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Original Article

PROSTATE CANCER: QUALITY OF LIFE AND PHYSICAL ACTIVITY LEVEL OF PATIENTS

CÂNCER DE PRÓSTATA: QUALIDADE DE VIDA E NÍVEL DE ATIVIDADE FÍSICA DOS PACIENTES

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ABSTRACT
The study examined the relationship between physical activity and quality of life of patients diagnosed with prostate cancer treated at the Oncology Research Center (CEPON). The study involved 85 men with a mean age of 65.9 ± 7.6 years. It made use of a structured questionnaire covering: general information; characteristic of the disease; socioeconomic status (IBGE); physical activity (IPAQ - short version); overall quality of life (QLQ-C30) and; quality of life - prostate cancer (QLQ-PR25). Most indicated to be insufficiently active with a good overall quality of life. There was significance in sub-items of the functional scale, with higher scores in active men, and those who practiced physical activity had fewer symptoms in symptomatic scale. There was a positive correlation between physical activity and quality of life in general and functional scale and items physical and emotional function, and negative in symptomatic scale and nausea items and vomiting, constipation and financial difficulties. In conclusion, the participants were insufficiently active, and the group of assets presented in the functional scale, better physical function, emotional and lower presence of symptoms in symptomatic scale, nausea and vomiting, constipation and financial difficulties, indicative these best quality of life.
Keywords: Physical activity. Quality of life. Prostatic Neoplasms.

RESUMO
O estudo analisou a relação entre a atividade física e a qualidade de vida de pacientes diagnosticados com câncer de próstata atendidos no Centro de Pesquisas Oncológicas (CEPON). Participaram 85 homens com média de idade de 65,9±7,6 anos. Fez-se uso de um questionário estruturado contemplando: informações gerais; características da doença; estrato socioeconômico (IBGE); atividade física (IPAQ - versão curta); qualidade de vida geral (QLQ-C30) e; qualidade de vida – câncer de próstata (QLQ-PR25). A maioria indicou ser insuficientemente ativo com uma boa qualidade de vida geral. Houve significância em subitens da escala funcional, com melhores escores nos homens ativos, e menores sintomas na escala sintomática. Houve correlação positiva entre atividade física e qualidade de vida na escala geral e funcional e itens função física e emocional, e negativa na escala sintomática e itens náusea e vômito, constipação e dificuldades financeiras. Conclui-se que os participantes, eram insuficientemente ativos, sendo que o grupo dos ativos apresentou na escala funcional, melhor função física, emocional e menor presença de sintomas na escala sintomática, náusea e vômito, constipação e dificuldades financeiras, indicativos estes de melhor qualidade de vida.
Palavras-chave: Atividade motora. Qualidade de vida. Neoplasia da próstata.

Introduction

Prostate cancer (PC) is the sixth most common type of cancer among men around the globe[1], seen as a public health problem worldwide[2]. For the 2016/2017 biennium[3], 61,000 new cases are estimated – 2,000 in Santa Catarina for every 100,000 men, and 130 new manifestations in Florianópolis.

Known as the third-age cancer[4], for mostly affecting men over 50 years old[5], it has risk factors with ethnic and hereditary origins[4]. Men who have cases diagnosed in the family tend to be at a higher risk of developing the disease before the age of 60[4]. Beliefs about its prognosis and prejudice against preventive exams are also factors related to the higher incidence of the disease[6]. Specifically, 76% of men do not know about the disease screening

test and only 32% have undergone the procedure, with open TV being their main source of information[7]. Unhealthy life habits are also associated with cancer diagnosis; therefore, the practice of physical activity (PA) is recommended in order to minimize these risk factors[1].

PC specifically affects an anatomical area responsible for a man's sexual functions, triggering a series of conflicts related to his sexuality[2], and may also present disabilities that worsen before, during or after treatment[8]. Considering that most men have their physical, psychological, cognitive and social functions affected by the disease[9], these factors may negatively interfere with their quality of life (QoL), and, for this reason, this has drawn attention to a need to learn about and assess their living conditions, increasing their survival rates and QoL[10].

