



# QUALITY OF LIFE AND COVID-19 PHOBIA OF CANCER PATIENTS RECEIVING CHEMOTHERAPY IN A STATE HOSPITAL DURING PANDEMIC: A CROSS SECTIONAL STUDY

S. HIDIROĞLU<sup>1</sup>, B.N. ATAĞLU<sup>1</sup>, E. PASTIRMACIOĞLU<sup>2</sup>, G. ÇAKIR<sup>2</sup>, S. YORGANCI<sup>2</sup>, A. GHACHEM<sup>2</sup>

<sup>1</sup>Department of Public Health, Marmara University, Faculty of Medicine, Istanbul, Turkey

<sup>2</sup>Marmara University, Faculty of Medicine, Istanbul, Turkey

**Abstract – Objective:** COVID-19 pandemic has become a global public health problem and led to phobia among people. There is also no doubt that the COVID-19 pandemic had a great impact on the quality of people's lives. The goal of this study was to assess the factors that might be affecting the quality of life and COVID-19 phobia of the cancer patients receiving chemotherapy.

**Materials and Methods:** This cross-sectional study was conducted between November 2021 and April 2022 in an outpatient chemotherapy unit within a state hospital in Istanbul. Participants' data was gathered by a questionnaire that had 3 components: participants' characteristics, the COVID-19 phobia scale, and the WHOQOL-BREF scale.

**Results:** The results showed that perceived economic status, education level, having comorbidities, having a caregiver and who is the caregiver had an impact on the Quality of Life, and people who have an acquaintance who died due to COVID-19 had higher COVID-19 phobia total score. Furthermore, it was seen that as the age or COVID-19 phobia total score increased, each component of the Quality of Life score decreased.

**Conclusions:** Quality of life and COVID-19 phobia of cancer patients were observed to be inversely proportional in chemotherapy receiving patients in a state hospital in Istanbul.

**KEYWORDS:** Cancer, Quality of life, COVID-19, Phobia.

## INTRODUCTION

Since its declaration as a pandemic by the World Health Organization on 11th March 2020, SARS-CoV-2 and the resulting illness COVID-19, had become a worldwide public health problem<sup>1,2</sup>. In addition to being a worldwide public health problem, COVID-19 resulted in emotional distress, anxiety, depression, and other psychiatric problems<sup>2,3</sup>. Like similar pandemics that happened in the past such as H1N1, Ebola, and MERS,

COVID-19 triggered the feeling of helplessness, fear, anxiety, and phobia<sup>3-6</sup>.

Phobia is defined as an “overwhelming and debilitating fear of an object, place, situation, feeling or animal”<sup>7</sup>. Coronaphobia is a specific and excessive fear of getting infected by COVID-19. People with coronaphobia are always on alert. The idea of losing someone they care makes them sad and stressed<sup>8</sup>.

The World Health Organization defines quality of life as an “individual's perception of their posi-



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tion in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns". Quality of life is a complex concept affected by various factors including social environment, expectations from life, beliefs, psychological and physical status and there is no doubt that the COVID-19 pandemic had an impact on people's life quality<sup>9</sup>.

During the pandemic, cancer patients constituted a significantly vulnerable population with their weakened immune system setting the ground for infections and poor course of illnesses<sup>3</sup>. Nowadays, with improvements in technology, there are different strategies for cancer treatment. One of the most common strategies is chemotherapy; although most cancer patients receiving chemotherapy continue to their daily-life routine without any restrictions, tiredness and possible side effects after chemotherapy have a dramatic impact on their quality of life<sup>10</sup>. The conducted studies in recent years showed that patients' quality of life, especially the ones suffering from a chronic illness, for instance, as cancer, is as important as their survival rates from the disease. Assessing the quality of life helps clinicians to see the potential benefits and risky aspects of the treatment they provide and thus they can arrange the appropriate treatment programs for better outcomes<sup>11</sup>.

The goal of this study was to define the factors that might be affecting the COVID-19 phobia and quality of life of cancer patients receiving chemotherapy who are a high-risk group during the pandemic and vulnerable to infections.

