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Determinants associated with participation in physical activity among patients with prostate cancer

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Introduction
Prostate cancer has the highest relative survival rate over 5 years after surgery compared with other cancers. In many studies, exercise has been studied as an effective intervention for reducing side effects of cancer treatment and improving quality of life. In spite of physical activity(PA) recommendations for cancer survivors and proven evidence of the benefits of exercises, recent studies suggest that the majority of cancer patients, including prostate cancer survivors, are failing to meet guidelines. Understanding the factors that affect participation in PA is essential to enhance health promotion strategies.

Objective
We investigate the determinants affecting PA of prostate cancer patients. General demographics, socioeconomic status and physical measurement, including weight, body mass index (BMI), and grip strength of patients were collected. The degree of PA measured by International physical activity questionnaire (IPAQ) in patients diagnosed with prostate cancer was also obtained.

Method
A total of 90 patients were enrolled. Patient enrollment was conducted from August 2015 to January 2016. The inclusion criteria were (1) 50 years of age or older, (2) histologically confirmed prostate adenocarcinoma, and (3) treatment with radical prostatectomy, radiation therapy, or ADT. Muscle mass was measured using a direct segmental multifrequency bioelectrical impedance analysis system. 2-minute walking test performed and handgrip strength was assessed using a hand-held dynamometer. Patients were divided into 2 groups based on the physical activities measuring by IPAQ, one group was defined as 'inactive or minimally active ' and the other group was defined as 'health enhancing physical activity(HEPA) active' groups. To find determinants associated with PA, PA measured by IPAQ was defined as dependent variable, and other clinical characteristics including general demographics, physical status, socioeconomic status, social history and difficulty of voiding or defecation were entered into a multivariate logistic regression model.

Results

The mean age of 90 patients was 69.44 ± 7.26 years and mean body mass index was 24.35 ± 2.54 (Table 1). 59 patients were classified as 'inactive or minimally active' group and the remaining 31 were classified as 'HEPA active' groups. In this study, we elucidate that urinary difficulty associated with lower physical activity (Table 2).

Discussion

PA has been shown to be related to quality of life and lower fatigue symptom in cancer patients. Knowing the factors that determine PA will allow physicians to encourage more exercise for patients who are expected to have less physical activity. Urinary difficulty is adversely affecting physical activity, so it is necessary to try to improve these complications. In addition, evaluation of the urinary difficulty at the initial assessment may help to predict the baseline physical activity of the patient and may be useful for exercise prescription.

table1. general demographics.

	(N=90)
Age (year)	69.43±7.30
Weight (kg)	67.25±8.06
Height (cm)	166.12±4.91
Body mass index (BMI)	24.33±2.57
Appendicular skeletal muscle mass (ASM)	7.55±0.64
Maximal grip strength (kg)	31.07±6.40
Gait speed(4m)	4.47±0.95

table2. Determinants associated with participation in physical activity among patients with prostate cancer.

n (%)	Physical activity inactive or minimally active	HEPA* active	Total	Logistic regression aOR	95%CI	P
Age						
<70 years	24(61.5)	15(38.4)	39			
≥70 years	35(68.6)	16(31.3)	51			
body mass index n						
<25 kg/m2	33(62.2)	20(37.7)	53			
≥25 kg/m2	26(70.2)	11(29.7)	37			
Work force participation						
Yes	25(73.5)	9(26.4)	34			
No	29(58)	21(42)	50			
Education						
With Bachelor's degree	25(64.1)	14(35.8)	39			
Without Bachelor's degree	25(59.5)	17(40.4)	42			
Maximal grip strength (kg)						
<26	13(72.2)	5(27.7)	18			
≥26	46(63.8)	26(36.1)	72			
Appendicular skeletal muscle mass (ASM)						
<7.0	11(100)	0(0)	11			
≥7.0	48(62.3)	29(37.6)	77			
Gait speed(4m)						
<0.8	11(73.3)	4(26.6)	15			
≥0.8	48(64)	27(36)	75			
Current smoker						
Yes	8(88.8)	1(11.1)	9			
No	43(64.1)	24(35.8)	67			
Current drinker						
Yes	25(67.5)	12(32.4)	37			
No	26(66.6)	13(33.3)	39			
Urinary difficulty				0.199	0.066-0.604	0.004
Yes	41(80.3)	10(19.6)	51			
No	18(46.1)	21(53.8)	39			
Defecation difficulty						
Yes	23(82.1)	5(17.8)	28			
No	36(58.0)	26(41.9)	62			