Body composition and quality of life in women breast cancer survivors[1]

Composição corporal e qualidade de vida em mulheres sobreviventes de câncer de mama

Composición corporal y calidad de vida en mujeres sobrevivientes de cáncer de mama

[Research Article]

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Abstract

The present study aims to correlate body composition and quality of life of breast cancer survivor women treated at the nutrition outpatient clinic of a public hospital. This is a cross-sectional, descriptive, and correlational study. A semi-structured questionnaire was used to assess sociodemographic conditions, and a 24-hour dietary recall was used to evaluate their quality of life. The quality of life was assessed using the EORTC QLQ-C30 version 3.0. It was found that the majority of women treated in this unit were overweight or obese according to the Body Mass Index:

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76%. When relating body composition to quality of life, it was observed that only the presence of the pain symptom was significantly related to the body composition of these women (p=0.047). Most of the patients are in an overweight or obese nutritional state (76%). Among these obese women, there is a higher presence of pain. Pain is a symptom present in these women and shows a significant relationship with body composition, potentially further impacting their lack of physical exercise and worsening their quality of life.

Keywords: breast neoplasia, body composition, food intake, quality of life, nutritional recommendations.

Resumen

El presente estudio tiene como objetivo relacionar la composición corporal y la calidad de vida de mujeres sobrevivientes de cáncer de mama atendidas en la clínica de nutrición de un hospital público. Se trata de un estudio transversal, descriptivo y correlacional. Se utilizó un cuestionario semiestructurado para evaluar las condiciones sociodemográficas, y se empleó un recordatorio de ingesta alimentaria de 24 horas para evaluar la calidad de vida. La calidad de vida se evaluó utilizando la versión 3.0 del EORTC QLQ-C30. Se encontró que la mayoría de las mujeres atendidas en esta unidad tenían sobrepeso u obesidad según el Índice de Masa Corporal: 76%. Al relacionar la composición corporal con la calidad de vida, se observó que solo la presencia del síntoma de dolor estaba significativamente relacionada con la composición corporal de estas mujeres (p=0,047). La mayoría de las pacientes se encuentran en un estado nutricional de sobrepeso u obesidad (76%). Entre estas mujeres obesas, hay una mayor presencia de dolor. El dolor es un síntoma presente en estas mujeres y muestra una relación significativa con la composición corporal, potencialmente afectando aún más la falta de ejercicio físico y empeorando su calidad de vida.

Palabras clave: neoplasia de mama, composición corporal, ingesta de alimentos, calidad de vida, recomendaciones nutricionales.

Resumo

O presente estudo tem como objetivo relacionar a composição corporal e a qualidade de vida de mulheres sobreviventes de câncer de mama atendidas no ambulatório de nutrição de um hospital público. Trata-se de um estudo transversal, descritivo e correlacional. Foi utilizado um questionário semiestruturado para avaliar as condições sociodemográficas um recordatório alimentar de 24 horas foi utilizado para avaliar, a qualidade de vida dessas mulheres foi avaliada por meio do EORTC QLQ-C30 versão 3.0. Verificou-se que a maioria das mulheres atendidas nesta unidade apresentava sobrepeso ou obesidade segundo o Índice de Massa Corporal: 76%. Ao relacionar a composição corporal com a qualidade de vida, observou-se que apenas a presença do sintoma dor teve relação significativa com a composição corporal dessas mulheres (p=0,047). A maioria das pacientes apresentam-se em estado nutricional de sobrepeso ou obesidade (76%). Entre essas mulheres com obesidade há maior presença de dor. A dor é um sintoma presente nessas mulheres e mostra uma relação significativa com a composição corporal, potencialmente afetando ainda mais a falta de exercício físico e piorando sua qualidade de vida.