## MATERIALS AND METHODS

### *Design, setting, and sample*

This present study is a cross-sectional study that took place between September 2021 and April 2022. Participants of this study were cancer patients receiving chemotherapy at an outpatient chemotherapy unit within a state hospital in İstanbul. The study sample consisting of 242 patients was calculated using the OpenEpi program. Participant inclusion criteria were as followed: a) being 18 years or older; b) having no apparent cognitive impairment; c) being able to read and understand Turkish.

## INSTRUMENTS

Information was gathered from participants by using a questionnaire. The questionnaire consisted of 3 parts: participants' characteristics, COVID-19 phobia, and quality of life scales, respectively.

The first part was designed by the researchers and included questions to evaluate participants' age, gender, marital status, level of education, economic status, and cancer type. To assess COVID-19 diagnosis, patients were asked if they or any of their friends/relatives previously had a positive COVID-19 PCR test result and if they needed to stay in hospital because of the infection. Furthermore, patients' vaccination status was questioned and participants who had at least two shots were accepted as vaccinated for COVID-19.

The second part included the COVID-19 phobia scale, a valid and reliable scale developed by Arpacı et al<sup>12</sup>. The scale has 20 questions and psychological, somatic, social, and economic sub-scales. All of the questions have likert scale response options where 1 strongly disagree to 5 strongly agree. The sum of all subscale scores gives the total score which can range from 20 to 100 points. Higher scores show higher COVID-19 phobia.

Third and the final part of the questionnaire includes the World Health Organization Quality of Life scale's abbreviated form (WHO-QOL-BREF)<sup>13</sup>. It is a reliable and valid scale that has 26 questions and four subdomains which are physical health, mental health, social health, and environmental well-being. All questions were answered according to the likert scale. Higher scores in each subdomain indicate better quality of life.

## ETHICAL CONSIDERATIONS

All procedures were in accordance with the Ethical Standards and with the Declaration of Helsinki. This study was also approved by the Local Ethics Committee (Protocol Number: 08.10.2021.1102).

## PROCEDURE

Data was gathered between November 2021 and April 2022 in the chemotherapy unit on weekdays from 09:00 to 16:00. First, the patients who met the inclusion criteria were informed about the study and were asked if they wanted to participate. Patients who are volunteers signed the informed consent form. Questionnaires were filled out by the researchers as they were interviewing the patients. Each questionnaire took 8-12 minutes to complete.

## STATISTICAL ANALYSIS

After data gathering was completed, the analysis of collected data started in April 2022. IBM SPSS (Armonk, NY, USA) was used for analysis and

Microsoft Excel was used for making tables. As the data wasn't normally distributed, Mann Whitney U and Kruskal Wallis tests were conducted for comparative analyses. Spearman Correlations were done between continuous data and scores. Differences were considered statistically significant at  $p < 0.05$ .

## RESULTS

A total of 242 patients had been reached (Table 1). Half of the participants were female. The mean age of the participants was  $57.9 \pm 11.9$  years. Most of the participants had a caregiver; 59.4% of them stated their partner (spouse, lover) as the caregiver, whereas 30.8% stated their children as the caregivers, and the rest of the answers classified as "other" (9.8%). The most common types of cancer among the population were colorectal (21.9%), breast (21.5%), and hematological cancers (11.2%) in origin. More than half of the participants had comorbidities and the most common diseases were hypertension (28.9%), diabetes (16.1%), and cardiovascular system diseases (7.4%).

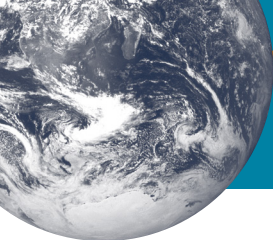
The COVID-19 phobia scale total score median point was 45.50 (interquartile range (IQR): 12.00); the psychological sub-scale was 15 (IQR: 7.00), the somatic sub-scale point was 10.00 (IQR: 2.00), the social sub-scale 13 (IQR: 7.00), and the economic sub-scale point was 8.00 (IQR: 2.25). Based on the answers given to the quality-of-life scale, the physical health sub-scale median point was 12.00 (IQR: 3.43), the psychological sub-scale median point was 13.33 (IQR: 3.33), the social relations sub-scale median point was 14.67 (IQR: 2.67), and the environmental health sub-scale median point was 14.50 (IQR: 2.00).

