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Eating behavior and body image of women with breast cancer

Abstract

Background: The term "eating behavior" refers to all actions involving the act of eating. Body image can be defined by understanding the shape, size, and weight of the body, and encompasses the affective, cognitive, and behavioral components. The objective of this study was to analyze the eating behavior and body image of women with breast cancer.

Methods: This is an observational, cross-sectional, and analytical study conducted at the Centro Regional Integrado de Oncologia, with women aged between 19 and 59 years, diagnosed with breast cancer. Socioeconomic, clinical, anthropometric data, body image and eating behavior of the sample were collected. The Body Shape Questionnaire (BSQ) and the Kakeshita Silhouette Scale were used to evaluate body image, and for eating behavior, the Portuguese version of the Dutch Eating Behavior Questionnaire (DEBQ) was used.

Results: Among the women studied, 43.3% were aged between 50 and 59 years. Overweight was the most prevalent nutritional status in 43.3% of the sample. Women with a mild degree of dissatisfaction presented means of habitual weight (p=0.04), current weight (p=0.02), waist circumference (p=0.04) and BMI (p<0.01) higher than those who did not present any dissatisfaction. Most women, with a predominance of restrained eating behavior, presented a mild degree of body dissatisfaction (p-value=<0.01). All those evaluated who presented a mild degree of dissatisfaction were dissatisfied with body image (p=0.03).

Conclusion: Most of the women evaluated were dissatisfied with body image. Restrained eating behavior was predominant and strongly correlated with mild body dissatisfaction levels. Higher BMI means were found in women who presented mild body dissatisfaction.

Keywords: eating behavior, nutritional status, body image, breast neoplasms, neoplasms

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Abbreviations: CRIO, Centro Regional Integrado de Oncologia; BSQ, body shape questionnaire; DEBQ, Dutch eating behavior questionnaire; IBGE, Instituito Brasileiro de Geografia e Estatítica; BMI, dody mass index; WHO, World Health Organization; UECE, Universidade Estadual do Ceará

Introduction

In terms of worldwide incidence, in 2018, breast cancer occupied 2nd position among all types of cancer, only behind lung cancer. In the same year, more than 2 million new cases were registered, corresponding to a percentage of 11.6%, being pointed as responsible for a number of 626,679 deaths.[1] In Brazil, without considering non-melanoma skin tumors, breast cancer is the most frequent type among women. The incidence estimate for each year of 2018-2019 biennium is 59,700 new cases, with an estimated risk of 56.33 cases per 100,000 women. The State of Ceará and the City of Fortaleza follow the same ranking line of this type of cancer and have an incidence estimate of 2,200 and 1,410 new cases for the year 2018 and an estimated risk of 47.32 and 100.36 per 100 thousand women respectively.[2]

Breast cancer screening in healthy women is of paramount importance because it is associated with early detection of tumors. With that, there is a lower chance of metastasis and a possibility of a less aggressive treatment.[3] In Brazil, due to the increase in screening, it has been possible to diagnose this neoplasm in earlier stages, allowing these individuals a longer survival.[4] Treatment techniques may include mainly surgery, cancer drugs (systemic chemotherapy, endocrine therapy, or HER-2-directed therapy), which are a vast class of drugs available, that according to the tumor characteristics and the extent of the disease can be administered, and also radiotherapy.[5]

Added to the individual genetic factor, there are several risk factors that can influence the development of breast cancer, including sex, age, family history, reproductive factors, exposure to estrogens and lifestyle. When talking about lifestyle as a risk factor for breast cancer, the main components are excess fat in the diet, sedentary lifestyle, and alcohol abuse.[6] One of the aspects that interfere in the lifestyle and that influence the health-disease process is the eating behavior of an individual.[7] Eating behavior analysis is a more comprehensive approach to nutrition. The focus of this approach is to explore all the nuances related to the patient's diet, that is, the actions in relation to the act of eating. It is important to note that some indicators commonly associated with nutritional evaluation, such as weight and clinical parameters, are not characterized as behaviors.[8]