Palavras-chave: neoplasia de mana, composição corporal, ingesta de alimentos, qualidade de vida, recomendações nutricionais

Introduction

Cancer, a multifactorial chronic-degenerative disease, ranks as the second leading cause of death worldwide. It is known that one-third of deaths from this disease are attributed to behavioral and dietary risk factors, such as high body mass index, low consumption of fruits and vegetables, physical inactivity, alcohol consumption, and smoking, with the latter being the primary risk factor, accounting for 22% of cancer-related deaths (INCA, 2020).

Cancer is considered one of the major non-communicable diseases (NCDs) of significant importance, responsible for causing deaths in numerous countries around the world (Ferlay et al., 2021; INCA, 2022), thus being regarded as a serious public health issue (Teixeira & Neto, 2020).

Estimates suggest that approximately 30% to 50% of all cancer cases can be prevented through the adoption of a healthy lifestyle, avoiding exposure to occupational carcinogens, pollution, and certain chronic infections. Therefore, adopting healthy habits such as avoiding physical inactivity and maintaining proper diet and nutrition has the potential, in the long term, to reduce a significant portion of the global burden of this disease, as well as other non-communicable chronic diseases (Allemani et al., 2015; INCA, 2022).

In Brazil, the prevalence of excess weight increased from 42.6% in 2006 to 55.4% in 2019, which directly reflects on the living conditions and health of the population. This excess weight and obesity are attributed to changes in behavior over the years regarding diet and physical activity (Blüher, 2019; Silva et al., 2021).

Excess adiposity leads to various metabolic and physiological changes (Freitas et al., 2021), resulting in the development of comorbidities. This can affect health conditions, leading to the onset of type 2 diabetes, heart diseases, hypertension, and certain types of cancer, such as breast cancer, as the body is in a state of chronic inflammation, leading to increased levels of certain hormones that promote the growth of cancer cells, notably leptin (Barone et al., 2020).

Strong evidence has demonstrated a positive association between overall adiposity and visceral fat distribution with some types of cancer, highlighting the importance of avoiding excess body fat as a preventive measure against neoplasms, regardless of gender and age. Some of the transformations that excess adiposity generates include increased circulating insulin and glucose, the presence of adipokines, inflammatory mediators, and the dysregulation of metabolic pathways, such as the carbohydrate pathway (Blüher, 2019; brown, 2021; Freisling et al., 2017; Freitas et al., 2021; INCA, 2020).

For hospitalized cancer patients, the process of coping with cancer is intensified by the loss of privacy, constant medical interventions, numerous tests, fatigue, anxiety, discomfort, and a desire to be at home. The physical distance from the support network, combined with the challenges posed by cancer, disrupts the individual's routine, including changes in family roles, ultimately impacting the patient's quality of life and often leading to social withdrawal (Wakiuchi, 2020; Wakiuchi, 2019).

Therefore, understanding the oncology patient and the potential consequences that the disease and treatment can have on their quality of life is essential, as this knowledge is crucial for determining the best treatment and approach for these patients. Health-related quality of life provides prognostic information when associated with socioeconomic and clinical data, as well as helping predict survival in cancer patients (Dzebo, 2017).

Studying the quality of life in women with breast cancer is essential to understand their perceptions and the main damages caused by treatment. It is important to note that cancer carries a strong social stigma, with uncertainty about the future, fear, and anxiety related to cure, treatment-related effects, and potential mutilations being present in the thoughts of those living with the disease (Silva et al., 2019; Castro et al., 2016). There are many concerns about the potential side effects of treatment on the individual, as well as physical, emotional, and economic strain, among others, which substantially impact the quality of life of cancer patients (Menezes et al., 2018).

Research has shown that women with breast cancer undergoing invasive treatments experience a decline in their quality of life (Faria et al., 2016). Regino et al. (2018), in their study of the quality of life of women with breast cancer in Uberaba/MG, concluded that depression was present and that there was a decrease in quality of life in relation to the psychological aspect.