The relationship between the characteristics of the participants and the COVID-19 phobia and quality of life scores is shown in Table 2 and Table 3. The variables of gender, marital, and employment status were not associated with the COVID-19 phobia or quality of life. There was a statistically significant but weak inverse relationship between age and all subscales of quality of life. As the age increased, quality of life sub-scale scores decreased. When the perceived economical state and quality of life sub-scales were compared, a statistically significant difference was observed in all quality-of-life sub-scales. The economic state increasing from poor to good

indicates that quality of life increases as economical state is getting better ( $p < 0.001$ ,  $p = 0.006$ ,  $p = 0.016$ ,  $p < 0.001$ , respectively). Moreover, after comparing the educational status and quality of life sub-scales, it has been seen that there was a significant difference in the environmental health sub-scale ( $p = 0.030$ ). When the participants who have or don't have a disease other than cancer were compared with COVID-19 phobia sub-scales, statistical significance was observed only in somatic and economical sub-scales ( $p = 0.029$ ,  $p = 0.009$ , respectively). When the same variable was compared with the quality of life sub-scales, it was seen that participants who have comorbidities got lower scores in the physical health and psychological health sub-scales of quality of life ( $p = 0.027$ ,  $p = 0.020$ ). There was no statistically significant difference between perceived economical state and COVID-19 phobia ( $p > 0.05$ ).

Participants who know someone who died because of COVID-19 got a borderline significantly higher total score on the COVID-19 phobia scale than the ones who don't know someone who died because of COVID-19 ( $p = 0.049$ ). When the variable was compared with the COVID-19 phobia sub-scale and quality of life sub-scale, it was found that the ones who have an acquaintance who died because of COVID-19 got statistically significant higher scores in psychological, somatic, and economical sub-scales of COVID-19 phobia, while they were getting statistically significant lower scores in social health sub-scale of quality of life ( $p = 0.020$ ,  $p = 0.038$ ,  $p = 0.046$ ,  $p = 0.030$ , respectively). When we compared the situation of participants having a caregiver and quality of life subscales, it was observed that participants who have a caregiver got higher scores on the social relations sub-scale of quality of life ( $p < 0.001$ ). When we compared the variable of who is the caregiver with COVID-19 phobia sub-scales, it was statistically significant only in the economical sub-scale ( $p = 0.006$ ). When the same variable was compared with the quality-of-life sub-scales, it was found that the participants who state their partner as the caregiver had higher scores in the physical health, psychological and environmental health sub-scales of quality of life ( $p = 0.002$ ,  $p = 0.018$ ,  $p = 0.044$ , respectively).

Total COVID-19 phobia score and quality of life sub-scales scores were also examined and there was a statistically significant but weak inverse relationship. As the total score of COVID-19 phobia was increasing, all four sub-scales scores of quality of life were decreasing.



**TABLE 1.** Baseline characteristics of participants.

<b>Characteristics</b>	<b>n</b>	<b>%</b>	
<b>Gender</b>	Female	121	50.0
	Male	121	50.0
	Total	242	100.0
<b>Marital status</b>	Married	196	81.0
	Single	46	19.0
	Total	242	100.0
<b>Educational status</b>	No education	20	8.3
	Primary education	123	50.8
	Highschool	62	25.6
	Higher education	37	15.3
	Total	242	100.0
<b>Employment status</b>	Currently Working	24	9.9
	Currently Not Working/Retired	218	90.1
	Total	242	100.0
<b>Perceived economic status</b>	Poor	59	24.4
	Moderate	166	68.6
	Good	17	7.0
	Total	242	100.0
<b>Type of cancer</b>	Lung	25	10.3
	Breast	52	21.5
	Stomach	25	10.3
	Hematological origin	27	11.2
	Colorectal	53	21.9
	Gynecological origin	10	4.1
	Bladder	8	3.3
	Thyroid	3	1.3
	Other GIS organs	15	6.2
	Other	24	9.9
	Total	242	100.0
<b>Have a comorbidity</b>	Yes	141	58.3
	No	99	40.9
	Total	240	99.2
<b>Have a caregiver</b>	Yes	223	92.1
	No	17	7.0
	Total	240	99.1
<b>Diagnosed with COVID-19</b>	Yes	84	34.7
	No	158	65.3
	Total	242	100.0
<b>Have an acquaintance died due to COVID-19</b>	Yes	100	41.3
	No	130	53.7
	Total	230	95.0
<b>Had at least two shots COVID-19 vaccine</b>	Yes	218	90.1
	No	23	9.5
	Total	241	99.6