To study the eating behavior of a subject, it is essential to analyze his eating attitude, which allows us to understand and, often, anticipate his behaviors. The attitude comprises three components: the affective, which concerns feelings, humor, and emotions; the cognitive, which encompasses beliefs and knowledge and the volition that is associated with desire. Analyzing this way, the food takes a much wider space than just the physiological field.[8] In addition to actions that directly interfere with eating behavior, there is subjectivity, which is an often-neglected component that impacts and interferes with this behavior. Subjectivity can be related as the way individuals shape their interior, being influenced by conscious and unconscious emotions and thoughts.[9]

The diagnosis of cancer causes a wave of emotions in cancer patients. The prejudice formed, relating the disease as a curse, contributes to the generation of great suffering. In addition to the shock caused by the diagnosis, the emotional load released during the course of the treatment leaves the patient very emotionally fragile. Thus, the subjectivity generated as a result of the diagnosis and treatment of cancer can influence the behavior of this patient as a whole.[10] The aggressive methods of treatment of breast cancer and the symptomatology, resulting from these procedures, can interfere in the patient's behavior through psychological alterations such as anxiety, depression, body image distortion and loss of self-esteem.[11]

Body image can be defined as the perception of the brain about the size, structure, shape and contour of the body itself and the thoughts and feelings that pervade it, suffering influence from the multiple stimuli of the environment in which the individual is inserted, which may be cultural, social, individual, and biological.[12] Because of the physical and emotional stress that women in breast cancer treatment have, it is expected that they present negatively altered eating behavior and that they are dissatisfied with their body image. Adding this hypothesis to a shortage of studies that contemplate such themes approaches jointly, this work aimed to analyze the eating behavior and body image of women in treatment with breast cancer, considering the magnitude of this neoplasm, and the scarcity of studies relating such topics.

Methods

This is a quantitative, observational, cross-sectional, and analytical study conducted at the Centro Regional Integrado de Oncologia (CRIO) in Fortaleza/Brazil in April 2019. The population was composed of women with breast cancer and the non-probabilistic sample was selected by convenience. The study included women aged between 19 and 59 years, with histological diagnosis of breast cancer, women with uncontrolled chronic non-communicable diseases, those who presented cognitive alterations that prevented them from collaborating with the collection of information and those who refused to participate in the study. The participants were approached in the chemotherapy, radiotherapy rooms and patient support networks, and invited to participate in the study. Sociodemographic, clinical, anthropometric data, data related to body image changes and eating behavior were collected.

To collect the sociodemographic data, we investigated the variables of age, marital status, ethnicity, family income, place of birth and schooling. The clinical data were investigated by direct interview and consultation of the medical record and the variables studied were: gynecological history, history of smoking, alcohol use, clinical staging, histological grade and antineoplastic treatment. The weight and height were measured in a mechanical scale of the brand Balmak®, and the waist circumference, with a Cescorf's inelastic anthropometric meter, following the IBGE methodology.[13] For the classification of nutritional status, the Body Mass Index (BMI) was calculated from the following formula: $BMI = Weight/Height^2$, by the parameters adopted by the WHO.[14,15]

The body image can be composed by the perceptive dimensions, which is defined by the understanding of the shape, size, and weight of the body, and attitudinal, which encompasses the affective, cognitive, and behavioral components.[16] Body dissatisfaction is a disturbance in the attitudinal dimension and can be determined by how much the subject suffers due to the difference between the current body and the desired body.[17] The Body Shape Questionnaire (BSQ) is composed of 34 questions that assess the degree of body dissatisfaction of the interviewees. For each question evaluated, an answer can be attributed among six options: never, rarely, sometimes, often, very often and always, each of which is equivalent to a score that varies from 1 to 6, respectively. The sum of points of the answers indicates the degree of dissatisfaction (if less than or equal to 80-no dissatisfaction; between 81 and 110-mild dissatisfaction; between 111 and 140-moderate dissatisfaction; greater than 140-severe dissatisfaction).[18]

