

PHYSICAL ACTIVITY AND QUALITY OF LIFE IN PROSTATE AND BREAST CANCER PATIENTS: A COMPARATIVE STUDY

ATIVIDADE FÍSICA E QUALIDADE DE VIDA EM PACIENTES DE CÂNCER DE PRÓSTATA E MAMA: UM ESTUDO COMPARATIVO

Marina Ribovski¹, Leonessa Boing¹, Ana Cristina Tillmann¹, Taysi Seemann¹, Zenite Machado¹ and Adriana Coutinho de Azevedo Guimarães¹

¹Universidade do Estado de Santa Catarina, Florianópolis-SC, Brasil.

RESUMO

O objetivo deste estudo foi comparar a atividade física (AF) e a qualidade de vida (QV) de pacientes com câncer de próstata (CP) e com câncer de mama (CM) em tratamento clínico e após tratamento. Estudo transversal com 148 pacientes (44 homens e 104 mulheres), média de idade 58.77±10.53 anos, com aplicação de questionário, contendo: informações gerais, status econômico (IBGE), AF (IPAQ – versão curta) e QV (EORTC QLQ-C30). Em relação à AF, 73,1% das pacientes com CM encontraram-se insuficientemente ativas e 63,6% dos pacientes com CP também, sem diferença entre ambos (p=0,251). O tempo total de prática de AF foi de 32,5 min/dia para as pacientes com CM e 39,0 min/dia para os pacientes com CP. Os pacientes com CP que praticavam mais AF relataram menos insônia (p=0,021). Ainda, apresentaram melhor escala funcional (75,4±20,0), assim como, escala sintomática (19,1±17,8) de QV, destacando-se piores escores para as pacientes com CM nas variáveis fadiga (39,4±36,3; p=0,027), náusea/vômitos (12,9±23,4; p=0,048) e dificuldades financeiras (30,7±39,0; p=0,034). Conclui-se que não houve diferença entre os grupos em relação à AF, por sua vez, na QV os pacientes com CP apresentaram melhores escores nas escalas funcional e sintomática comparados às pacientes com CM.

Palavras-chave: Atividade motora. Qualidade de vida. Neoplasmas da mama. Neoplasma da próstata.

ABSTRACT

The objective of this study was to compare the physical activity (PA) and quality of life (QL) of patients with prostate cancer (PC) and breast cancer (BC) undergoing clinical treatment and after treatment. Cross-sectional study with 148 patients (44 men and 104 women), mean age of 58.77±10.53 years old, data collect with questionnaire, containing: general information, economic status (IBGE), PA (IPAQ – short version) and QL (EORTC QLQ-C30). About the PA, 73.1% of the patients with BC were insufficiently active and also 63.6% of the patients with PC, with no difference between both (p=0.251). The time total of PA practice was 32.5 min/day for the BC patients and 39.0 min/day for the PC patients. PC patients that practiced more PA reported less insomnia (p=0.021). More, they presented better functional scale (75.4±20.0) as the symptomatic scale (19.1±17.8) of QL, highlighting worse scores for the BC patients on the variables of fatigue (39.4±36.3; p=0.027), nausea/vomits (12.9±23.4; p=0.048) and financial difficulties (30.7±39.0; p=0.034). We conclude that there was no difference between groups related to PA, however, the PC patients presented better scores in the functional and symptomatic scales when comparing to BC patients.

Keywords: Motor activity. Quality of life. Breast neoplasms. Prostate neoplasm.

Introduction

The absence of physical activity has been reported worldwide as responsible for six percent of all mortality deaths¹. Associated with smoking and inadequate eating habits, it is linked to more than 50% of the risk of chronic diseases², including some types of cancer¹. Given that, Brazilian data indicate that the adoption of a healthy lifestyle would act as a preventive factor to the occurrence of new cancer cases in the country³.

Among men, prostate cancer is the sixth most common and prevalent type of cancer, accounting for 10% of the diagnoses of the disease³. Breast cancer is characterized for women, as the most common type of cancer and the second most frequent³, corresponding to 11.9% of all diagnosed cancers⁴.