**TABLE 2.** Relationship between characteristics and COVID-19 phobia scale.

Characteristics	The Total Score of COVID-19 Phobia Scale			Psychological sub-scale of COVID-19 Phobia Scale			Somatic sub-scale of COVID-19 Phobia Scale			Social sub-scale of COVID-19 Phobia Scale			Economic sub-scale of COVID-19 Phobia Scale				
	Median	IQR*	p-value	Median	IQR	p-value	Median	IQR*	p-value	Median	IQR*	p-value	Median	IQR*	p-value		
<b>Gender</b>	Female	47.00	16.75	0.294	16.00	8.00	8.00	0.223	10.00	3.75	0.772	13.00	9.00	0.568	8.00	4.00	0.503
	Male	45.00	12.00		15.00	6.00	6.00		10.00	1.00		13.00	6.00		8.00	0.00	
<b>Marital status</b>	Married	45.00	12.75	0.586	15.00	7.00	7.00	0.365	10.00	3.00	0.312	13.00	8.00	0.680	8.00	3.75	0.400
	Single	47.00	10.25		15.50	6.00	6.00		10.00	0.25		13.00	6.25		8.00	0.00	
<b>Educational status</b>	No education	44.00	19.25	0.479	13.50	7.00	7.00	0.295	10.00	4.00	0.170	11.50	9.00	0.560	8.00	3.50	0.112
	Primary education	45.00	12.00		15.00	6.00	6.00		10.00	4.00		13.00	8.00		8.00	4.00	
	High school	46.00	11.50		16.00	6.00	6.00		10.00	0.25		13.50	7.00		8.00	0.00	
	Higher education	46.00	12.00		15.00	7.50	7.50		10.00	4.50		13.00	6.00		8.00	4.00	
<b>Perceived economic status</b>	Poor	45.00	10.00	0.849	15.00	5.00	5.00	0.878	10.00	0.00	0.054	12.00	5.00	0.498	8.00	0.00	0.088
	Moderate	46.00	13.25		15.00	7.00	7.00		10.00	4.00		14.00	9.00		8.00	4.00	
	Good	47.00	16.50		16.00	8.00	8.00		10.00	4.00		13.00	7.00		8.00	4.00	
<b>Employment status</b>	Currently Working	45.00	14.50	0.941	15.00	8.00	8.00	0.948	10.00	3.75	0.960	13.00	9.25	0.726	8.00	3.50	0.410
	Currently Not Working/ Retired	45.50	12.00		15.00	7.00	7.00		10.00	2.00		13.00	7.00		8.00	2.25	
<b>Type of cancer</b>	Lung	41.00	11.00	0.741	14.00	6.50	6.50	0.802	10.00	5.00	0.409	13.00	6.50	0.885	8.00	4.00	0.140
	Breast	45.50	21.50		16.00	11.50	11.50		10.00	5.00		13.00	9.00		8.00	4.00	
	Stomach	46.00	8.50		15.00	4.50	4.50		10.00	2.00		13.00	5.00		8.00	0.00	