To evaluate body image perception, the silhouette scale proposed by Kakeshita for adult women was applied, which consists of 15 cards, each with a figure of a white woman on a black background. The figures represent a woman with BMI ranging from 12.5 to 47.5kg/m², with a constant difference of 2.5 between the cards. The scale is presented in ascending order and the interviewee should choose two cards, one card that best represents her body and the other that represents the body she would like to have. If the participant chooses the same figure in both situations, she is considered to be satisfied with her appearance, and if she chooses a different figure, she is considered to be dissatisfied, being able to be by thinness or overweight.[19]

The term "eating behavior" refers to all actions involving the act of eating, influenced both by social and psychological factors.[8] It can be divided into three subgroups: restrained eating, which deals with the effort that the individual exerts regularly to control his or her appetite and food intake; emotional intake, which includes emotional stress factors, causing food disinhibition in this situation; and external ingestion, which reflects an ingestion motivated by external factors inherent to the food or the social situation that are consumed.[20,21] The Portuguese version of the Dutch Eating Behavior Questionnaire (DEBQ) composed of 33 items, evaluated on a 5-point Likert-type scale, distributed into three subscales, was used to analyze restrained eating (10 items), emotional intake (13 items) and external intake (10 items). The score of each subscale is obtained by the average of the scores, being the most prevalent behavior the one represented by the highest average.[20]

The results were analyzed using the Statistical Analysis Software (SAS), version 9.0. For quantitative variables, the Kolmogorov-Smirnov and Bartlett test were applied to verify normality and homogeneity of variance, respectively. When the assumptions were met, we applied variance analysis and Student's t test. Pearson's test was applied to find correlations between parametric variables, and for non-parametric variables, Spearman's test. Fisher's exact test and binomial test were applied. For all tests, the significance level was considered when p0.05. The variables were expressed as mean and standard deviation. Qualitative variables will be presented in simple frequency and absolute number. The study was submitted to the research ethics committee of the Universidade Estadual do Ceará (UECE) under the number 3.255.459. The research was carried out after the authorization of the Center where the study took place, through the Consent Term, the Term of Trustee, and the signature of the Free and Informed Consent Term by the participants.

Results

Thirty women were interviewed, n=13 (43.3%) aged 50 to 59 years. It was found that 36.7% (n=11) of the women studied up to complete high school/ incomplete college. 56.7% (n=17) of these had monthly income between one and two minimum wages. 56.7% (n=17) were married and n=13 (43.3%) lived in a home composed of a total of two people. The majority are from the countryside of the state of Ceará, n=22 (73.3%). They declared themselves as "brown, mulatto, brunette or caboclas", n=23 (73.3%) (Table 1).

Table 1 Sociodemographic data of women with breast cancer, Regional Center for Oncology, Fortaleza, Brazil, 2019

Variables	n	%
Age group:		
From 19 to 29 years	-	-
From 30 to 39 years	9	30,0%
From 40 to 49 years	8	26,7%
From 50 to 59 years	13	43,3%
Educational level:		
Illiterate/ Incomplete Elementary school	4	13,3%
Complete elementary school/ Incomplete middle school	10	33,3%
Complete middle school/ Incomplete High School	2	6,7%
Complete high school/ Incomplete college	11	36,7%
Complete college	3	10,0%
Marital status:		
Legally Married	17	56,7%
Single	5	16,7%
Divorced	4	13,3%
Widowed	1	3,3%
Common law	3	10,0%
Family income:		
< 1 Minimum wage	6	20,0%
1 - 2 Minimum wage	17	56,7%
2 - 3 Minimum wage	5	16,7%
> 4 Minimum wage	2	6,7%
How many people live in your house:		
2	13	43,3%
3	7	23,3%
Higher than 4	10	33,3%
Ethnicity:		
White	4	13,3%
Black	1	3,3%
Brown, mulatto, brunette or caboclas	22	73,3%
Asian	3	10,0%
Born in:		
Fortaleza	8	26,7%
Countryside	22	73,3%

It was verified in the sample, women with systemic arterial hypertension n=9 (30%), and with diabetes mellitus n=4 (13.3%). The highest prevalence in clinical staging was III, with n=16 (53.3%). In relation to treatment, chemotherapy was the most frequently used n=21 (70%) (Table 2).

