

Awareness and attitudes of oncology physicians recommending exercise to patients with cancer

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ABSTRACT

Objectives: The aim of our study was to evaluate oncology physicians' attitudes and awareness toward recommending exercise to their patients with cancer.

Patients and methods: A total of 86 oncology physicians (52 males, 34 females; mean age: 46.7±10.9 years; range, 26 to 60 years) were included in the study between June 2019 and September 2019. A questionnaire was prepared to evaluate the physicians' perspectives about exercise and it consisted of five main sections including the physician's exercise habits, physicians' attitudes toward recommending exercise, the effects of exercise on cancer-related symptoms and cancer treatments, whether there was an exercise unit in the hospital, and whether the physician was referring the patients and on which subjects the physicians were willing to receive training.

Results: A total of 87.2% of the physicians recommended exercise to their patients. There were three reasons for physicians who did not recommend exercise: "I don't have enough training to recommend exercise; I don't know which type of exercise to recommend; and I don't know what I should pay attention while recommending exercise." A total of 83.7% physicians considered that exercise reduced the symptoms associated with cancer. A total of 73.3%, 64%, and 80.2% physicians believed that exercise increased the effectiveness of chemotherapy, radiotherapy, and immunotherapy, respectively. About 94.2% of the physicians were willing to be trained on the effects of exercise in cancer.

Conclusion: Oncology physicians believe that exercise has positive effects on cancer; however, they still need training on this subject.

Keywords: Awareness, cancer, clinicians, exercise, oncology.

Patients with cancer live with effects of cancer and its treatment such as pain, osteoporosis, neuropathy, metabolic syndrome, muscle weakness, physical deconditioning, sleep disturbances, anxiety, depression, and fatigue.^[1] Although clinicians usually advised cancer patients to rest and avoid physical activity before 1990s, this advice was changed in 1990s and 2000s. Currently, researches support that exercise can improve anxiety, depressive symptoms,

physical condition, quality of life, and cancer-related fatigue.^[2]

The effects of exercise have been studied pre-treatment period, during active treatment, and after treatment.^[3] The molecular and systemic changes in infiltrating immune cell populations and inflammatory cytokines occurring during exercise should directly target cancer cells,

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controlling their initiation, and progression.^[4] Data from preclinical experiments have demonstrated that exercise can directly inhibit tumor growth in rodent models and it is also an adjunct therapy in cancer treatment.^[3] Patients with cancer who exercise regularly have a lower relative risk of cancer mortality and cancer recurrence, and they also have fewer and/or less severe treatment-related adverse effects.^[5] Patients with breast and colon cancer who exercise have a notable (50%) amelioration in survival rates.^[6]

Resistance and aerobic exercise training enhance quality of life and cardiopulmonary endurance of patients with cancer during and after treatment.^[7,8] Cardiotoxic effects of doxorubicin and trastuzumab can be avoided by aerobic exercise, and cardiopulmonary endurance may increase.^[6] Researches recommend that physical activity is associated with a lower mortality rate in survivors of breast, colon, and prostate cancer.^[9,10] In a systematic review, the dynamic, moderate, and high-frequency exercise provided the most positive effects in subjective and objective parameters in breast cancer-related lymphedema patients.^[11]

The American College of Sports Medicine (ACSM) recommends to avoid inactivity, return to normal daily activities as quickly as possible after surgery, and continue these activities as much as possible during any adjuvant treatment for cancer survivors.^[2] It has been also suggested that physical activity should be an integral and continuous part of care for all cancer survivors in physical activity guidelines.^[2] Oncology care professionals play an important role in supporting exercise programs during and after cancer treatment for cancer survivors. Although the acknowledgement of exercise is as an essential component, it is often overlooked in routine cancer treatment.^[4] Therefore, there is a need to assess the awareness of oncology care professionals about the effects of exercise in the treatment of cancer patients. In the present study, we aimed to evaluate oncology physicians' attitudes and awareness toward recommending exercise to their patients with cancer.