	Colorectal	46.00	12.50		15.00	6.50	6.50		10.00	0.50		14.00	9.00		8.00	0.00	
	Hematological origin	45.00	16.00		15.00	8.00	8.00		10.00	2.00		14.00	9.00		8.00	2.00	
	Gynecological origin	47.50	7.75		15.50	5.50	5.50		10.00	2.25		14.00	8.50		8.00	4.00	
	Thyroid	49.00	0.00		17.00	0.00	0.00		10.00	0.00		14.00	0.00		8.00	0.00	
	Bladder	50.00	15.50		17.00	8.75	8.75		10.00	5.00		13.50	6.25		8.00	0.00	
	Other GIS organs	43.00	6.00		13.00	4.00	4.00		10.00	4.00		12.00	4.00		8.00	2.00	
	Other organs	45.00	11.50		16.00	6.75	6.75		10.00	0.00		11.50	4.00		8.00	0.00	
<b>Have a comorbidity</b>	Yes	46.00	14.50	0.075	15.00	7.00	7.00	0.182	10.00	1.00	<b>0.029</b>	13.00	7.50	0.249	8.00	0.00	<b>0.009</b>
	No	45.00	10.00		15.00	6.00	6.00		10.00	5.00		13.00	7.00		8.00	4.00	
<b>Have a caregiver</b>	Yes	46.00	12.00	0.493	15.00	7.00	7.00	0.646	10.00	2.00	0.915	13.00	8.00	0.736	8.00	2.00	0.896
	No	45.00	10.50		15.00	5.00	5.00		10.00	2.00		13.00	6.00		8.00	4.00	
<b>Who is the caregiver</b>	Partner	45.00	13.50	0.350	15.00	7.00	7.00	0.190	10.00	5.00	0.055	13.00	9.00	0.293	8.00	4.00	<b>0.006</b>
	Children	46.00	11.50		15.00	6.00	6.00		10.00	0.00		12.00	5.00		8.00	0.00	
	Other	47.00	15.25		16.00	6.00	6.00		10.00	1.00		13.50	7.00		8.00	0.00	
<b>Diagnosed with COVID-19</b>	Yes	45.00	12.00	0.916	15.00	7.00	7.00	0.850	10.00	3.50	0.907	13.00	9.00	0.994	8.00	4.00	0.459
	No	46.00	12.00		15.00	7.00	7.00		10.00	1.25		13.00	6.00		8.00	2.00	
<b>Have an acquaintance died due to COVID-19</b>	Yes	47.00	10.75	<b>0.049</b>	16.00	6.00	6.00	<b>0.029</b>	10.00	0.00	<b>0.038</b>	13.00	6.00	0.098	8.00	0.00	<b>0.046</b>
	No	45.00	12.25		15.00	7.00	7.00		10.00	5.00		13.00	7.00		8.00	4.00	
<b>Had at least two shots COVID-19 vaccine</b>	Yes	45.00	12.00	0.511	15.00	7.00	7.00	0.756	10.00	2.20	0.142	13.00	7.00	0.485	8.00	2.00	0.627
	No	47.00	19.00		14.00	11.00	11.00		10.00	2.05		14.00	9.00		8.00	4.00	