Physical activity, which comprehends any body movement that promotes energy expenditure, can be an option to improve a patient's lifestyle after PC diagnosis, since it can assist him physically and psychologically, improving his QoL[11,12]. A recent systematic review[11] points out correlations between PA and reduced mortality rates in PC patients, especially when it comes to walking, as well as reduced specific symptoms associated with PC diagnosis and treatment, such as fatigue and urinary incontinence[11]. Physical exercise, in turn, when systematized and monitored by a professional in the field, can be inserted at three moments of the patient's life: during the pre-treatment period, during the clinical treatment period, and after the completion of said treatment, always with the aim of aiding the patient's recovery[12].

An active lifestyle adopted by patients with PC can affect their QoL during and after treatment[13]. Based on that, this study aimed to analyze the relationship between physical activity and quality of life of patients diagnosed with PC and treated at the CEPON in the city of Florianópolis – Santa Catarina.

Methods

Participants

This study is composed of a non-probabilistic, intentional sample of 85 men with mean age of 65.9±7.6 years old, diagnosed with PC at Florianópolis' CEPON, SC, public service reference in the treatment of cancer patients in Santa Catarina, as well as a reference center of the World Health Organization (WHO) for Palliative Medicine in Brazil. G* Power 3.1.9.2 software was used to calculate the sample size, considering a significance level of 5% and test power of 80%, resulting in a sample of 102 individuals.

Procedures

A 20-minute questionnaire-based interview was conducted with patients found in the waiting rooms for chemotherapy and radiotherapy treatments, or those awaiting their medical appointments. In total, 102 men with prostate cancer were identified in these collection sites; however, 7 of them had no minimum level of education, 2 were over 80 years of age, and 8 were diagnosed with metastasis. The patients were invited to participate in the study voluntarily and signed the Free and Informed Consent Term, thus having their rights guaranteed, as set forth in Resolution 466/2012 of the National Health Council. Collection was done at the CEPON by three previously trained researchers, with the orientation and supervision of a researcher in charge, and took place from October 2014 to July 2015.

This research included men diagnosed with PC, aged between 40 and 80 years old, who were either undergoing clinical treatment (chemotherapy, radiotherapy or hormone therapy), or had already completed it, as well as those who were being medically followed up without having started treatment. It excluded men without a minimum level of education –

illiterates, those who had undergone clinical treatment outside of the CEPON and, finally, those who presented other types of cancer, metastasis or the stage IV of the disease.

The questionnaire was divided into four blocks, composed of previously validated instruments. The first block was about general patient information, including the characterization of participants as to age, marital status, education, presence of diseases, disease treatment method, physical consequences – urinary or anal incontinence (self-reported) and weight and height (self-reported) for calculation of Body Mass Index (BMI). The WHO's protocol[14] was used to classify BMI (nutritional status), that is, thinness (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, the items thinness and eutrophy were grouped as normal weight, and overweight and obesity as overweight.

In accordance with the Brazilian Institute of Geography and Statistics [*Instituto Brasileiro de Geografia e Estatística*] IBGE (2010)[15], socioeconomic strata were divided into: class A, with at least 20 minimum wages (MWs); class B, from 10 to 20 MWs; class C, from 4 to 10 MWs; class D, from 2 to 4 MWs; and class E, up to 2 MWs, calculating the MW value according to the value corresponding to the year of 2014 (724 BRL). The categories were grouped for statistical purposes (A+B), (C) and (D+E).

PA level was obtained from the International Physical Activity Questionnaire (IPAQ - short version)[16], which refers to how many times work, domestic, leisure, recreational and sports activities have been performed, for at least 10 consecutive minutes, in the last week – being distributed as walking, moderate and intense PA. The participants could be classified as: sedentary, for not doing any PA for at least 10 consecutive minutes, or insufficiently active, for practicing PA for at least 10 consecutive minutes. For the active classification, the duration and frequency of the different activities – (walking + moderate + intense walking) were summed. Thus: active – met the recommendations – 1) intense PA ≥ 3 days/week and ≥20 minutes/session; 2) moderate ≥5 days/week and ≥30 minutes/session; 3) any activity summed: ≥5 days/week and ≥150 min/week. To be classified as very active, the following indications were followed: 1) intense ≥5 days/week and ≥30 min/session; 2) intense ≥3 days/week and ≥20 min/session + moderate ≥5 days/week and ≥30 min/session. Due to the small number of participants in the categories, they were grouped as: a) sufficiently active – active + very active, and b) insufficiently active.

