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Investigation of the level of physical activity, coronavirus fear, and quality of life in oncology patients during the COVID-19 pandemic: A cross-sectional study

Fatma Kübra Çekok [1], Arda Aktaş [2], Öznur Fidan [3], Serpilnur Avar [4]

[1] Tarsus Unıversity, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, 33400, Mersin, Turkey
[2] Balıkesir University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, 10145, Balıkesir, Turkey
[3] Osmangazi Unıversity, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, 26030, Eskişehir, Turkey
[4] İzmir University of Economics Medical Point Hospital, 35330, İzmir, Turkey

ORCID ID of the author(s)

FKÇ: 0000-0001-8865-660X
AA: 0000-0002-2503-8027
ÖF: 0000-0001-6473-049X
SA: 0000-0002-3349-3353

Corresponding Author
Fatma Kübra Çekok
Tarsus Unıversity, Faculty of Health Sciences Physiotherapy and Rehabilitation, 33400, Mersin, Turkey
E-mail: kubracekok@tarsus.edu.tr

Ethics Committee Approval
This study was approved by the Ethics Committee of Toros University (Protocol Number: (2022-03-53).
All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

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Abstract

Background/Aim: There are no studies examining quality of life, anxiety levels, physical activities, and Covid-19 fear levels in people with cancer. The aim of this study was to examine physical activity status, coronavirus fear levels, and quality of life in oncological individuals during the COVID-19 pandemic.
Methods: This study was conducted among oncology patients. The level of physical activity was assessed using the Rapid Assessment of Physical Activity Scale (RAPA 1), the level of fear with the Fear of COVID-19 Scale (FCV-19S), and the quality of life with the COVID-19 Impact on Quality of Life Scale (COV19-QoLTR).
Results: The study was completed by 78 patients. Thirty-eight patients tested positive for COVID-19. Patients who tested positive for COVID-19 had significantly higher FCV-19S and COV19-QoL scores and lower scores of RAPA 1 (P<0.001). Also, FCV-19S was positively correlated with COV19-QoLTR and negatively correlated with RAPA 1 scores (P<0.001).
Conclusions: These findings suggest the need for more clarity and tailoring of physical activity-related advice for oncology patients with COVID-19 and improved support to resume activities important to individual well-being.

Keywords: cancer, COVID-19, fear, physical activity, quality of life

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Introduction

The coronavirus pandemic (COVID-19), a serious health problem worldwide, started with the detection of an epidemic of unknown etiology and severe viral pneumonia in the city of Wuhan, People's Republic of China, on 31 December 2019 [1]. It was subsequently found that the pathogen causing the development of this infection was an enveloped RNA beta coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [2]. On 11 March 2020, the World Health Organization declared the COVID-19 outbreak a pandemic due to the virus's frightening transmission rate and the severity of its symptoms [3]. The first case was announced in Turkey on 11 March 2020 [4].

According to the World Health Organization's COVID-19 reports, the adult COVID-19 patients in the Republic of China who died were mostly elderly people with chronic diseases [5]. In patients with a severe infection, chronic diseases were observed, such as cerebrovascular disease, chronic obstructive pulmonary disease, cardiovascular disease, and diabetes [6]. Apart from these comorbidities, the suppression of the immune system, which develops due to the treatment applied in oncological rehabilitation or due to the disease, is important as it can worsen the course of the COVID-19 disease. It has been reported that the clinical course of cancer patients with COVID-19 is worse than non-cancer patients, and the mortality rates are high [7]. In addition, it has been reported that the incidence and prevalence of COVID-19 infection are higher in individuals with oncological disease compared to other populations, and the presence of comorbidity increases the risk of COVID-19 infection with a more severe clinical picture [8]. Oncological patients are a highly vulnerable group, and mortality among patients with cancer with COVID-19 infection is approximately ten times greater than in the general population [7]. Moreover, patients receiving oncological treatment are in the risk group during the COVID-19 pandemic.

The COVID-19 pandemic has affected all humanity and patients receiving oncological treatment. Globally, 1.7 billion people (22% of the world's population) are at risk of severe COVID-19 infection, including 43 million common cancer cases [9]. The COVID-19 risk profile is affected by multiple parameters, including quality of life, fear, anxiety, depression, and physical activity in oncological patients. Reduced anxiety, depression symptoms, and enhanced physical function are important for oncological patients' health [10].

Although there are studies examining the quality of life, anxiety levels [10], physical activities [11], and COVID-19 fear levels [12] separately in people with cancer, no study has addressed all of these together. This study aims to examine the effect of the COVID-19 pandemic, which has had a significant impact on the world, on the physical activities, coronavirus fear levels, and quality of life of patients receiving oncological treatment.