PATIENTS AND METHODS

This descriptive study was conducted at Dr. Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital between June 2019 and September 2019. The study center is one of the largest cancer centers in Turkey, resulting in over 130,000 clinician visits per year. Inclusion criteria

were as follows: being a physician, working in the field of oncology for at least two years, and taking care of adult cancer patients. Finally, a total of 86 oncology physicians (52 males, 34 females; mean age: 46.7±10.9 years; range, 26 to 60 years) from surgical oncology, radiation oncology, hematology, and medical oncology were included in the study. A written informed consent was obtained from each participant. The study protocol was approved by the Dr. Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital Ethics Committee (No: 2019-05/312, Date: 29/05/2019). The study was conducted in accordance with the principles of the Declaration of Helsinki. A questionnaire was prepared to evaluate the physicians' perspective about exercise. This questionnaire consisted of five main sections. In the first part of the questionnaire, the physician's exercise habits were questioned; how many days a week and how long he/she exercised, what are the reasons for exercising. In the second part, whether the physician recommends/does not recommend exercise to his/her patients, what types of exercises he/she recommends and if he/she does not recommend exercise, the reasons for this were questioned. In the third part, the effects of exercise on cancer-related symptoms (e.g., fatigue and weakness) and cancer treatments (e.g., radiotherapy, chemotherapy, and immunotherapy) were questioned. In the fourth section, it was questioned whether there was an exercise unit in the hospital and whether he/she was referring the patients to the relevant unit. In the fifth section, it was questioned on which subjects the physicians were willing to receive training. The questionnaire was filled out by a single researcher through one-on-one interview with physicians.

TABLE 1
Demographic characteristics of participants

	n	%	Mean±SD
Age (year)			40.7±10.9
Sex			
Male	52	60.5	
Female	34	39.5	
Medical branch			
Surgical oncology	39	45.3	
Radiation oncology	22	25.6	
Hematology	16	18.6	
Medical oncology	9	10.5	
Average number of patients per week			84.1±72.6
SD: Standard deviation.			

Statistical analysis

Statistical analysis was performed using the SPSS for Windows version 16.0 (SPSS Inc., Chicago,

IL, USA). Descriptive data were expressed in mean \pm standard deviation (SD), median (min-max) or number and frequency. The chi-square test

TABLE 2
Questionnaire results

Questionnaire	n	%	Mean \pm SD	Questionnaire	n	%	Mean \pm SD
1. Section				3. Section			
Do you exercise regularly?,				Does exercise reduce the frequency of cancer-related symptoms (weakness, fatigue, etc.)?			
Yes	20	23.3		Yes	72	83.7	
No	66	76.7		No	4	4.7	
If your answer is Yes (physicians who exercise regularly)				I don't know	10	11.6	
answer the questions below?				Does exercise increase the effectiveness of chemotherapy?			
a. How many years have you been exercising regularly?			6.9 \pm 5.2	Yes	63	73.3	
b. How many days a week do you exercise regularly?			3.4 \pm 1.6	No	18	20.9	
c. What is your total exercise time weekly (hours)?			4.0 \pm 1.4	I don't know	5	5.8	
d. What type of exercise do you do?				Does exercise increase the effectiveness of radiotherapy?			
Aerobic	5	75		Yes	55	64	
Strengthening	15	25		No	23	26.7	
e. Why do you exercise?				I don't know	8	9.3	
Increase aerobic capacity	6	30		Does exercise increase the effectiveness of immunotherapy?			
Increase muscle strength	3	15		Yes	69	80.2	
Other (losing weight, healthy life, reducing stress, etc.)	11	55		No	9	10.5	
				I don't know	8	9.3	
2. Section				4. Section			
Do you recommend your patients to exercise?				Is there an exercise unit for cancer patients in your hospital?			
Yes	10	88.4		Yes	16	18.6	
No	76	11.6		No	65	75.6	
If your answer is No, answer the questions below?				I don't know	5	5.8	
a. I didn't know that I should recommend exercise to patients				If your hospital has an exercise unit for cancer patients, would you direct your patients?			
b. I don't have enough time to recommend exercise	1	9.1		Yes	86	100	
c. I don't know where to refer patients for exercise program				No	0	0	
d. I don't have enough training to recommend exercise				If your answer is No, why?			
e. I don't know what type of exercise to recommend				a. I think exercise is dangerous for cancer patients	-	-	
f. I don't know what I should pay attention when recommending exercise	1	9.1		b. I think that exercise will increase symptoms associated with cancer	-	-	
g. I don't know when patients should start exercise after surgery or radiotherapy	1	9.1		c. I don't think that exercise is effective in cancer patients	-	-	
h. I think exercise can be dangerous for cancer patients and can not be safe				5. Section			
i. I think that exercise will increase the cancer-related symptoms (fatigue, pain...)	1	9.1		Which of the following topics would you like to receive training on?			
j. a+b+c+d+e+f+g	1	9.1		a. The effect of exercise on cancer	6	7	
k. a+c+e+f+g+h	1	9.1		b. The effect of exercise on the treatments (chemotherapy, radiotherapy, immunotherapy)	7	8.1	
l. d+e+f	3	27.3		c. Issues to be considered while recommending exercise	4	4.7	
m. b+d+e+f	1	9.1		d. a+b	3	3.5	
n. c+g	1	9.1		e. a+b+c	61	70.9	
				f. None	5	5.8	