Cancer is related to habits and quality of life⁵, which undergoes considerable changes; from the perception of the disease to the different types of treatments, physical and emotional consequences, besides social changes and daily activities⁶. Therefore, the assessment of cancer patient quality of life is justified as an important indicator of the response to treatment and disease.

As physical activity influences the reduction of mortality risks, improves prognosis in patients with breast and prostate cancer and brings positive changes in quality of life in the oncological context. The present study aimed to compare the physical activity and quality of life of patients with prostate cancer and breast cancer undergoing clinical treatment and post-treatment.

Methods

Participants

The cross-sectional study was composed of a non-probabilistic sample of 148 cancer patients (58.77±10.53 years old), being 44 prostate cancer patients (66.23±7.73 years old) and 104 breast cancer patients (55.62±9.97 years old). The data collection occurred in Oncologic Research Center (CEPON) in the city of Florianópolis – Santa Catarina, in the South of Brazil. This institution is a reference in oncologic treatment and public service in the state of Santa Catarina, and also and of the World Health Organization (WHO) for Palliative Medicine in Brazil. The study was approved by the Ethics Committee on Research in Human Being (CEPSH) of UDESC, Protocol No. 688.548 on June 16, 2014, and by the Research Ethics Committee of CEPON (CEP), Protocol No. 818.174, on October 3, 2014.

All participants read and signed the Consent Form. For inclusion criteria were determined: (1) being aged between 40 and 80 years, (2) being in any phase of adjuvant or neoadjuvant treatment at the CEPON hospital or being medically monitored after clinical treatment. As exclusion criteria: (1) being classified as illiterate, since it would enable the subject to understand the questions; and (2) present signs of clinical stage IV of cancer (presence of metastasis) to avoid a treatment and prognostic bias.

Procedures

Data were collected with a questionnaire divided into four parts: (1) General information; (2) Economic level; (3) Physical activity and (4) Quality of life. The general information were self-related by the patients, and included age, marital status, educational level, presence of other diseases and clinical treatment of the cancer. Weight status was classified by means of calculating the Body Mass Index (BMI) and was categorized according to the WHO⁷ that suggests: slenderness (BMI<18.5); eutrophy (BMI 18.5-24.9); overweight (BMI 25.0-29.9); pre-obesity and obesity (BMI≥30.0). For statistical purposes, due to the lower numbers of patients in the mentioned categories, it was used only two categories: normal weight (slenderness and eutrophy) and overweight (overweight, pre-obesity and obesity).

Economic level was verified by means of the IBGE⁸ criterion, classifying the subjects into economic strata A, B, C, D and E in accordance with the number of minimum wages counted in the monthly family income, based on the minimum wage of R\$724.00 of 2014. Given the lower number of participants in each category the groups divided in high class (A+B), middle class (C), and low class (D+E).

Physical activity was investigated by International Physical Activity Questionnaire (IPAQ – short version) from Pardini et al.⁹. It contains six items regarding the time that the

participant practiced at least 10 continuous minutes of walking, moderate and vigorous physical activity in the last week, in different domains, namely: work, domestic, leisure, recreation and sports. Considering the physical activity guidelines for cancer patients recommended by the *American College of Sports Medicine* – ACSM of at least 150 minutes of practice per week¹⁰, the authors opted for classify the patients as: insufficiently active, when the patient did not attain 150 minutes of physical activity, and sufficiently active, when the patient attained the 150 minutes of physical activity per week or more.

Quality of life was evaluated by European Organization for Research and Treatment of Cancer Quality of Life Questionnaire C30 (EORTC QLQ-C30) from Aaronson et al.¹¹. This questionnaire contains 30 questions scale that evaluate the quality of life of patients with cancer over the past four weeks. This instrument presents three scales: functional (physical, functional, emotional, social and cognitive), symptomatic (fatigue, pain, nausea/vomiting, dyspnea, insomnia, loss of appetite, constipation, diarrhea and financial difficulties) and global health status. Validated in Portuguese language by Pais-Ribeiro, Pinto, Santos¹² and validated for Brazilian women with breast cancer by Michels, Latorre, Maciel¹³. Scales and specific items result in scores from 0 to 100. For functional and global health status scale, higher scores indicate a better quality of life, and for the symptomatic scale higher scores indicate worse quality of life.