Materials and methods

Sample size calculations

A statistical analysis program was used to perform the sample size calculations (G*Power package program, Ver. 3.1.9.2, Axel Buchner, Universitat Kiel, Germany). While determining the appropriate sample size for the study, the difference between the Fear of COVID-19 Scale scores in the study conducted by Sigorski et al. [13] in 2020 was considered. In the sample size analysis performed to obtain power with an effect size of 0.33, the number of participants was calculated as 69 with 5% type 1 error and 80% power.

Participants

Seventy-eight patients diagnosed with cancer and undergoing chemotherapy in oncology clinics older than 18 years were included in the study. We excluded patients who received psychological treatment had undergone surgery in the last 6 months, had additional physical disorders, and were inactive patients with high comorbidity. The patients were divided into two groups: Group 1: Oncology patients with COVID-19 disease (have SAR-Cov-2 positivity in their nasal or oral swabs) and Group 2: Oncology patients without COVID-19 disease.

Variables and outcomes

The demographic and clinical characteristics, medical management, quality of life, level of fear, and physical activity of the patients participating in the study were recorded. Data about age, gender, type of cancer, duration of treatment, and type of treatment were collected.

The COVID-19-Impact on Quality of Life (COV19-QoL) scale evaluated patients' quality of life. The Turkish version of the scale by Sümen et al. [14] is a reliable tool for assessing the impact of the COVID-19 pandemic on quality of life. Total scores are calculated by averaging the scores on all the items. A higher score indicates an increased impact of the pandemic on QoL. The Fear of COVID-19 Scale (FCV-19S), which is used to evaluate the effect of the pandemic process on psychological health, is a valid and reliable measurement tool. The Turkish version of the scale was developed by Satici et al. [15]. The Rapid Assessment of Physical Activity (RAPA) scale is a valid and reliable measure of physical activity. It comprised nine items related to different physical activities and participation in strength and flexibility training. The RAPA has two subscales: RAPA-Aerobic and RAPA-Flexibility and strength. The RAPA-Aerobic questionnaire is based on a scale of 1 to 7 measuring the amount, intensity, and duration of a person's physical activity. A score of greater than 6 indicates regular activity [16].

Statistical analysis

Statistical analyses were performed using SPSS, version 28.0 (Statistical Package for Social Sciences, (Armonk, NY: IBM Corp.). Continuous variables were presented by mean values (standard deviation), and categorical variables were presented as percentages. The conformity of the data to the normal distribution was examined with the Kolmogorov-Smirnov test. Non-parametric tests were used to analyze data that did not show normal distribution. Categorical variables were analyzed using the chi-square test, and continuous variables were analyzed using the Mann-Whitney test. The Spearman correlation analysis method was used for correlation analysis. *P*-value <0.05 was considered statistically significant.

Results

Seventy-eight patients who met the inclusion criteria were enrolled in the study. The demographics and clinical characteristics of the patients are summarized in Table 1. Patients in both groups were similar in age, gender, height, and weight. Table 1 shows the demographic and clinical characteristics of all patients.

Table 1: Demographics and clinical characteristics of the patients

		Group 1 (COVID-19+) n=38	Group 2 (COVID-19-) n=40	*P*-value
Sex- n(%)	Female	15 (39.5)	24 (60)	
	Male	23 (60.5)	16 (40)	0.070
Type of cancer-n(%)	Lung cancer	5 (13.2)	4 (10)	
	Breast cancer	14 (36.8)	9 (22.5)	
	Colon cancer	6 (15.8)	8 (20)	
	Gastric cancer	1 (2.6)	2 (5)	
	Other	12 (31.6)	17 (42.5)	0.622
Age (years)	Mean (SD)	60.44 (11.16)	57.79 (13.71)	0.252
Height(cm)	Mean (SD)	165.26 (20.35)	162.43 (15.89)	0.068
Weight (kg)	Mean (SD)	78.87 (20.68)	71.93 (22.72)	0.064
Type of treatment-n(%)	Inpatient	20 (52.6)	25 (62.5)	
	Outpatient	18 (47.4)	15 (37.5)	0.378

According to the results of these studies, FCV-19S and COVID-19-Impact on Quality of Life Scale (COV19-QoL) scores were significantly higher in Group 1 (whose COVID test result was positive) than in Group 2 (whose COVID test result was negative) (P<0.001). Additionally, in Group 1, RAPA scale scores were significantly lower than in Group 2 (P<0.001) (Table 2). Both groups had a moderate positive correlation between FCV-19S and COV19-QoL scale. Furthermore, a moderate negative correlation was found between FCV-19S and RAPA scores (Table 3). It has been observed that the fear of COVID-19 increases anxiety and depression, reduces the quality of life, and negatively affects physical activity.