Quality of life is influenced by various factors, and Konieczny et al. (2020) found in their study that age, marital status, education, and financial status had an impact on the quality of life of women with breast cancer. Therefore, it is necessary to address the question: Is there a relationship between body composition and the quality of life of breast cancer survivors treated at a public hospital's nutrition outpatient clinic?

Method

This is a cross-sectional, descriptive, correlational study. The study population consisted of female breast cancer survivors attending a public hospital's nutrition outpatient clinic. The sample consisted of 41 volunteers who agreed to complete the data collection instruments. The study was approved by the Research Ethics Committee of Tiradentes University, under protocol number 23682219.0.0000.5371/2020.

Body composition was obtained through anthropometric assessment of weight, height, waist circumference, arm circumference, and skinfold thickness (Triceps skinfold thickness (TST), Biceps skinfold thickness (BST), subscapular fold, abdominal fold). Subsequently, the body mass index (BMI) and percentage of body fat were calculated. All anthropometric procedures followed the guidelines of the International Society for the Advancement of Kinanthropometry (marfell-jones et al., 2006).

Weight was measured using a digital scale from the Filizola® brand (Brazil) with a capacity of up to 150 kg. Height was measured using a portable stadiometer from the Seca® brand (Germany). Weight was measured with the patient wearing minimal clothing, feet together, and arms extended alongside the body, and the patient remained in this position until the weight reading was fixed on the scale.

Height was measured in an upright position, feet together with heels and calves against the wall, knees extended, and arms extended alongside the body, with the head held high (making a 90° angle with the ground), following the Frankfurt plane, with the eyes looking at a horizontal plane ahead, and the reading was subsequently taken from the equipment. Circumferences were measured using an inelastic tape measure from the Lange® brand, and skinfold thickness was measured using a scientific skinfold caliper, also from the Lange® brand (Beta Technology INC, Santa Cruz, CA, USA).

The present study included oncological patients, over 18 years old, who had been diagnosed with breast cancer, of female gender, and who sought the outpatient nutrition service. Individuals who were in a terminal state, those whose anthropometric measurements could not be taken, those with chronic or acute muscular, skeletal, or joint abnormalities (unless the pathology did not affect their participation in the research), those with compromised immunity, those with severe edema, especially lymphedema that could interfere with the assessment of anthropometric measurements, those who did not consent to participate in the research, or those not authorized by the responsible physician were excluded from the study.

Quality of life was assessed through the application of the European Organization for Research and Treatment of Cancer Core Quality of Life Questionnaire (EORTC QLQ – C30) (Annex E). This assessment protocol consists of 30 questions related to five functional scales (physical, functional, emotional, social, and cognitive), three symptom scales (fatigue, pain, nausea/vomiting), and a scale about overall health status, as well as the presence of six additional items (dyspnea, insomnia, constipation, diarrhea, loss of appetite, and financial difficulties). Scores were assigned based on the patient's response, ranging from 0 to 100. Regarding the functional and quality of life scale items, a higher score indicates a better quality of life, while for the symptom scale, a higher score signifies a greater presence of symptoms and consequently a worse quality of life.

The data analysis was conducted using measures of central tendency. Bivariate inferential analysis employed the Chi-Square and Fisher's Exact tests. Regarding the relationship between quality of life variables and BMI classification, the Kruskal-Wallis test was used, with results presented in terms of median and interquartile range. Data analysis was performed using R software, version 4.3.1.

Results

Table 1 presents the nutritional status data according to Body Mass Index (BMI) and the risk of developing heart diseases based on Waist Circumference (WC). It was observed that 76% of the study population were overweight (overweight or obese) according to BMI, and 99.16% had a waist circumference above 80cm, which is considered an increased risk for the development of cardiovascular diseases, indicating central fat concentration. The classification was established according to the recommendations of the World Health Organization (WORLD HEALTH ORGANIZATION, 1995).

Table 1: Classification of nutritional status according to body mass index (BMI) and the risk of developing heart diseases based on waist circumference (WC).

