Association between the level of physical activity and the presence of comorbidities in the diagnosis of breast cancer

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INTRODUCTION

Physical activity (PA) at diagnosis is associated with a reduction of comorbidities and has contributed to the improvement in quality of life by reducing physical and emotional symptoms in cancer patients (SCHMIDT et al, 2015; SHIN et al, 2017). Comorbidity can be defined as any additional distinct clinical entity pre-existing or occurring during the clinical course of a patient with a primary disease under study (HONG et al, 2015; KANG et al, 2018).

OBJECTIVE

To evaluate the association between the PA level and the presence of comorbidities in the diagnosis of breast cancer.

METHODS

Cross-sectional study in women diagnosed with breast cancer, enrolled in the Brazilian National Cancer Institute (INCA), with curative treatment indication, over 18 years, who signed the consent form. Women were excluded subject to prior cancer treatment out of INCA with previous personal history of cancer, with gear changes or limited mobility with visual or hearing impairment that prevented the questionnaires, no clinical or psychological conditions to respond to the questionnaire and who participated in clinical research protocol. Was considered as the main exposure PA level, assessed using the International Physical Activity Questionnaire (IPAQ) long version (MATSUDO et al, 2001), and as outcome the comorbidity, assessed by the Charlson Comorbidity Index (CCI) (CHARLSON et al, 1994). Descriptive analysis of the study population was performed. The analysis between comorbidities and the PA level was carried out by the simple and multiple logistic regression (stepwise forward), considering as statistically significant $p<0.05$. This project was approved by the Ethics Committee in Research of the INCA, under protocol number 1400320.

RESULTS

301 women were included. The mean age was 54.17 years (± 12.11). The majority reported having brown skin color (45.2%) and had a companion at the time of the interview (50.2%). Regarding education, 64.2% had more than 8 years of study, 54.2% had no employment relationship and 67.4% received less than a minimum wage per capita. The majority of women (71.1%) did not drink alcohol in the last 30 days and 11.0% of women reported using tobacco currently (Table 1).

Of these, 13.6% had comorbidities, 45.8% were women with hypertension, 52.2% were in the postmenopausal period, 29.9% and 32.9% were obese overweight. The most frequent histological type was infiltrating ductal carcinoma (ICD) (76.1%) and in relation to pain, 31.9% reported having the symptom. When considering the proposed treatment, 59.1% had proposed as neoadjuvant chemotherapy and 35.5%, surgery (Table 2).

It was evidenced that those who performed lower levels of PA (≤ 2862 Mets / min / week) (Table 3) presented a 50% higher chance of having comorbidities (95% CI 0.77- 2.93), but there was no statistically significant difference between the groups ($p = 0.232$) (Table 4).

CONCLUSION

In this study the mean age of the patients was 54.17 years and the majority of the women were brown with a partner and education level over 8 years of study. In addition, women had no employment and mostly received less than one minimum wage. In our population, 13.6% had comorbidities at the time of the interview by the Charlson comorbidity index. In relation to the level of physical activity, the majority of the women performed domestic physical activity. There was no statistically significant difference between the PA levels in the presence of comorbidities at breast cancer diagnosis.

Table 1. Sociodemografic characteristics of the study population (N=301)

Variables	N*	%*
Age		
Mean (±SD)	54,17 (12,11)	
Race/ skin color		
White	103	34,3
Black	56	18,7
Yellow or indigenous	4	1,3
Brown	136	45,2
With Partner		
Yes	151	50,2
No	148	49,2
Educational level (years)		
0 to 7 years	107	35,8
≥ 8 years	192	64,2
Working		
No	163	54,2
Yes	132	43,9
Per capita income		
≤ 1 minimum wage	203	67,4
> 1 minimum wage	97	32,2
Alcohol Consumption		
No	214	71,1
Yes	83	27,6
Smoking		
No	266	88,4
Yes	33	11,0

* The differences correspond to the absence of information.

Table 2. Clinical characteristics of the study population (N=301)

Variables	N*	%
Charlson comorbidity index		
No	246	81,7
Yes	41	13,6
Not reported	13	4,3
Arterial hypertension		
No	162	53,8
Yes	138	45,8
Menopause		
No	104	34,6
Yes	157	52,2
Not reported	39	4,3
Histological type of tumor		
Infiltrating ductal carcinoma	229	76,1
Others	36	12,1
Body mass index		
Low weight	5	1,7
Eutrophic	72	23,9
Overweight	99	32,9
Obesity	90	29,9
Pain		
No	200	66,4
Yes	96	31,9
Proposed treatment		
Surgery	107	35,5
Neoadjuvant Chemotherapy	178	59,1

*The differences correspond to the absence of information.

Table 3. Domains of physical activity in Mets-minutes/week and physical capacity of the patients at the time of inclusion (N = 301)

Variables	N	%
IPAQ		
Physical Activity – Work (Mets-minutes/week)	0 (0-27120)	
Physical Activity – Transport (Mets-minutes/week)	330 (0-20916)	
Physical Activity – Domestic (Mets-minutes/week)	1080 (0-21030)	
Physical Activity – Leisure (Mets-minutes/week)	0 (0-7695)	
Physical Activity – Overall	2862 (0-28936)	
Dynamometer		
Mean (±SD)	21,34 (5,15)	
2 minute step test		
Median (min-max)	82,07 (0-150)	
Sitting-rising test		
Mean (±SD)	12,70 (6,53)	

Min = minutes; SD = Standard deviation; min = minimum; max = maximum.

Table 4. Association of physical activity level (low versus high) according to the presence of comorbidities (N = 301)

Characteristics	Comorbidity		OR	95%CI	P value
	Yes N (%)	No N (%)			
Physical Activity (Mets-minutes/week)					
> 2862	17 (41,5)	133 (51,6)	1,00	-	
≤ 2862	24 (58,5)	125 (48,4)	1,50	0,77-2,93	0,232

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Projeto Gráfico: Área de Edição e Produção de Materiais Técnico-Científicos / INCA

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