Table 2 Clinical data of women with breast cancer, Regional Center for Oncology, Fortaleza, Brazil, 2019

Variables	n	%
Systemic arterial hypertension:		
Yes	9	30,0%
No	21	70,0%
Diabetes mellitus:		
Yes	4	13,3%
No	26	86,7%
Cardiovascular diseases:		
Yes	-	0,0%
No	30	100,0%
Staging:		
0	3	10,0%
I	4	13,3%
II	6	20,0%
III	16	53,3%
IV	1	3,3%
Current treatment:		
Surgery	2	6,7%
Chemotherapy	21	70,0%
Radiotherapy	8	26,7%
Hormonal therapy	-	-
Others	-	-

It was observed that 100% of the respondents did not smoke or consume alcohol at the time of the survey. In the prior to the study, they smoked n=6 (20.7%) and ingested alcohol n=7 (24.1%). The total number of n=4 (13.8%) practiced physical activity at the time of the survey. Regarding nutritional status, the mean BMI was 29.6 ($\pm$6.1) kg/m^2, and overweight n=13 (43.3%) was the classification of nutritional status of most patients. The mean waist circumference was 88.7 ($\pm$12.1) cm, presenting above the recommended n=24 (80%) (Table 3).

Table 3 Life style and anthropometric data of women with breast cancer, Regional Center for Oncology, Fortaleza, Brazil, 2019

Variables	n	%
Current smokers:		
Yes	-	-
No	30	100,0%
Former smokers:		
Yes	6	20,7%
No	23	79,3%

Table Continued...

Variables	n	%
Time since quit smoking (month):	156,5±118,7*	-
Current drinker		
Yes	-	-
No	30	100,0%
Former drinker:		
Yes	7	24,1%
No	22	75,9%
Time since quit drinking (month):	85,3±92,8*	
Practiced physical activity:		
Yes	4	13,8%
No	25	86,2%
Current weight (kg):	68,5±14,8*	
Usual weight (kg):	68,1±14,7*	
Height (m):	1,5±0,1*	
BMI (kg/m²):	29,6±6,1*	
BMI Categories:		
< 18,5	-	-
18,5 a 24,5	6	20,0%
25 a 29,9	13	43,3%
> 30	11	36,7%
Waist circumference (cm):	88,7±12,1*	
Low risk (<80 cm)	6	20,7%
Increased risk (> 80 cm)	23	79,3%

*Average±standard deviation

As for the evaluation of the predominant eating behavior, there was a restrained eating n=18 (60%), followed by external intake and emotional intake, with statistical significance (p<0.01). Most respondents were dissatisfied with the body (p<0.01), through the evaluation of body image satisfaction, by the Kakeshita silhouette scale. Regarding the evaluation of body dissatisfaction by the BSQ, dissatisfaction was not observed in 65.5% of the women, but a mild degree of dissatisfaction was found in 34.5% of them (p=0.04). No patient presented severe dissatisfaction (Table 4).

Table 4 Eating Behavior (DEBQ), body image satisfaction (Kakeshita) and evaluation of body dissatisfaction (BSQ) of women with breast cancer, Regional Center for Oncology, Fortaleza, Brazil, 2019

Variables	n	%	p-value*
Predominant eating behavior			
Restrained eating	18	60,0%	<0,01
Emotional intake	3	10,0%	
External intake	9	30,0%	

Table Continued...

Variables	n	%	p-value*
Body image satisfaction:			
Dissatisfied	23	76,7%	<0,01
Satisfied	7	23,3%	
BSQ:			
Mild dissatisfaction	10	34,5%	0,04
No dissatisfaction	19	65,5%	

*Binomial test

When relating the anthropometric variables to the results of BSQ body dissatisfaction levels, it was observed that women with a mild degree of dissatisfaction presented means of habitual weight (p=0.04), current weight (p=0.02), waist circumference (p=0.04) and BMI (p<0.01) higher than those who did not present any dissatisfaction (Table 5).