QoL was defined by the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire C30 (EORTC QLQ - C30)[17], which assesses the QoL of cancer patients in the last four weeks. Comprising 30 questions, it presents responses on the Likert scale and was validated for the Portuguese language[18]. It was divided in three scales: functional, with sub-items related to physical, functional, emotional, social and cognitive aspects; overall health status; and symptomatic scale, with questions related to fatigue, pain, nausea/vomiting, dyspnea, insomnia, loss of appetite, constipation, diarrhea and financial issues.

The EORTC QLQ - C30 was complemented by a specific module for patients with PC, the EORTC – QLQ PR – 25 module, also validated for Portuguese[19]. The QLQ PR – 25 counts with 25 questions that measure the patient's QoL in relation to symptoms of the urinary and intestinal systems, related to post-surgical treatment, radiotherapy and hormonal therapy, and sexual function. The classification of the scales and their sub-items ranges from zero to 100, both in the EORTC QLQ – C30 and in the PR – 25 specific module. For the symptomatic scale, values closer to 100 indicate worse QoL, while in the functional and overall health scales, values closer to 100 indicate better QoL.

Statistical Analysis

Statistical analysis was performed using the IBM-SPSS statistical package, version 20.0. Descriptive analyses were used to calculate the mean, standard deviation, median, interquartile difference and percentage of the sample. In order to verify associations between general and disease characteristics with the patients' practice of PA, the Chi-Squared or Fisher's Exact Test was adopted. For normality calculation, the Kolmogorov Smirnoff Test was employed. As data normality was not found, the Mann-Whitney U test was used to compare the active and insufficiently active groups with respect to QoL. Finally, Spearman's Correlation was used to verify the correlation between PA intensities with QoL. The significance level adopted was 5%.

Results

Regarding PA, as it can be seen in Table 1, a total of 56.5% of the men were underactive, whereas only 43.5% were active. The majority was aged over 60 years old (80%), had a partner (72.9%), monthly income of up to four minimum wages – D+E stratum (83.3%) –, were overweight (67, 9%), and completed elementary school (58.3%). Before the diagnosis, many had up to two jobs (64.7%), and after the diagnosis of the disease, they were retired, on leave or unemployed (76.5%). There were no significant differences between the PA groups for any of the patients' general characteristics.

Table 1. Prostate cancer CEPON patients' general characteristics by PA level, Florianópolis – SC, 2014 – 2015

Variables (%)	%Total (95%CI)	Sufficiently Active (95%CI)	p
Age			0.189
40 to 60 years old	20 (11-29)	13.5 (2-25)	
61 to 80 years old	80 (71-89)	86.5 (74-98)	
BMI			0.674
Normal Weight	32.1 (22-42)	29.7 (14-45)	
Overweight	67.9 (58-78)	66.0 (54-85)	
Education			0.795
Elementary School	58.3(47-69)	56.8(40-73)	
High School and Higher Education	41.7 (30-52)	43.2(26-59)	
Occupation before diagnosis			0.628
Up to 2 jobs	64.7 (54-75)	67.6 (51-83)	
Unemployed/retired/on leave	35.3 (25-46)	32.4 (16-48)	
Occupation after diagnosis			0.504
Up to 2 jobs	23.5 (14-33)	27.0 (12-42)	
Unemployed/retired/on leave	76.5 (67-86)	73.0 (57-87)	
Marital Status			0.627
Without Partner	27.1 (17-37)	29.7 (14-45)	
With Partner	72.9 (63-83)	70.3 (54-85)	
Income			0.095
A+B+C	1.,7 (8-24)	24.3 (10-38)	
D+E	83.3 (75-91)	75.7 (61-90)	

Note: Chi-Squared. $p<0.05$. BMI: Body Mass Index
Source: The authors

As shown in Table 2, most of the sample had diagnosis of other diseases (64.7%), although, in general, they presented only one (43.5%) besides cancer, with greater evidence of cardiovascular diseases (44.7%), (data not displayed in the Table). Of those still in treatment,

most were undergoing radiotherapy (56.8%); however, many had not yet started treatment (43.5%). A total of 54% had not been subjected to surgery and 95% had no relapse (Table 2).