SD: Standard deviation.

TABLE 3 The distribution of age, professional year, weekly examined patients, and sex of physicians who exercise regularly and not exercise regularly							
	Exercise regularly (n=20)			Not exercise regularly (n=66)			p
	n	%	Mean±SD	n	%	Mean±SD	
Age (year)			43.9±13.0			39.7±10.1	0.138*
Professional year (year)			20.4±13.5			16.0±10.5	0.128*
Number of patients per week			86.5±72.5			83.3±73.1	0.865*
Sex							0.041**
Female	4	4.7		30	34.9		
Male	16	18.6		36	41.9		

SD: Standard deviation; * Independent sample t-test; ** Chi-square test.

and Fisher's exact test were used to compare the categorical differences between the groups. The Student's t-test was performed to compare parametric variables. A *p* value of <0.05 was considered statistically significant.

RESULTS

Demographic characteristics of the participants are shown in Table 1. A total of 23.3% (n=20) of the physicians who answered the questionnaire exercised regularly and 76.7% (n=66) did not. Of 20 physicians who exercised regularly, 75% (n=15) preferred aerobic exercise, while 25% (n=5) preferred strengthening exercises. When the reasons for exercise were questioned, exercise increased the aerobic capacity in 30% (n=6) and increased muscle strength in 15% (n=3). The remaining 55% (n=11) of the participants reported several reasons such as losing weight, living healthy, and stress-free (Table 2). Of the participants, 50% (n=10) were surgical oncologists, 35% (n=7) were radiation oncologists, and 15% (n=3) were medical oncologists. When all of the physicians who exercised (n=20) and those who did not (n=66) were evaluated together, 88.4% of the physicians recommended exercise to their patients. All of the physicians who exercised regularly (n=20) recommended exercise to their patients, while 84.8% (n=56) of the physicians who did not exercise regularly (n=66) also recommended exercise.

There were three reasons for not recommending exercise for 27.3% (n=3) participants: "I don't have enough training to recommend exercise; I don't know which type of exercise to recommend; and I don't know what I should pay attention while recommending exercise." All of the physicians reported that if there was an exercise unit in the

hospital, they would have referred their patients to this unit (Table 2).

A total of 83.7% (n=72) of the physicians considered that exercise reduced the symptoms associated with cancer. In addition, 73.3% (n=63), 64% (n=55), and 80.2% (n=69) of the physicians believed that exercise increased the effectiveness of chemotherapy, radiotherapy, and immunotherapy, respectively.

When the physicians were asked about which subjects they were willing to be trained in exercise-cancer relationship, 70.9% (n=61) desired to receive training on three subjects: the effect of exercise on cancer, and the effect of exercise on the applied treatments, and issues to be considered while recommending exercise.

There was no significant difference between the physicians who exercised regularly (n=20) and those who did not (n=66) in terms of age, professional year, and number of patients examined weekly (Table 3). According to sex distribution, the number of physicians who did not exercise regularly was significantly higher among female participants (*p*=0.04). In addition, 45.5% of the physicians who did not exercise regularly were women and 54.5% were men (Table 3).

DISCUSSION

In the current study, we evaluated oncology physicians' attitudes and awareness toward recommending exercise to their patients with cancer. According to the study results, the majority of oncology physicians (87.2%) recommended exercise to their patients with cancer, although they also needed to receive training on this subject. One of the most interesting results is that regular exercise

habit is low (23.3%) among physicians; however, they recommended exercise to their patients.