\*IQR: interquartile range



**TABLE 3.** Relationship between characteristics and WHOQOL scores.

Characteristics	Physical health sub-scale of Quality of Life scale			Psychological health sub-scale of Quality of Life scale			Social relations sub-scale of Quality of Life scale			Environmental health sub-scale of Quality of Life scale		
	Median	IQR*	p-value	Median	IQR	p-value	Median	IQR*	p-value	Median	IQR*	p-value
<b>Gender</b>												
Female	12.00	2.86	0.648	13.33	3.33	0.576	14.67	2.67	0.111	14.50	2.50	0.770
Male	12.57	3.43		13.33	2.67		14.67	2.67		14.50	1.88	
<b>Marital status</b>												
Married	12.00	3.29	0.335	13.33	2.67	0.774	14.67	2.67	0.067	14.50	2.00	0.902
Single	12.00	3.14		13.33	3.33		13.33	1.33		14.00	3.00	
<b>Educational status</b>												
No education	10.57	3.29	0.077	12.00	2.00	0.108	13.33	3.67	0.129	13.75	2.75	<b>0.003</b>
Primary education	12.00	3.43		13.33	2.67		14.67	2.67		14.00	2.00	
High school	12.29	3.43		14.00	3.33		14.67	2.67		15.00	2.50	
Higher education	12.00	2.29		13.33	3.33		14.67	2.67		15.00	2.50	
<b>Perceived economic status</b>												
Poor	10.29	2.29	< <b>0.001</b>	12.67	2.67	<b>0.006</b>	13.33	4.00	<b>0.016</b>	14.00	3.00	< <b>0.001</b>
Moderate	12.57	2.43		14.00	2.67		14.67	2.67		14.50	2.00	
Good	12.57	3.00		14.67	4.83		14.67	3.00		16.50	3.00	
<b>Employment status</b>												
Currently Working	12.29	3.14	0.587	14.00	4.50	0.329	14.67	2.67	0.995	14.25	2.50	0.931
Currently Not Working/Retired	12.00	3.43		13.33	3.33		14.67	2.67		14.50	2.00	
<b>Type of cancer</b>												
Lung	12.00	3.14	0.909	13.33	4.00	0.749	13.33	2.67	0.536	14.00	1.50	0.928
Breast	12.57	3.86		14.00	2.67		14.67	3.67		14.75	2.88	
Stomach	12.00	4.00		13.33	3.67		14.67	3.33		14.00	1.75	
Colorectal	12.00	2.57		13.33	3.00		14.67	4.00		14.50	2.50	
Hematological origin	12.57	4.57		14.00	2.67		14.67	4.00		14.00	2.50	
Gynecological origin	12.86	4.43		13.00	3.67		13.33	4.67		14.50	2.00	
Thyroid	12.00	0.00		13.33	0.00		13.33	0.00		15.00	0.00	
Bladder	12.00	4.29		12.67	2.33		14.67	1.33		14.25	1.25	
Other GIS organs	11.43	5.14		12.67	4.00		14.67	4.00		15.00	3.50	
Other organs	12.57	2.71		13.33	3.67		14.67	2.67		14.75	2.38	
<b>Have a comorbidity</b>												
Yes	12.00	2.86	<b>0.027</b>	13.33	2.83	<b>0.020</b>	14.67	1.33	0.418	14.50	1.50	0.384
No	13.14	3.14		14.00	3.33		14.67	4.67		14.50	2.75	
<b>Have a caregiver</b>												
Yes	12.00	3.43	0.384	13.33	3.33	0.760	14.67	2.67	< <b>0.001</b>	14.50	2.00	0.082
No	10.86	5.43		13.33	2.67		10.67	4.67		12.50	3.75	
<b>Who is the caregiver</b>												
Partner	12.57	4.00	<b>0.002</b>	14.00	3.33	<b>0.018</b>	14.67	2.67	0.097	14.50	2.50	<b>0.044</b>
Children	11.43	3.43		12.67	2.67		14.67	1.33		14.00	2.00	
Other	12.00	3.14		13.67	3.33		13.33	4.33		15.00	3.63	
<b>Diagnosed with COVID-19</b>												
Yes	12.57	2.86	0.270	13.33	2.67	0.734	14.66	4.00	0.764	14.50	2.50	0.907
No	12.00	3.43		13.33	3.33		14.66	2.67		14.25	2.00	
<b>Have an acquaintance died due to COVID-19</b>												
Yes	12.00	3.29	0.616	13.33	2.67	0.931	14.67	2.67	<b>0.030</b>	14.50	2.00	0.231
No	12.00	3.57		13.33	3.33		14.67	2.67		14.00	2.50	
<b>Had at least two shots COVID-19 vaccine</b>												
Yes	12.00	3.43	0.680	13.33	3.33	0.402	14.67	2.67	0.367	14.50	2.00	0.220
No	12.57	2.86		13.33	3.33		13.33	4.00		14.00	3.00	

\*IQR: interquartile range

## DISCUSSION

This study showed that patients receiving chemotherapy had higher levels of COVID-19 phobia and lower quality of life in some sub-scales. In our assessed population, those with underlying illnesses had significantly higher scores in somatic and economic subscales of the COVID-19 phobia scale, in addition to lower psychological health sub-scale scores. A research conducted by Koçak et al<sup>14</sup> showed that anxiety and stress levels were significantly high in patients who have underlying diseases and witness family/friends being infected with or dying due to COVID-19. A survey carried out in Wuhan by Qian et al<sup>15</sup> showed that more than half of the participants had a significant level of anxiety; almost all of them stated that their life was affected by COVID-19, and they needed mental support. Also, in a cohort study that assessed COVID-19 hospitalization and death-related predictors within the first 9515 cases in Denmark, risk factors such as the number of comorbidities had a significant impact on hospitalization and death of COVID-19 positive patients<sup>16</sup>.