Statistical analysis

For statistics purposes, it was used descriptive analyzes for calculation of mean, standard deviation and percentage. The comparison between groups of prostate patients and breast cancer patients regarding the general information and physical activity were realized by the Chi-Square and Exact Fisher. For normality calculation, the Kolmogorov Smirnov test was used, and since normality prerequisite were not meet for any variable, it was used the Mann-Whitney U test for comparison of quality of life and types/intensity of physical activity (walking, moderate and vigorous physical activity) between the two groups. In addition, it Spearman Correlation was performed between the total physical activity and the quality of life scales and subscales in prostate cancer patients and breast cancer patients, separately. Only insomnia was significative in prostate cancer patients, so it was the only subscale presented in the Table 5. Statistical analysis was performed with the program IBM SPSS version 20.0.

Results

Table 1 shows that most of the sample had monthly family income in until four minimum wages (84.4%), attended until elementary school (55.4%) and had two jobs before cancer diagnosis (71.6%), being the women with breast cancer in higher number (73.1%). After diagnosis, majority was in medical leave or unemployed (64.2%), highlighting the men with prostate cancer (84.1%). Most of the sample had partner (62.5%) and was overweight (69.6%).

Table 1. General information of prostate and breast cancer patients. Florianopolis-SC, 2014-2015

Variable	Total	Prostate cancer	Breast cancer	p-value
Economic level (%)				0.822*
High level (A+B)	2.0	2.3	1.9	
Medium level (C)	13.6	16.3	12.5	
Low level (D+E)	84.4	81.4	85.6	
Occupational activity before cancer diagnosis (%)				<0.001*
One or more jobs	71.6	68.2	73.1	
Unemployed/Retired/Medical leave	16.9	31.8	10.6	
Home	11.5	0.0	16.3	
Occupational activity after cancer diagnosis (%)				<0.001*
One or more jobs	18.2	15.9	19.2	
Unemployed/Retired/Expertise	64.2	84.1	55.8	
Home	17.6	0.0	25.0	
Educational level (%)				0.527*
Basic school	55.4	61.4	52.9	
High school	33.8	31.8	34.6	
Undergraduate school	10.8	6.8	12.5	
Marital status (%)				0.068**
With partner	61.5	72.7	56.7	
Without partner	38.5	27.3	43.3	
Weight status (%)				0.645**
Healthy weight	29.7	27.3	31.1	
Overweight	69.6	72.7	68.9	

Note: *Fisher Exact test. **Chi-Square test. $p > 0.05$

Source: Authors

In the Table 2 are presented the disease characteristics of the studied patients. Most of them had at least one more adjunct diagnosis (51.4%), occurring more in the men (75.0%). Cardiovascular complications were evidenced in 31.3% of the cases (not specified in the table). Most of the interviewed was during clinical treatment, being 48.3% of the men in radiotherapy and 48.3% of the women in chemotherapy. Those who had already finished the clinical treatment (chemotherapy, radiotherapy and/or hormone therapy), had ended in more than 12 months. About the surgeries, more than half of the women (54.4%) did radical mastectomy and half of the men did not received any surgery intervention (50.0%), with significant differences between both cases. Urinary incontinence and lymphedema, possible consequences of prostate cancer and breast cancer, respectively, were found in less than 50% of the sample.

Table 2. Clinical information of prostate and breast cancer patients. Florianopolis, 2014-15

Variable	Total	Prostate cancer	Breast cancer	p-value
Presence of other disease (%)				<0.001**
Yes	51.4	75.0	41.3	
No	48.6	25.0	58.7	
How many diseases (%)				0.001**
None	48.0	25.0	57.7	
One	33.8	52.3	26.0	
Two or more	18.2	22.7	16.3	
Cancer recurrence (%)				0.611*
Yes	6.1	4.5	6.7	
No	93.9	95.5	93.3	
Stage of treatment (%)				0.011**
During treatment	79.1	65.9	84.6	
After treatment	20.9	34.1	15.4	
Present treatment (%)				0.021**
Chemotherapy	42.2	24.1	48.3	
Radiotherapy	29.3	48.3	23.0	
Hormone therapy	28.4	27.6	28.7	
Time after treatment (%)				0.765**
Less than 12 months	40.0	42.9	37.5	
More than 12 months	60.0	57.1	62.5	
Surgery (%)				<0.001*
Radical	50.3	40.9	54.4	
Conservative	31.3	9.1	40.8	
Not realized	18.4	50.0	4.9	
Treatment consequences (%)				0.679**
Lymphedema ^a Urinary incontinence ^b	45.1	47.7	44.0	
No lymphedema ^a No urinary incontinence ^b	54.9	52.3	56.0	