Variable/Category	Frequency	Percentage
BMI CLASSIFICATION		
Eutrophy	6	24.00
Overweight	11	44.00
Obesity	8	32.00
WC CLASSIFICATION		
Adequate	1	3.84
Increased risk for obesity	3	11.54
Very high risk for obesity	22	84.62

The Table 2 shows the results related to the quality of life of women with breast neoplasms treated at the nutrition outpatient clinic. It was observed that for the items physical function, functional status, and social function, the median response score was above 50. When evaluating the presence of symptoms, it was found that none of them scored above this threshold, indicating that the presence of symptoms in these women was low. However, when assessing overall quality of life, the median score was 41.67 on a scale that goes up to 100.

Table 2: Median responses regarding the quality of life of women with breast neoplasia treated at the nutrition outpatient clinic of a public hospital in Aracaju, Sergipe

Variable	Median	Standard- Deviantion	Mínimum	Maximum
QL	41.67	16.67	0.00	75.00
Functional Scale				
Physical Function (PF2)	66.67	43.33	0.00	100.00
General Function	66.67	50.00	0.00	100.00
Emotional Function	50.00	58.33	0.00	100.00
Cognitive Function	50.00	66.67	0.00	100.00
Social Function	91.67	83.33	0.00	100.00
Overall	58.89	40.56	0.00	100.00
Symptom Scale				
Fatigue	33.33	66.67	0.00	100.00
Nausea/Vomiting	0.00	33.33	0.00	100.00
Pain	33.33	41.67	0.00	100.00
Dyspnea	0.00	66.67	0.00	100.00

Insomnia	16.67	100.00	0.00	100.00
Loss of Appetite	0.00	66.67	0.00	100.00
Constipation	0.00	33.33	0.00	100.00
Diarrhea	0.00	100.00	0.00	100.00
Financial Difficulty	0.00	75.00	0.00	100.00
Overall	26.92	42.31	0.00	87.18

QL- Quality of Life

When assessing the quality of life of women with breast câncer in table 3, it was observed that only the symptom of pain had a significant relationship with the body composition of these women; overweight women experienced more pain (p = 0.0447). Excess weight can lead the body to a state of mild chronic inflammation, which increases the production of inflammatory mediators that can generate a sensation of pain and discomfort.

Table 3: Median ± Interquartile Range between body composition and quality of life of women with breast cancer

Variable/Category	**BMI**			**P-value**
	Eutrophy	**Overweight**	**Obesity**	
QL	29.17 ± 8,33	33.33 ± 16,67	37.50 ± 18.75	0.467
Functional Scale				
Physical Function (PF2)	80.00 ± 5.00	60.00 ± 33.33	60.00 ± 58.33	0.423
General Function	75.00 ± 41.67	83.33 ± 66.67	66.67 ± 100.00	0.831
Emotional Function	66.67 ± 41.67	33.33 ± 41.67	41.67 ± 47.92	0.739
Cognitive Function	83.33 ± 12.50	50.00 ± 75.00	16.67 ± 66.67	0.176
Social Function	100.00 ± 0.00	50.00 ± 83.33	66.67 ± 87.50	0.261
Overall	76.67 ± 15.00	48.89 ± 28.89	57.78 ± 60.00	0.374
Symptom Scale				
Fatigue	22.22 ± 25.00	11.11 ± 38.89	61.11 ± 80.56	0.190
Nausea/Vomiting	0.00 ± 25.00	0.00 ± 8.33	16.67 ± 62.50	0.330
Pain	33.33 ± 25.00	16.67 ± 41.67	66.67 ± 66.67	0.047
Dyspnea	0.00 ± 0.00	0.00 ± 66.67	16.67 ± 100.00	0.314
Insomnia	16,67 ± 33,33	0.00 ± 66.67	33.33 ± 100.00	0.831
Loss of Appetite	0.00 ± 0.00	0.00 ± 16.67	0.00 ± 100.00	0.532
Constipation	0.00 ± 25.00	0.00 ± 33.33	0.00 ± 8.33	0.855
Diarrhea	16.67 ± 33.33	0.00 ± 50.00	0.00 ± 50.00	0.956
Financial Difficulty	33.33 ± 66.67	0.00 ± 50.00	33.33 ± 100.00	0.818
Overall	20.51 ± 14.1	12.82 ± 14.10	29.49 ± 67.31	0.134