Table 2 – Disease characteristics of CEPON patients with PC, Florianópolis – SC, 2014 – 2015

Variables (%)	%Total (95%CI)	Sufficiently Active (95%CI)	p
Diagnosis of other diseases			0.979**
Has other diseases	64.7 (54-75)	64.9 (48-81)	
Has no other diseases	35.3 (25-46)	35.1 (19-51)	
Number of diseases			0.561**
No disease	35.3 (25-46)	35.1 (19-51)	
One disease	43.5 (33-54)	48.6 (31-65)	
Two diseases or more	21.2 (12-30)	16.2 (4-28)	
Relapse			0.313*
Yes	4.7 (0-9)	8.1(0-17)	
No	95.3 (91-100)	91.9 (82-100)	
Current treatment			0.364*
Chemotherapy	18.9 (6-32)	29.4 (5-53)	
Radiotherapy	56.8 (40-74)	52.9 (26-79)	
Hormone therapy	24.3 (10-39)	17.6 (2-37)	
Surgery undergone			0.184**
Prostatectomy	45.9 (35-57)	54.1 (32-70)	
None	54.1 (43-65)	45.9 (29-62)	
Completed treatment			0.751**
Yes	34.1 (24-44)	24.3 (9-38)	
No	22.4 (13-31)	45.9 (29-62)	
Not started	43.5 (33-54)	29.7 (14-45)	

Note: *Fisher's Exact Test. **Chi-Squared. $p<0.05$. CI – Confidence Interval
Source: The authors

According to data presented in Table 3, the three scales of the EORTC QLQ-C30 (overall, functional and symptomatic QoL) showed significant differences between the active and the insufficiently active groups. The total value (71.8±20.3) of the PC patients' overall QoL positively represented that the men considered active (77.2±19.1) had better QoL than those who were insufficiently active (67.7±20.4), considering that the extremes of the scale start at zero and have their maximum value at 100. Similarly, the functional scale showed good results in active men (85.7±13.2) compared to underactive ones (73.4±20.2).

Two items on the functional scale showed significant difference between groups, namely, emotional function and physical function, and presented better QoL in active men. About the symptomatic scale, active men showed smaller signs of symptoms when compared to the insufficiently active ones, as values closer to zero on this scale indicate a lower presence of symptoms. There was also a difference in the symptoms related to nausea and vomiting, constipation and financial issues, with higher scores for insufficiently active men, representing a worse QoL. There were no significant differences on the EORTC QLQ-PR25 scales.

Table 3. QoL characterization according to the PA level of CEPON patients with PC, Florianópolis – SC, 2014 – 2015