Table 5 Body dissatisfaction levels (BSQ) and anthropometric data of women with breast cancer, Regional Center for Oncology, Fortaleza, Brazil, 2019

Variables	Mild Dissatisfaction		No dissatisfaction		p-value
	Average	SD*	Average	SD	
Current weight (kg)	76,47	15,81	63,73	12,78	0,02
Usual weight (kg)	75,15	14,90	63,18	13,28	0,04
Height (m)	1,51	0,07	1,53	0,06	0,62
BMI (kg/m²)	33,40	6,77	27,36	4,79	<0,01
Waist circumference (cm)	95,02	13,85	85,45	10,31	0,04

*SD=standard deviation. independent t-test

When associating these variables with body dissatisfaction, it was evidenced that the participants who had a higher average of habitual weight presented body dissatisfaction. (p=0.04), however, the other findings in this analysis did not present significant statistical difference (Table 6).

The relation between eating behavior and anthropometric data did not present significant statistical difference (p>0.05) (Table 7).

Table 6 Body image perception (Kakeshita) and anthropometric data of women with breast cancer, Regional Center for Oncology, Fortaleza, Brazil, 2019

Variables	Dissatisfied		Satisfied		p-value
	Average	SD*	Average	SD	
Current weight (kg)	71,10	14,98	60,00	11,46	0,08
Usual weight (kg)	70,40	14,68	61,00	13,50	0,04
Height (m)	1,52	0,06	1,52	0,07	0,92
BMI (kg/m²)	30,77	6,39	25,88	3,36	0,06
Waist circumference (cm)	90,77	12,47	81,86	8,15	0,09

*SD=standard deviation. independent t-test

Table 7 Predominant eating behavior (DEBQ) and anthropometric data of women with breast cancer, Regional Center for Oncology, Fortaleza, Brazil, 2019

Variables	Restrained eating		Emotional intake		External intake		p-value
	Average	SD*	Average	SD	Average	SD	
Current weight (kg)	72,27	13,56	68,17	29,02	61,12	10,18	0,18
Usual weight (kg)	71,38	14,06	64,67	26,65	62,25	10,65	0,33
Height (m)	1,52	0,06	1,49	0,08	1,53	0,06	0,58
BMI (kg/m²)	31,35	5,97	30,04	9,30	26,03	4,25	0,10
Waist circumference (cm)	91,12	11,44	88,00	20,79	84,06	10,33	0,37

*SD=standard deviation. Analysis of variance (ANOVA)

Relations between eating behavior and body image satisfaction were also evaluated, but no statistical significance was obtained in these analyses. Most women, with a predominance of restrained eating behavior, presented a mild degree of body dissatisfaction (p-value = <0.01) (Table 8).

All patients with mild dissatisfaction, n=10 (34.5%), were dissatisfied with body image (p=0.03) (Table 9).

Table 8 Predominant eating behavior (DEBQ) and degree of dissatisfaction of body shape (BSQ) of women with breast cancer, Regional Center for Oncology, Fortaleza, Brazil, 2019

Variables	Mild dissatisfaction	No dissatisfaction	Total
	n (%)	n (%)	n (%)
Restrained eating	10 (34,5%)	7 (24,2%)	17 (58,6%)
Emotional intake	0 (0,0%)	3 (10,3%)	3 (10,3%)
External intake	0 (0,0%)	9 (31,0%)	9 (31,0%)
Total	10 (34,5%)	19 (65,5%)	29 (100%)

p-value = <0,01. Fisher exact test

Table 9 Body image perception (Kakeshita) and degree of dissatisfaction of body shape (BSQ) of women with breast cancer, Regional Center for Oncology, Fortaleza, Brazil, 2019

Variables	Dissatisfied	Satisfied	Total
	n (%)	n (%)	n (%)
Mild Dissatisfaction	10 (34,5%)	0 (0,0%)	10 (34,5%)
No dissatisfaction	12 (41,3%)	7 (24,2%)	19 (65,5%)
Total	22 (75,8%)	7 (24,2%)	29 (100%)