Cancer patients' quality of life was getting affected and was inevitable while continuing the course of treatment under difficult conditions<sup>17</sup>. This was observed in our findings; cancer patients with lower economic status had significantly lower quality of life in all aspects. Ciężynska et al<sup>18</sup> had found resembling results to those findings. They showed cancer patients living alone had lower quality of life which indicates the importance of caregivers and their impact on patients' well-being and making progress on their treatment. Also, they showed they had lower quality of life during the pandemic, in their financial status, and cognitive and social functioning, compared to the data gathered under normal conditions.

In our study age was an important factor that affects the quality of a cancer patient's life. Older patients dealing with their illness during the burdensome conditions of the pandemic had lower quality of life scores when compared to much younger patients. With increasing age, people tend to become more dependent on surrounding family, acquaintances, and facilities. A cross-sectional Danish study conducted by Jeppesen et al<sup>19</sup> found age to be an important predictor of mortality due to COVID-19 and supposed that as age increases, quality of life decreases. Also, in this study resembling our findings, it was observed that people who concern about being infected with COVID-19 had lower quality of life scores.

Overall, we can state that patients at high risk such as cancer patients have been critically affected by the pandemic. They experienced a high level

of phobia and in return, their well-being worsened during this time. We have found that as COVID-19 phobia levels increases, the patient's quality of life declines. This similar inverse correlation was interpreted in Dönmez et al<sup>20</sup> research carried out on cancer patients during the pandemic.

Limitations of this study include the fact that it's cross-sectional, hence it only interprets the present perception of cancer patients receiving chemotherapy at a single institute regarding their situation during the COVID-19 pandemic. In future studies, instead of convenient sampling, a random sampling method can be applied to a larger sample size of patients receiving chemotherapy across several institutes in Istanbul. Confounding factors that may affect the quality of life independent of COVID-19, for example, stage of cancer, number of chemotherapy sessions etc. can be further studied and asked in detail to establish stronger relations in our results.

Regarding our study's strength points we had rather included a wide range of age and cancer types instead of focusing on one type. At the time we carried out our research, the impact of COVID-19 was mitigating. Hence, it can be useful to compare with research conducted at the beginning of the pandemic and weigh up the impact of the change on people's perceptions and responses.

## CONCLUSIONS

COVID-19 phobia and quality of life levels were observed inverse relationship in patients receiving chemotherapy in a state hospital. Patients who have an acquaintance who died due to COVID-19 tend to show higher levels of COVID-19 phobia. In addition, lower scores on physical and psychological subscales of quality of life were observed in patients who have comorbidities whilst they had higher levels of COVID-19 phobia. Lastly, those who have better economic status had an improved quality of life within all its subscales.

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All authors give their consent for publication.

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The authors declare that they have no conflict of interest.

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Conception and design of the study by Seyhan Hıdıroğlu, Beyza Nur Ataoğlu, Ege Pastırmacıoğlu, Gizem Çakır, Söğüt Yorgancı, Alisar Ghachem; analysis and interpretation of data by Beyza Nur Ataoğlu; drafting the article or making critical revisions related to relevant intellectual content of the manuscript by all authors; validation and final approval of the version of the article by Seyhan Hıdıroğlu.

## ORCID ID

Seyhan Hıdıroğlu: 0000-0001-8656-4613

Beyza Nur Ataoğlu: 0000-0001-5202-0458

Ege Pastırmacıoğlu: 0000-0002-5929-2242

Gizem Çakır: 0000-0001-9659-0508

Söğüt Yorgancı: 0000-0003-0935-1803

Alisar Ghachem: 0000-0002-0231-4797

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