Variables Md(IQD)	Total	Sufficiently Active	Insufficiently Active	p
EORTC QLQ – C30				
Overall QoL Scale	75.0 (33.3)	83.3 (25.0)	66.6 (33.3)	*0.031*
Functional Scale	82.2 (20.0)	86.6 (16.6)	80.0 (30.0)	*0.002*
Cognitive Scale	83.3 (33.3)	83.3 (33.3)	83.3 (33.3)	0.760
Emotional Function	75.0 (37.5)	83.3 (33.3)	66.6 (50.0)	*0.004*
Physical Function	93.3 (26.6)	93.3 (20.0)	86.6 (46.6)	*0.031*
Social Function	100 (33.3)	100 (16.6)	100 (33.3)	0.341
Functional Capacity	100 (33.3)	100 (16.6)	100 (50.0)	0.067
Symptomatic Scale	23.0 (20.5)	20.5 (14.1)	26.9 (26.6)	*0.031*
Fatigue	11.1 (33.3)	0 (22.2)	22.2 (44.4)	0.051
Loss of Appetite	0 (0)	0 (0)	0 (0)	0.760
Insomnia	0 (66.6)	0 (66.6)	16.6 (91.6)	0.312
Pain	0 (33.3)	0 (16.6)	0 (45.8)	0.260
Nausea and Vomiting	0 (0)	0 (0)	0 (12.5)	*0.017*
Dyspnea	0 (0)	0 (0)	0 (0)	0.266
Constipation	0 (33.3)	0 (33.3)	0 (100)	*0.048*
Diarrhea	0 (0)	0 (0)	0 (0)	0.124
Financial issues	0 (33.3)	0 (0)	0 (66.6)	*0.046*
EORTC QLQ – PR25				
Functional Scale	84.2 (26.3)	85.0 (27.1)	84.2 (28.0)	0.753
Sexual Activity	66.6 (50.0)	58.3 (50.0)	66.6 (58.3)	0.831
Sexual Functioning	75.0 (27.0)	75.0 (37.5)	75.0 (29.1)	0.674
Symptomatic Scale	15.7 (26.3)	14.9 (27.1)	15.7 (28.0)	0.753
Urinary Symptoms	25.0 (37.5)	22.9 (35.4)	25.0 (37.5)	0.972
Intestinal Symptoms	0 (16.6)	0 (8.3)	0 (16.6)	0.076
Hormonal Treatment	11.1 (22.2)	16.6 (19.4)	11.1 (25.0)	0.728
Incontinence	0 (100)	0 (100)	0 (100)	0.537

Note: * Mann-Whitney U Test; $p<0.05$. Md – Median. IQD – Interquartile Difference
Source: The authors

Analyzing the results in Table 4, walking correlated positively with overall QoL, functional scale and physical function, and negatively with the symptomatic scale, nausea and vomiting, constipation and financial issues. Intense PA had no correlation with the other variables, while moderate PA correlated negatively with constipation, indicating that, as moderate PA increased, constipation symptoms decreased. There was also correlation with all variables in total PA, evidencing that the more one exercises, the fewer complaints related to the QoL symptomatic scale he will have, specifically the symptoms of nausea and vomiting, constipation, and financial issues. Consequently, the more active, the better the scores in overall QoL, functional scale, emotional function, and physical function.

Table 4. Spearman's correlation coefficient between PA (min/day) and QoL of CEPON patients with PC, Florianópolis – SC, 2014 – 2015

Variables	Walking (min/day)	Mod PA (min/day)	Int Pa (min/day)	Mod+Int PA(min/day)	Total PA (min/day)
Overall QoL Scale	0.226*	0.067	0.063	0.101	0.231*
Functional Scale	0.329**	0.176	0.041	0.221*	0.369**
Emotional Function	0.197	0.199	0.001	0.238*	0.246*
Physical Function	0.336**	0.172	0.124	0.204	0.369**
Symptomatic Scale	-0.366**	-0.208	-0.059	-0.228*	-0.397**
Nausea and Vomiting	-0.257*	-0.097	-0.085	-0.109	-0.251*
Constipation	-0.216*	-0.215*	-0.058	-0.182	-0.247*
Financial issues	-0.238*	-0.138	-0.027	-0.156	-0.250*

Note: *Significant correlation 0.05. **Significant correlation 0.01. Min/day – minutes per day. Mod – moderate. Int -intense. Observation: Correlation with the significant variables was done at the PA level, according to Table 3
Source: The authors

Discussion

This study aimed to analyze the relationship between physical activity and quality of life of men with prostate cancer treated at the CEPON in the city of Florianópolis, SC. It identified that most of the patients were underactive, with worse scores in some QoL aspects compared to active ones. There was also positive correlation between PA and QoL as to functional scale, emotional and physical function, and negative correlation with the symptomatic scale, and as to the specific symptoms of nausea and vomiting, constipation and financial issues.