Discussion

This work is a pioneer in Brazil, since until now, the eating behavior and body dissatisfaction in breast cancer patients have not been jointly evaluated. This approach was performed in this study and it was seen that all women who presented mild body dissatisfaction also had restrained eating behavior as predominant. In middle-aged women, body dissatisfaction is one of the main factors that provoke a dysfunctional eating behavior.[22] The predominance of restrained behaviors in the sample of this study was also observed by Ferreira who, when characterizing eating behavior and nutritional status in adults, found that the women evaluated also presented this characteristic with higher incidence.[23] Individuals who present restrained behaviors are more likely to dichotomize food into good and bad and to blame themselves after meals, especially in the more caloric ones. The female sex has a greater tendency to show eating patterns linked to restriction.[21]

In the present study, 76.7% of the participants were dissatisfied with their body. Result that is also verified in the study of Pelegrini, which also used the Kakeshita silhouette scale as an instrument of analysis, and found 73% of dissatisfaction in women who performed cervical cancer prevention test, in Santa Catarina.[24] The influence of body image on women undergoing breast cancer treatment was studied, and it was concluded that these are more dissatisfied when compared to women who do not have breast cancer. It was also seen that some types of treatment, such as chemotherapy and mastectomy, have a worse effect on the body image of this population.[25]

When analyzing the degree of body dissatisfaction of the participants of this study, through another instrument, the BSQ, the maximum degree of body dissatisfaction of the sample was mild. Matos, when comparing the body satisfaction of young and old women practicing dance in the city of Rio Claro, São Paulo, found that advancing age could provoke a better acceptance with the physical form,[26] which meets our study, where the predominance of women is more prevalent in advanced ages. The importance of body image care at all stages of treatment in patients affected by breast cancer, to prepare them for possible negative impacts caused by treatment, and to favor improvement in several areas of their lives, in particular, quality of life was pointed out by Kołodziejczyk1 and Pawloski.[27]

In this work, we found a predominance of married women, in chemotherapy treatment, as well as in Capelari and Ceni,[28] differing from this in the education level, where lower levels was found as prevalent. According to the anthropometric characteristics raised in this study, 80% of those evaluated were overweight. Obesity was pointed out as a risk factor for breast cancer development in a study conducted by Engin.[29] Neuhouser analyzed the associations of overweight and obesity with the risk of invasive post-menopausal breast cancer, in which 72.34% of the total sample was represented by women aged between 50 and 59 years,[30] age group also found in this study. In another study, with patients diagnosed with breast cancer, it was evidenced that 66.51% of the women, from a sample of 848, were overweight.[31]

In the present study, a strong association was observed between a higher mean BMI and a higher level of body dissatisfaction. Poltronieri TS et al.,[32] when analyzing the dissatisfaction with body image in women from the South of Brazil, identified that those with obesity, had a 49% higher chance of being dissatisfied with body image, and that this follows the growth of BMI . In a study conducted in Ribeirão Preto (SP) and region, when investigating body image satisfaction in groups with ages ranging from 18 to 55 years, with high school as minimum education, found more body dissatisfaction for those with higher body weight.[33]

By associating eating behavior with BMI, this study did not find statistically relevant differences. In contrast to this finding, Antunes et al. found a significant and moderate positive correlation between restrained predominant eating behavior and BMI, resulting in a strong correlation with individuals of low weight.[34] As a counterpoint to obesity as a risk factor, patients who are undergoing cancer treatment often have malnutrition and cachexia from multifactorial causes, such as reduced intake due to, mainly, side effects associated with different types of treatment and, still, complex metabolic changes that increase energy expenditure. Such conditions are associated to the lower response to the treatment, worse quality of life, greater amount of side effects and, therefore, a worse prognosis.[35] Studies conducted by Capelari and Ceni confirm that patients reported changes in their dietary choices, such as rejection and even aversion to some foods after chemotherapy treatment, associated with discomfort and illness, be causing an impact on eating behavior. The author also states that the way in which the reaction to cancer and to the treatment occurs can cause reduction or increase in food consumption, being the reduction possibly more present at the beginning of the treatment.[28] In another study carried out by Santos; Franco and Vasconcelos, patients who presented emotional tremors were associated with greater changes in eating behavior when compared to those who did not present this condition.[36]

The joint approach of body dissatisfaction and eating behavior in breast cancer patients is scarce in the literature. New studies with larger samples, considering the use of instruments performed in this research and others that help in the deepening of these themes, may bring useful perspectives for these areas. It is important, given the above, to carry out investigations that consider the different stages, types of cancer treatments, as well as their different phases: before, during and after. These variables have different characteristics and impacts for patients. A comprehensive approach to health, covering both physical and mental aspects, may favor the improvement of quality of life as a whole, and may also contribute to the early identification of aggravations of body dissatisfaction and changes in eating behavior, such as body dysmorphic disorders and eating disorders, respectively.