Note: Source: Developed by the authors. ^a Only for breast cancer patients ^b Only for prostate cancer patients. *Fisher Exact test. **Chi-Square test. p>0.05

Source: Authors

In the Table 3 is verified that most of the participants was insufficiently active (70.3%), being women more insufficiently actives (73.1%) than men (63.6%), although there was no significant difference between the variables. The mean time of total physical activity was 34.5 minutes per day (min./day), showing walking as the more practiced option, with 21.4 min./day. Vigorous physical activity + moderated had the total of 13.1 min./day, with no significant difference between groups.

Table 3. Prostate and breast cancer patients physical characterization. Florianopolis, 2014/15

Variable	Total	Prostate cancer	Breast cancer	p-value*
Present level of PA	(%)	(%)	(%)	0.251
Sufficiently active (> 150 min./week)	29.7	36.4	26.9	
Insufficiently active (< 150 min./week)	70.3	63.6	73.1	
Characterization of present PA	\bar{x} (sd)	\bar{x} (sd)	\bar{x} (sd)	p-value**
Time of walking (min./day)	21.4±30.5	22.1±35.3	21.1±28.4	0.647
Time of moderate PA (min./day)	9.6±30.9	10.4±34.5	9.1±29.4	0.677
Time of vigorous PA (min./day)	3.5±18.5	6.4±25.9	2.3±14.2	0.267
Time of moderate + vigorous PA (min./day)	13.1±43.8	16.9±53.2	11.4±39.2	0.989
Total time of PA (min./day)	34.5±61.9	39.0±69.6	32.5±58.5	0.788

Note: Source: Developed by the authors. *Chi-Square test. **Mann-Whitney U-test. PA – Physical activity. min./day – minutes per day. \bar{x} - mean; sd – standard deviation

Source: Authors

Table 4 points that there was no difference between the groups in the global health scale, and that both men and women were close to the ideal, in the zero to 100 scale. In the functional scale, data also resulted in a better quality of life, however, there was significant difference between the groups, where men had better scores. In the symptomatic scale, some items showed significant difference, namely fatigue, nausea/vomiting and financial difficulties, where women had worse scores when compared to men.

Table 4. Quality of life characterization of prostate and breast cancer patients. Florianopolis, 2014/15

Variable	\bar{x} (dp)			
EORTC-C30	Total	Prostate cancer	Breast cancer	p-value
Functional scale	68.7±22.3	75.4 ±20.0	65.9±22.7	0.016
Cognitive function		76.5±30.7	69.5±31.5	0.192
Emotional Function		65.9±32.6	61.1±32.3	0.363
Physical Function		70.7±24.9	71.7±25.0	0.808
Social Function		78.7±33.4	80.1±29.3	0.882
Performance of roles		73.8±35.1	68.2±36.1	0.306
Symptomatic scale	26.8±21.8	19.1±17.8	30.0±22.6	0.005
Fatigue		25.5±31.1	39.4±36.3	0.027
Loss of Appetite		16.6±34.8	21.4±34.7	0.166
Insomnia		46.9±42.7	43.2±45.4	0.566
Pain		29.9±35.3	33.9±37.8	0.611
Nausea and vomiting		6.0±19.3	12.9±23.4	0.048
Dyspnea		6.0±14.8	12.1±27.5	0.186
Constipation		24.2±36.9	28.2±39.3	0.554
Diarrhea		21.9±68.9	10.5±28.3	0.247
Financial difficulties		18.1±34.0	30.7±39.0	0.034
Global health scale	73.98(±23.50)	70.0±23.1	75.6±23.5	0.116

Note: Mann-Whitney U-test. \bar{x} - mean; sd – standard deviation

Source: Authors

Table 5 shows the correlation between quality of life and physical activity. The result presented is related to the only variable that demonstrated statistical significance. It is demonstrated that in patients with prostate cancer, some increase in the total practice of physical activity can help in the decrease of the subscale of insomnia from quality of life.