Several studies have shown that the physicians who exercise regularly exercise about three days a week or 4 h a week and prefer aerobic exercise more.^[1,12] The current guidelines recommend at least 150 min of aerobic exercise and two or three days of strength exercise weekly.^[2] In recent years, the Canadian National Survey have revealed that most of the oncologists believe that the exercise during cancer treatment is beneficial (62.0%), important (55.8%), and safe (63.1%) for patients with cancer.^[12] Our findings are also consistent with this study.

In our study, 83.7% of the physicians reported that exercise reduced the symptoms associated with cancer. In a study, Schwartz et al.^[13] found that exercise prevented or reduced many adverse effects of cancer treatments, such as fatigue, muscle weakness, decreased cardiorespiratory endurance, and impaired quality of life. Consistent with these findings, the physicians in our study considered that exercise increased the effectiveness of chemotherapy (73.3%), radiotherapy (64%), and immunotherapy (80.2%). Preclinical studies have also demonstrated that exercise regulates intratumoral vascular maturity, hypoxia, and perfusion and increases the anti-tumor immune responses.^[4,14] As a result of these mechanisms, exercise improves drug tolerance and increases the effectiveness of treatment.^[15]

In our study, the most common three reasons for not recommending exercise were as follows: "I don't have enough training to recommend exercise; I don't know which type of exercise to recommend; and I don't know what I should pay attention while recommending exercise". In other words, the physicians did not have a clear information about which exercise, when, and how they should recommend it. Similar results were also reported in the Nadler's^[1] study; approximately 80% of oncology care providers reported that they did not have adequate knowledge about how and when they could refer exercise programs for their cancer patients. Oncologists need to collaborate with physical therapy and rehabilitation specialists about exercise recommendations. A multidisciplinary team work is required among oncology and physical therapy rehabilitation units. Oncologists particularly focus on the primary disease and, during daily hard work, supportive care is often neglected. When cancer patients are diagnosed with cancer and a treatment plan is created, an exercise prescription should be also included in this plan. The time of the first diagnosis

of cancer is the best time to begin exercise. This is also the most teachable moment for the patient with cancer. Exercise allows patients to participate actively in their treatment.^[6] Patients should be consulted to the physical therapy and rehabilitation specialist during this initial period and an individualized exercise prescription should be developed. Type and stage of cancer, degree of disability, and presence of comorbidities should be taken into account while developing an exercise program. Scimeca et al.^[16] underlined the fact that all evidences supported the individualized training protocols for patients with cancer to improve the quality of life of patients both during and after cancer treatments.

Several international guidelines recommend regular exercise program for cancer prevention. The American Cancer Society, National Comprehensive Cancer Network, American Society of Clinical Oncology, ACSM, Exercise & Sports Science Australia, British Association of Sports and Exercise Science recommend cancer patients to avoid inactivity and perform moderate-to-high intensity aerobic exercises and strengthening exercises regularly.^[17-22] Researches have supported that aerobic and resistance exercise training increases the quality of life and cardiorespiratory endurance of patients with cancer during and after treatment, and physical activity decreases mortality in survivors of colon, breast, and prostate cancer.^[3,9,10,23] In our study, we were unable to question the knowledge of the physicians about these guidelines, which is one of the limitations of the study. Furthermore, there is no national exercise guideline for cancer patients in Turkey, yet. Nadler et al.^[1] reported that 69% of oncology care professionals were not aware of any exercise guidelines for patients with cancer. Another limitation of our study is that the validity and reliability study of this questionnaire has not been done, yet. In the literature, there is no valid questionnaire on this topic. Of note, in previous studies, it was reported that physicians thought that exercise might be harmful for cancer patients.^[7] However, there is no such result in our study. Nevertheless, while planning the exercise program, cancer treatment modalities and comorbidities should be considered for each patient individually.^[24]

In conclusion, there is growing evidence that exercise is effective in preventing cancer, increasing the effectiveness of cancer treatments, and preventing relapses. In addition, oncologists have increased their awareness on this issue in recent years. Oncologists particularly focus on the primary disease and, during

daily busy hours, supportive care is often neglected. To achieve the most optimal results, a multidisciplinary team work is needed among oncology and physical therapy rehabilitation units. The cooperation between oncology clinics and physical therapy and rehabilitation clinics would lead to the creation of individualized exercise recommendations.

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