Conclusion

Overweight was the most prevalent nutritional status, and chemotherapy was the most used antineoplastic treatment by the participants of this study. Most of the women evaluated in this study were dissatisfied with their body image. Restrained eating behavior was predominant and presented a significantly strong relation with mild body dissatisfaction levels. Higher BMI means were found in women who presented mild body dissatisfaction, when compared to those who did not present dissatisfaction. The findings of the present study are preliminary results of a larger project; therefore, the evaluated sample is a cut of the total sample, evidencing that such relations can be found when the data are analyzed with the entire sample. It is worth noting that this theme is rarely addressed in the literature, and more studies are needed to investigate the relationship between eating behavior and body image in the lives of women with breast cancer.

Acknowledgments

None.

Conflicts of interest

The authors declare that they have no conflict of interest.

References

1. World Health Organization. *Breast fact sheet*. 2019;876:2.

2. INCA. Estimativa 2018-Incidência de câncer no Brasil [Internet]. Instituto Nacional de Câncer José Alencar Gomes da Silva; 2017. 130 p.

3. Fuller MS, Lee CI, Elmore JG. Breast cancer screening: An evidence-based update. *Medical Clinics of North America*. 2015;99(3):451–468.

4. Genz N, et al. Estadiamento e grau de resiliência do sobrevivente ao câncer de mama Staging and resilience degree in breast cancer survivors. *Rev Pesqui Cuid é Fundam Online*. 2016;8(4):4935.

5. McDonald ES, Clark AS, Tchou J, et al. Clinical Diagnosis and Management of Breast Cancer. *J Nucl Med*. 2016;57(Supplement_1):9S–16S.

6. Sun YS, Zhao Z, Yang ZN, et al. Risk factors and preventions of breast cancer. *International Journal of Biological Sciences*. 2017;13(11):1387–1397.

7. Viana V. Psicologia, saúde e nutrição: Contributo para o estudo do comportamento alimentar. *Análise Psicológica*. 2002;20(4):611–624.

8. Alvarenga M, Koritar P. Atitude e comportamento alimentar-determinantes de escolhas e consumo. In: Alvarenga, M. (Org.). *Nutrição Comportamental*. São Paulo: Manole; 2015. 23–51 p.

9. Mennucci L, Timerman F, Alvarenga M. Como a subjetividade influencia o comportamento alimentar? In: Alvarenga, M. (Org.). *Nutrição Comportamental*. São Paulo: Manole; 2015. 51–68 p.

10. Barbosa LNF, Francisco AL. A Subjetividade Do Câncer Na Cultura: Implicações Na Clínica Contemporânea. *Rev SBPH*. 2007;10(1):9–24.

11. Branco E. *Qualidade de Vida e Ajustamento Emocional em Doentes Com Cancro Ginecologico e Mama*. Universidade de Aveiro; 2014.

12. Slade PD. What is Body Image. *Behav Res Ther*. 1994;32(5):497–502.

13. IBGE. *Pesquisa Nacional de Saúde*. Inst Bras Geogr e Estat IBGE; 2013. 31–33 p.

14. WHO. *Physical status: the use and interpretation of anthropometry*; 1995. 1–463 p.

15. *Obesity: preventing and managing the global epidemic*. Report of a WHO Consultation on Obesity: Geneva; 1997.

16. Ferreira MEC, Amaral ACS, Fortes LS, et al. Imagem corporal: contexto histórico e atual. In: Ferreira MEC, Castro MR, Morgado FFR (orgs). *Imagem corporal: reflexões, diretrizes e práticas de pesquisa*. Juiz de Fora: Editora UFJF; 2014. 15–29 p.