Table 5. Spearman Correlation between total physical activity and symptomatic scale of quality of life from prostate cancer patients. Florianopolis – SC, 2014/15

Prostate cancer patients (n=48)	Total physical activity (min./day)	
	r^2	p-value
Insomnia (Symptomatic scale EORTC QLQ-C30)	-0.319	0.021

Note: Spearman Correlation. This variable was the only one presented, once, which was the only variable that had statistical significance

Source: Author

Discussion

According to the first objective of this study, to compare the physical activity of patients with prostate cancer and breast cancer, it can be observed that there was no significant difference in the practice of physical activity between the groups of prostate and breast cancer patients, and that both groups were considered insufficiently active. The

American College of Sports Medicine¹⁰ recommendations advocate the practice of 150 minutes of moderate to vigorous intensity physical activity for cancer patients in order to provide improved health and quality of life. Thus, the results of the present study merit attention, since most of the patients did not reach the ACSM¹⁰ recommendations, with a daily average of 34 minutes of total physical activity, with approximately 10 minutes of moderate activity and only 3 minutes of vigorous.

Different studies report similar results related to physical activity levels, although they present distinctive measurement methodologies. Studies by Lynch et al.¹⁴ and Mina et al.¹⁵ showed that most of the sample of prostate cancer patients was also characterized as insufficiently active. In breast cancer patients, Harrison et al.¹⁶ reported that approximately 50% decreased physical activity levels between six and 18 months after diagnosis¹⁶. In the present study, the low value of physical activity can be justified by the fact that 81.6% of the patients underwent surgical procedures, and 79.1% were in clinical treatment at the time of data collection, with 45.1% reporting treatment consequences (urinary incontinence and lymphedema), factors that may be considered limiting to the practice of physical activity¹⁵. Overweight and obesity may also be related to the low practice of physical activity and associated with risk factors for prostate and breast cancer patients¹⁷. In the present study, besides the majority of the total sample being considered insufficiently active, it was also overweight (67.3%).

Contrary to the overweight rates, obesity and lack of physical activity, global health scale of the quality of life questionnaire presented elevated scores throughout the group (73.98 ± 23.50), respectively for patients with prostate cancer (70.0 ± 23.1) and with breast cancer (75.6 ± 23.5). Similar values are evidenced in both women with breast cancer¹⁸ and men with prostate cancer¹⁹. The global health scores may be due to the experiences of cancer patients in relation to positive changes in feelings of values and attitudes, and their visions and perceptions of life²⁰. Considering that the score of global health is obtained by the median of the score that the patient attributes himself to his health and his quality of life.

On quality of life functional scale, breast cancer patients had lower scores when compared to prostate cancer patients. This result may be related to the type of surgery to which they were submitted, since most of the patients underwent radical mastectomy and half of the patients with prostate cancer did not undergo surgical intervention. Since quality of life impairment may also be one of the side effects in cancer patients, performing the surgery may trigger significant experiences and chronic side effects related to treatment and physical function for years²¹. These side effects have been shown to compromise emotional well-being and to decrease quality of life up to four years after treatment²². In breast cancer patients, the total mastectomy reflects in worse scores on the emotional and social scales of quality of life²³, since the absence of breasts modifies body image and spreads the sensation of mutilation and loss of femininity for these women²⁴.

The lowest scores in relation to the symptomatic scale were also observed in breast cancer patients, since a majority was found in chemotherapy (48.3%), and a majority of the prostate cancer in radiotherapy (48.3%). The chemical elements presented in chemotherapy may promote the increase of symptoms such as nausea and vomiting²⁵ and fatigue²⁶. The chemotherapy effects are different from the radiotherapy effects and tend to be better tolerated³. Furthermore, in a study with prostate cancer patients, it was reported that quality of life did not present significant changes during radiotherapy treatment¹⁹.