In this study, 56.5% of the men were insufficiently active, that is, they did not meet the recommendations of 150 minutes of moderate to intense PA prescribed by the American College of Sports Medicine[20]. Possibly, this insufficient practice of PA is due to the fact that most of these patients were undergoing radiotherapy (60%) and had cardiovascular diseases (44.7%). Similarly, some studies have observed that men who had been subjected to treatments such as androgen therapy or radiotherapy were less capable of exercising, although it has been revealed that those who had undergone androgen therapy had significantly lower scores for PA than those who did only radiotherapy[21]. The literature also points that men subjected to treatments presented higher levels of depression, fatigue and worse QoL[22], which may affect motivation for PA.

In addition, harmful side effects from treatment have been observed, as well as an increasing incidence of acute or chronic rectal, bladder and other pelvic injuries, represented by mucositides and functional disorders[23]. Consequently, these side effects may be associated with a drop in the PA levels[24] of the men in the present study, which is common in cancer survivors[25]. Other barriers include, in addition to cancer, injuries, functional decline, and loss of confidence in their physical abilities[26,27].

At the same time, cancer, and all its treatment, can reduce one's ability to work, thus resulting in low income, increasing financial issues[28-30], as it is the case in this study, which involves a large number of men, who were parents and had to provide for their families. Said patients were retired, unemployed or on leave after being diagnosed with the disease (76.5%), consequently having financial difficulties, fitting in the D and E strata. Financial issues showed an inversely proportional correlation with walking and total PA, indicating a decrease in score with the increase in practice of PA, and, in this way, it is possible that they recover more quickly, becoming able to return to work faster and efficiently, which can therefore help with their financial issues.

Likewise, significant differences were found between active and underactive men when it comes to the physical functions related to QoL. There was positive correlation of physical function with patients who walked and total PA, revealing higher levels of QoL with the increase of this practice. The literature shows that patients with high PA levels had a lower drop in QoL[31], general fatigue[32], and a fast resumption of this practice after surgery[33], with better recovery and return to previous levels of functionality. In agreement, De Backer et al.[34] evidenced that all the QoL scales in his study, except for the cognitive one, improved after an eighteen-week high-intensity training; Mishra et al.[35] also found improvements in physical functioning with the prescription of moderate or intense PA.

This study found inversely proportional values between PA and the items nausea and vomiting, and constipation in QoL, showing that walking, moderate PA and total PA may be associated with the decrease of these symptoms in patients with PC. Likewise, De Lira et al.[36] observed improvements in constipation after a diet-associated PA program, as well as the study by Raposo and López[37], which reported that inactivity can cause symptoms like constipation, nausea and vomiting, thus justifying that PA helps to improve them and QoL.

Still in this study, active patients had better emotional function means than underactive ones, except that PA reduces depressive symptoms[21] and anxiety[32]. These patients presented a positive correlation between moderate+intense PA and total PA, showing that, with increasing practice of PA, benefits can be derived with regard to the emotional aspects of QoL. The international study by Riesenberg and Lubbe[38] verified significant differences in several QoL scales, such as physical and emotional functions, after 28 consecutive days of aerobic exercise. On the other hand, Oliveira and Côrte[39] stressed the need for practice of PA, especially those that promote social interactions, just as the study by Brunn et al.[40], which presents interventions with football (national passion) in men after PC diagnosis.

The limitations of this study were mainly due to the collection-individual interview format, for the delay in performing it; because it is a cross-sectional study, which does not allow a long-term relationship, whether causal or not; and for the use of the IPAQ instrument – short version, which, despite having been used in several studies, has only subjective responses from patients about PA, besides being an instrument with limited reproducibility, not allowing data generalization. Moreover, the use of this instrument may have affected the prevalence of PA in the sample, overestimating the final scores, which indicates that the prevalence of low PA levels in this sample would be even greater. Evidence which is worrisome, knowing the benefits of PA in this population. Thus, health professionals should come up with new strategies in order to increase PA levels in these patients.

Conclusions

This research observed that the studied men with PC were mostly underactive, and some QoL items showed significant difference between groups, with men considered active achieving better scores. There was also correlation between PA and QoL, indicating that the more patients with PC practices PA, the better their QoL. Knowing that PA can benefit the QoL of this kind of patient, greater subsidies are suggested for new studies and interventions so health professionals involved in this area can encourage the practice of PA both in the treatment and post-treatment periods of the disease.

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