.023*	0.000	0.030*	0.224
Quality of life					
Spearman	-0.016	1.000	0.125	-0.154*	-0.027
p	0.831	-	0.089	0.037	0.717

*Significant results ($p < 0.05$); **Significant results ($p < 0.01$); #Tendency toward significance.

visitors, which weakens opportunities for family support, affecting an important sense of connection and a source of strength for patients with breast cancer[11].

There was also a deterioration in the physical scale of patients treated during the pandemic. A meta-analysis provided evidence that programs of physical exercises performed during or after breast cancer treatment have a small, but positive impact on physical functioning and cancer-related fatigue in patients with breast cancer compared with conventional care[12]. However, the transmissibility of COVID-19 is greater in sports environments due to the viability of the virus as well as its incubation period and milder symptomatology[13]. The fear of being exposed to physical exercise outside their house and the consequent decrease in physical activity during the pandemic may be related to the worsening of the patients' physical scale.

The correlation analysis showed that chemotherapy significantly affects the domains analyzed by the EORTC-C30. This finding corroborates previous studies that point to chemotherapy as an emotional drainage experience, which can affect patients for a long time after the end of treatment. Patients who underwent chemotherapy may experience prolonged fatigue for up to three years after treatment[14]. Nonetheless, it is unclear whether the lower index of quality of life in patients who underwent chemotherapy is caused by the treatment itself or by a more aggressive neoplasm or a more advanced stage compared with those who did not need to undergo chemotherapy[7].

Although previous studies have pointed out the social isolation resulting from the pandemic as an adverse factor in the mental health of patients[15], some women considered quarantine to be a beneficial period, as they were able to keep the diagnosis and treatment of cancer confidential. Therefore, because they did not need to be exposed to work environments and social events, the patients reported feeling preserved from the concern and curiosity of others.

The present study has limitations. Due to social distancing, participants were recruited by means of a message application and by telephone calls, therefore, they may not be fully representative of the population with breast cancer in general. Furthermore, the study lacks information about socioeconomic data and possible comorbidities associated with breast cancer. Finally, individual differences between cancer patients and survivors play an important role in quality of life and present themselves as a limitation, considering that this perception is shaped by some personality traits, and not only by physical, sociodemographic, and oncological variables[16].

CONCLUSION

Although the quality of life score remained the same in both groups, the results demonstrated that women who were diagnosed during the pandemic had a lower physical and emotional score compared with previously diagnosed patients. Further research should continue to monitor the long-term effects of COVID-19 on the psychological health and quality of life of patients with breast cancer.

AUTHORS' CONTRIBUTIONS:

A.C.S.A.H.: Conceptualization, data curation, methodology, investigation, project administration, resources, supervision, validation, writing – review & editing.

L.A.P.: Conceptualization, investigation, data curation, formal analysis, methodology, investigation, resources, visualization, writing – original draft.

M.C.S.P: Conceptualization, investigation, data curation, formal analysis, methodology, investigation, resources, visualization, writing – original draft.

C.E.C.: Supervision, data curation, validation, software, writing – review & editing.

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