About fatigue symptom, it was more severe in breast cancer patients (39.4 ± 36.3) than in patients with prostate cancer (25.5 ± 31.1). In the literature, fatigue has been reported as one of the most frequent manifestations in cancer patients undergoing chemotherapy or chemotherapy associated with radiotherapy, being present in 75% to 95% of cases²⁷. The fact

that 48.3% of breast cancer patients were undergoing chemotherapy becomes a determinant of the worst fatigue scores, since studies indicate the increase in this symptom is associated with chemotherapy treatment^{26,28}.

The financial difficulties were reported more by the breast cancer patients in the present study when compared to the prostate cancer patients. The chemotherapy treatment was responsible for leaving jobs and financial difficulties because of the association of this modality of treatment with a high level of aggressiveness and treatment side effects²⁹. Still, women with breast cancer who underwent radical mastectomy reported similarly, leaving jobs and financial difficulties²³. Both the type of surgery and the type of treatment may be associated with the difference between the groups in the context of the financial difficulties in the present study, since the majority of the women underwent radical mastectomy and undergoing chemotherapy.

An international study evaluating sleep disorders and quality of life, with 861 men diagnosed with prostate cancer, confirmed that patients with insomnia have a medium quality of life³⁰. In the present study, the correlation between physical activity and quality of life has shown that an increase in the total practice of physical activity by patients with prostate cancer may indicate a decrease in insomnia symptoms. What can be beneficial to these patients, considering that insomnia is a symptom very present during and after treatment³¹.

Some limitations are presented in the study, as a cross-sectional study, the exposure and outcome were collected in a single moment, making it difficult to establish a temporal relationship between the events and whether the relationship between them is causal or not. Self-reported information, since patients' records were not accessed during data collection. Use of the IPAQ short version, as it's a questionnaire and is characterized as a subjective method of evaluation of physical activity. However, studies that investigate physical activity, for the most part, used the same methodology³⁰. And the fact that the patients were undergoing treatment and after treatment stage can also be a limitation and cause some bias in the study. Also, the presence of covariates was not analyzed, which may be considered a limitation of the study.

Because it is a multi-scope research, the results of the present study open possibilities for new investigations of the same origin. Studies are recommended that investigate physical activity by direct measures and relate their possible benefits. Also, longitudinal or qualitative studies on experience reports in the various stages of cancer in the quality of life question. It is recommended Brazilian researches in order to investigate different regions and social context.

Even, measuring physical activity level of men and women with cancer is extremely important for that new strategies that encourage its practice be implanted, acting beneficially in the physical³² and psychological aspects, such as improvement of self-esteem, depressive symptoms²² and quality of life³³. Besides that, accelerating the process of return to the daily activity and decreasing the risk of progression of the disease, reducing the mortality rates³⁴, as during as after the treatment³⁵. According to the findings of the present study, most of the patients, both breast and prostate cancer did not reach the necessary physical activity recommendations, thus, it becomes essential that new strategies and interventions be implanted for this public.

Conclusions

It is concluded that the majority of the sample is insufficiently active and in higher overall quality of life scores. However, differences between functional and symptomatic quality of life scores were observed between patients with prostate and breast cancer patients,

in which men had higher scores when compared to women. Also, the patients with prostate cancer revealed that the more physical activity they practiced, less symptoms of insomnia they presented. More attention is given to factors limiting the practice of physical activity and the reduction of symptoms in all aspects of quality of life. Also, to develop actions to mitigate the treatment side effects and its consequences. It is hoped that the results contribute to new perspectives in the practice of physical activity and quality of life, especially to the health professionals involved in the context.