QL - Quality of Life

Discussion

Some factors have shown a positive relationship with the onset of cancer, including: early menarche, before the age of 12; age above 50 years; late menopause, after the age of 55; nulliparity; and breastfeeding. According to the American Institute for Cancer Research, women of older age, particularly those above 50 years, have a higher risk of developing the disease due to the accumulation

of exposures throughout life and the biological changes that occur with the aging process (INCA, 2020; WCRF, 2017).

Nulliparity and lactation are also considered risk factors because they result in the lack of differentiation of breast tissue during pregnancy, in order to prepare the woman for breastfeeding. Terminal differentiation occurs in the terminal ductal lobular region in the last trimester of pregnancy, and this is an important mechanism that associates pregnancy with a reduced long-term risk of developing breast neoplasia, protecting the breast against disease transformation. Another factor is the increased exposure to non-estrogenic mutagens and genotoxicity caused by the estrogen hormone during this period in a woman's life (Fortner et al., 2019; Thorne; Holen; Corfe, 2022). Fortner et al., (2019) demonstrated the role of breastfeeding in reducing hormone receptor-negative breast neoplasia, in addition to the established benefits of breastfeeding.

The diagnosis of breast cancer typically requires prolonged treatment, including surgery, chemotherapy, radiotherapy, and/or hormone therapy. Some of these treatments cause side effects that can be transient or permanent, such as the presence of pain and other symptoms, hair loss, and total or partial loss of the breasts, which are related to a woman's self-esteem, in addition to the presence of fibrosis, lymphedema, decreased physical activity, which can affect her quality of life. Konieczny et al. (2020) found that factors such as age, marital status, education, and financial situation had an impact on the quality of life of women with breast cancer. It also highlighted the need for social monitoring and assistance provided by appropriate services.

Obesity is associated with numerous metabolic and endocrine abnormalities, such as elevated fasting insulin and estradiol levels, and increased inflammatory mediators. Furthermore, obesity releases pro-inflammatory factors, such as cytokines, which are related to the development of the disease (INCA, 2020). High BMI is associated with 14 types of cancer, including breast neoplasia (Freitas et al., 2021; WHO, 2020). According to the World Cancer Research Fund International and the American Institute for Cancer Research, in developed countries, about one-third of the most common neoplasms could be prevented through lifestyle and dietary changes.

General health/quality of life was considered moderate, while scores on the symptom scale revealed low symptomatology, indicating that the present symptoms did not compromise the quality of life of these women. The symptoms with higher medians were fatigue and pain, followed by insomnia. Similar results were found in the study by Vieira et al. (2022) with patients with hematological cancer.

In the mentioned study, pain had a significant relationship with body composition. Excess weight and obesity cause hormonal, metabolic, and immune changes that can lead to chronic inflammation, and consequently, the onset of pain (INCA, 2020).

Understanding the relationship between body composition and the quality of life of the patients under study is essential for the entire multidisciplinary team in order to develop strategies to prevent the disease and even improve the quality of life of this population.

Conclusion

A prevalence of overweight was observed in women attending the nutrition clinic in the city of Aracaju, as well as a concentration of adiposity in the abdominal region. Pain is a symptom present in these women and shows a significant relationship with body composition, potentially further impacting their lack of physical exercise and worsening their quality of life.

Longitudinal follow-up studies are recommended to assess the evolution of body composition and quality of life in these women over time. These studies can provide additional information about the impact of interventions and treatments, as well as support the development of new care and prevention strategies.

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