Table 2: Comparison between the mean values of the scores of the COVID-19 Fear Scale, COV19-QoL and RAPA 1 scale between groups

	Group 1 (COVID-19+) n=38		Group 2 (COVID-19-) n=40			
	Med	**Min-Max**	**Med**	**Min-Max**	**Z score**	***P*-value**
COV19-QoL	4.00	(3 - 5)	2.00	1-5	6.711	<0.001
FCV-19S	23.00	(7 - 35)	10.00	(7 - 22)	7043	<0.001
RAPA- Aerobic	2.00	(1 - 6)	4.00	(1 - 6)	-4.642	<0.001

COV19-QoL: COVID-19-Impact on Quality of Life Scale, FCV-19S: The Fear of COVID-19 Scale, RAPA: Rapid Assessment of Physical Activity

Table 3: Correlations between FCV-19S, COV19-QoL and RAPA between the groups

		RAPA	**COV19-QoL**
Group 1 (COVID-19+) (n=38)	FCV-19S	R=-0.512	R=0.592
		P<0.001	*P*<0.001
Group 2 (COVID-19-) (n=40)	FCV-19S	R=0.529	R=-0.460
		P<0.001	*P*=0.003

COV19-QoL: COVID-19-Impact on Quality of Life Scale, FCV-19S: The Fear of COVID-19 Scale, RAPA: Rapid Assessment of Physical Activity

Discussion

In this study, we demonstrated the Fear of COVID-19 Scale (FCV-19S) and COVID-19-Impact on Quality of Life Scale (COV19-QoL) scores were significantly higher in Group 1, whose COVID test result was positive than Group 2. In addition, the Rapid Assessment of Physical Activity (RAPA) scale scores was significantly lower than in Group 2. The study has found that patients who receive oncological treatment, especially those who have COVID-19, should increase their physical activity, reduce their fear levels, and receive additional treatment and support to improve their quality of life.

With its extreme infection and mortality rates, COVID-19 is a global pandemic that is particularly dangerous for oncological patients [17]. Moreover, COVID-19 has been considered a determinant of fear, stress, anxiety, and mood disorders and negatively impacts people's physical health and, consequently, their quality of life [18]. Our study found that oncology patients with COVID-19 had higher COVID-19-QoL scores. The first finding could indicate a possible recovery pattern similar to that which has been established in COVID-19 infection, where the patient experience impaired quality of life and a poor health-related quality of life [19]. The second could be chemotherapy treatment. Which is comprehensive of both mental and physical health-related as well as the quality of life

There is a lack of data on cancer patients' fear and anxiety related to COVID-19. A variety of tools and questionnaires were suggested to measure patient anxiety. FCV-19S was designed by Ahorsu et al. [20]. Subsequently, it has been validated in many nations, becoming one of the most widely used instruments for evaluating COVID-19 for anxiety. We showed that FCV-19S had higher scores compared to oncological patients with COVID-19. For oncological patients, many triggers might cause worry. Nevertheless, cancer itself seems to be the most significant factor. Aside from the risk of infection, the impact of COVID-19 on cancer care appears to have exacerbated patients' emotions of disease and isolation, resulting in a deterioration in these patients' COVID fear.

Most cancer organizations recommend that oncological patients exercise for 150 min (aerobic, moderate to high-intensity physical activity) each week [21]. The best type or domain of physical activity for oncological patients is unclear [22]. It is common for patients with cancer to feel depressed and physically inactive.

Physical inactivity and prolonged sitting are highly prevalent among oncological patients, especially due to chronic symptoms such as fatigue, pain, and muscular weakness. Furthermore, self-isolation measures among oncological patients are also a concern; clinicians have traditionally urged patients to rest and refrain from physical activity. Humphreys et al. have shown the challenges of regulating physical activity alongside the extended symptoms associated with long COVID-19 [23]. A possible interpretation of these interrelated factors is that increased feelings of fatigue associated with cancer may complicate activities of daily living.

The findings of this study should be evaluated with some limitations in mind. First, the study used self-reported questionnaires, which may raise the concern of common method bias. In addition, the patients differed in duration and type of cancer treatment; we could not completely account for the patient's preexisting medical conditions before the COVID-19 infection. Studies in the future can focus on COVID-19 poses an imminent and obvious risk to physical health.

Conclusions

Oncological patients must be considered at risk of substantial distress when operations, chemotherapy treatments, and follow-up visits are postponed due to interrupted healthcare infrastructure. For this reason, it is critical to take care not only of the physical but also of the mental health of oncological patients. In addition, physical activity should be recommended to

oncological patients to maintain physical function and quality of life.

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