References

1. World Health Organization. Global recommendations on physical activity for health, 18-64 years old. Genebra, Suíça; 2011.
2. VIGITEL Brasil 2014. Vigilância de fatores de risco para doenças crônicas por inquérito telefônico 2014. Secretaria de Vigilância em Saúde. Brasília: Ministério da Saúde; 2014.
3. Instituto Nacional do Câncer. Síntese de Resultados e Comentários. Rio de Janeiro: INCA; 2010.
4. World Health Organization. Global Health Estimates: Deaths by Cause, Age, Sex and Country, 2000-2012. Geneva, World Health Organization; 2014.
5. Macedo GDN, Lucena NMG, Soares LMMM, Rocha PO, Gutiérrez CV, López MCB. Influência do estilo de vida na qualidade de vida de mulheres com câncer de mama. RBCS 2008;14(4):13-18. DOI:10.4034/RBCS.2010.14.04.02
6. Akin S, Can G, Durna Z, Aydinler A. The quality of life and self-efficacy of Turkish breast cancer patients undergoing chemotherapy. Eur J Oncol Nurs 2008;12(5):449-56. DOI: 10.1016/j.ejon.2008.07.006
7. World Health Organization. The International Classification of adult underweight, overweight and obesity according to BMI; 2004.
8. Instituto Brasileiro de Geografia e Estatística, Programa Nacional de Amostra por Domicílio. Brasília, Distrito Federal; 2010.
9. Pardini R, Matsudo S, Matsudo TAV, Andrade E, Braggion G, Andrade D, et al. Validation of the international physical activity questionnaire (IPAQ): pilot study in Brazilian young adults. Med Sci Sports Exerc 1997;29(6):S5-S9.
10. Schmitz KH, Courneya KS, Matthews C, Demark-Wahnefried W, Galvão DA, Pinto BM et al. American College of Sports Medicine roundtable on exercise guidelines for cancer survivors. Med Sci Sports Exerc 2010;42(7):1409-1426. DOI: 10.1249/MSS.0b013e3181e0c112
11. Aaronson NK, Ahmedzai S, Bergman B, Bullinger M, Cull A, Duez NJ, et al. The European Organization for Research and Treatment of Cancer QLQ-C30: A quality-of-life instrument for use in international clinical trials in oncology. J Natl Cancer Inst 1993;85:365-376. DOI: 10.1093/jnci/85.5.365
12. Pais-Ribeiro J, Pinto C, Santos C. Validation study of the portuguese version of the QLC-C30-V.3. Psic Saúde & Doenças 2008;9(1):89-102.
13. Michels FAS, Latorre MRO, Maciel MS. Validity, reliability and understanding of the EORTC-C30 and EORTC-BR23, quality of life questionnaires specific for breast cancer. Rev Bras Epidemiol 2013;16(2):352-363. DOI: 10.1590/S1415-790X201300020001
14. Lynch BM, Dunstan DW, Healy GN, Winkler E, Eakin E, Owen N. Objectively assessed physical activity, sedentary time and waist circumference among prostate cancer survivors: findings from the National Health and Nutrition Examination Survey (2003-2006). Eur J Cancer Care 2011;20:514-519. DOI: 10.1111/j.1365-2354.2010.01205.x
15. Mina DS, Guglietti CL, Alibhai SMH, Matthew AG, Kalnin R, Ahmad N, et al. The effect of meeting physical activity guidelines for cancer survivors on quality of life following radical prostatectomy for prostate cancer. J Cancer Surviv 2014;8:190-198. DOI: 10.1007/s11764-013-0329-z
16. Harrison S, Hayes SC, Newman B. Level of physical activity and characteristics associated with change following breast cancer diagnosis and treatment. Psychooncology 2009;18:387-394. DOI: 10.1002/pon.1504.
17. Davoodi SH, Malek-Shahabi T, Malekshahi-Moghadam A, Shahbazi R, Esmaeili S. Obesity as an Important Risk Factor for Certain Types of Cancer. Iran J Cancer Prev 2013;6(4):186-94.
18. Musarezia A, Zargham-Boroujeni A. Quality of life and related factors among the women undergoing mastectomy. Iran J Nurs Midwifery Res 2015;20(2):287-291.
19. Majewski W, Tabor K, Prokop E, Kulik R. Quality of life in patients with prostate cancer treated with radical image-guided radiotherapy. Contemp Oncol (Pozn) 2014;18(4):285-289. DOI: 10.5114/wo.2014.44097
20. Mezzomo NR, Abaid JLW. O Câncer de Mama na Percepção de Mulheres Mastectomizadas. Psic em Pesquisa 2012;6(1):40-49.