17. Campana ANNB, Tavares MCGCF. Avaliação atitudinal da imagem corporal. In: Tavares MCGCF, Campana ANNB (orgs). *Avaliação da imagem corporal: instrumentos e diretrizes para a pesquisa*. São Paulo: Phorte; 2009. 75–126 p.

18. Bandeira YER, Mendes AL de RF, Cavalcante ACM, et al. Avaliação da imagem corporal de estudantes do curso de nutrição de um centro universitário particular de Fortaleza. *J Bras Psiquiatr*. 2016;65(2):168–173.

19. Kakeshita IS, Silva AIP, Zanatta DP, et al. Construção e Fidedignidade Teste-Reteste de Escalas de Silhuetas Brasileiras para Adultos e Crianças. *Psicol Teor e Pesqui*. 2009;25(2):263–270.

20. Viana V, Sinde S. Estilo Alimentar: Adaptação e validação do questionário holandês do comportamento alimentar. *Psicol Teor Investig e Prática*. 2003;26(1):59–71.

21. Viana V. Psicologia, saúde e nutrição: Contributo para o comportamento alimentar. *Análise Psicológica*. 2002;4(XX):611–624.

22. Slevec JH, Tiggemann M. Predictors of body dissatisfaction and disordered eating in middle-aged women. *Clin Psychol Rev*. 2011;31(4):515–524.

23. Ferreira PDAA, Sampaio RMM, Montenegro ACC, et al. Caracterização do comportamento alimentar e estado nutricional de adultos Characterization of food behavior and nutritional status of adults. *Edições Desafio Singul*. 2018;14(1):252–258.

24. Pelegrini A, Sacomori C, Santos MC, et al. Percepção da imagem corporal em mulheres: Prevalência e associação com indicadores antropométricos. *Rev Bras Cineantropometria e Desempenho Hum*. 2014;16(1):58–65.

25. Carolina A, et al. Influence of Body Image in Women Undergoing Treatment for Breast Cancer. *Rev Bras Ginecol Obs*. 2017;39(4):175–183.

26. Matos MT. *Imagem corporal de adultos jovens e adultos idosos praticantes de dança*. Rio Claro. Monografia [Graduação em Educação Física]-Universidade Federal Paulista; 2012. 51 p.

27. Kolodziejczyk A, Pawłowski T. Negative body image in breast cancer patients. *Adv Clin Exp Med*. 2019;28(8):1137–1142.

28. Capelari P, Ceni GC. Comportamento Alimentar E Perfil Nutricional De Pacientes Oncológicos Em Tratamento Quimioterápico. *Demetra:Aliment Nutr Saúde*. 2018;13(1):223–240.

29. Engin A. Obesity-associated breast cancer: Analysis of risk factors. *Adv Exp Med Biol*. 2017;960:571–606.

30. Neuhouser ML, et al. Overweight, obesity, and postmenopausal invasive breast cancer risk: A secondary analysis of the women's health initiative randomized clinical trials. *JAMA Oncol*. 2015;1(5):611–621.

31. Gershuni V, Li YR, Williams AD, et al. Breast cancer subtype distribution is different in normal weight, overweight, and obese women. *Breast Cancer Res Treat*. 2017;163(2):375–381.

32. Poltronieri TS, Cremonese C. Dissatisfaction with self-image and its related factors in southern Brazilian women. *Ciência & Saúde*. 2020;25(7):128–134.

33. Martins A, Paulo DS, Preto R, et al. Satisfação com a imagem corporal em adultos de diferentes pesos corporais. Aval Psychol. 2008;7(2):199–209.

34. Antunes B, et al. Comportamento alimentar restritivo e excesso de peso em jovens portugueses. *Escola Superior de Educação de Viseu*. 2015;96–113.

35. Martucci RB. Câncer. In: Cuppari L. (Org.). *Nutrição Clínica no adulto*. 3rd ed. São Paulo: Manole; 2014. 327–354 p.

36. Silva AM, Franco LP, Santos TSS, et al. Impacto das aversões alimentares no estado nutricional de pacientes oncológicos submetidos à quimioterapia. *J Heal Sci Inst*. 2012;30(2):166–170.