21. Loprinzi PD, Cardinal BJ. Effects of physical activity on common side effects of breast cancer treatment. *Breast Cancer* 2012;19:4-10. DOI: 10.1007/s12282-011-0292-3
22. Blank TO, Bellizzi KM. After prostate cancer: predictors of well-being among long-term prostate cancer survivors. *Cancer* 2006;106:2128–2135. DOI: 10.1002/cncr.21865
23. Sun Y, Kim SW, Heo CY, Kim D, Hwang Y, Yom CK. Comparison of Quality of Life Based on Surgical Technique in Patients with Breast Cancer. *Jpn J Clin Oncol* 2014;44(1):22–27. DOI: 10.1093/jjco/ht176
24. Sheppard LA, Ely S. Breast cancer and sexuality. *Breast J* 2008;14(2):176-18. DOI: 10.1111/j.1524-4741.2007.00550.x
25. Quinten C, Martinelli F, Coens C, Sprangers MA, Ringash J, Gotay C, et al. Patient Reported Outcomes and Behavioral Evidence (PROBE) and the European Organization for Research and Treatment of Cancer (EORTC) Clinical Groups. A global analysis of multitrail data investigating quality of life and symptoms as prognostic factors for survival in different tumor sites. *Cancer* 2014;120:302–311. DOI: 10.1002/cncr.28382
26. Mansano-Schlosser TC, Ceolim MF. Fadiga em idosos em tratamento quimioterápico. *Ver Bras Enferm* 2014;67(4):623-629. DOI: 10.1590/0034-7167.2014670419
27. McCabe RM, Grutsch JF, Braun DP, Nutakki SB. Fatigue as a driver of overall quality of life in cancer patients. *PLoS ONE* 2015;10(6):e0130023. DOI: 10.1371/journal.pone.0130023
28. Machado SM, Sawada NO. Avaliação da qualidade de vida de pacientes oncológicos em tratamento quimioterápico adjuvante. *Texto Contexto Enferm* 2008;17(4):750-757. DOI: 10.1590/S0104-07072008000400017
29. Martins LC, Ferreira Filho C, Giglio AD, Munhoes DA, Trevizan LLB, Herbst LG, et al. Desempenho profissional ou doméstico das pacientes em quimioterapia para câncer de mama. *Rev Assoc Med Bras* 2009;55(2):158-162. DOI: 10.1590/S0104-42302009000200019
30. Vardar-Yagli N, Sener G, Saglam M, Calik-Kutukcu E, Arikian H, Inal-Ince D, et al. Associations among physical activity, comorbidity, functional capacity, peripheral muscle strength and depression in breast cancer survivors. *Asian Pac J Cancer Prev* 2015;16(2):585-589. DOI: 10.7314/APJCP.2015.16.2.585
31. Araújo ICS, Barbosa MH, Barichello E. Distúrbios do sono em homens com câncer de próstata em hormonioterapia. *Esc Anna Nery* 2014;18(4):705-709. DOI: 10.5935/1414-8145.20140100
32. Magbanua MJ, Richman EL, Sosa EV, Jones LW, Simko J, Shinohara K, et al. Physical activity and prostate gene expression in men with low-risk prostate cancer. *Cancer Causes Control* 2014;25(4):515-523. DOI: 10.1007/s10552-014-0354-x
33. Chipperfield K, Fletcher J, Millar J, Brooker J, Smith R, Frydenberg M, et al. Factors associated with adherence to physical activity guidelines in patients with prostate cancer. *Psychooncology* 2013;22:2478–2486. DOI: 10.1002/pon.3310
34. Phillips SM, Stampfer MJ, Chan JM, Giovannucci EL, Kenfield SA. Physical activity, sedentary behavior, and health-related quality of life in prostate cancer survivors in the health et professionals follow-up study. *J Cancer Surviv* 2015;9(3):500-511. DOI: 10.1007/s11764-015-0426-2
35. Bo Y, Jiansheng W. Effects of Exercise on Cancer-related Fatigue and Quality of Life in Prostate Cancer Patients Undergoing Androgen Deprivation Therapy: A Meta-analysis of Randomized Clinical Trials. *Chin Med Sci J* 2017;1032(1):13-21. DOI: 10.24920/J1001-9242.2007.002

Received on Aug, 11, 2017.

Reviewed on Dec, 28, 2017.

Accepted on Feb, 03, 2018.

Author address: Marina Ribovski. Rua General Estilac Leal 129, Bairro Coqueiros, Florianópolis - SC, CEP 88080-760. E-mail: marinaribovski@gmail.com