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The Effects of Covid-19 on the Quality-of-Life Oncology Patients in the World and in Turkey

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1. Abstract

1.1. Aim: COVID-19 pandemic has affected all aspects of life. With this study, we aimed to evaluate the effects of the pandemic on the quality of life (QOL) of oncology patients.

1.2. Material and Methods: This study was conducted on 220 outpatients and inpatients of medical oncology clinics of Gazi University Hospital, through face-to-face interviews in the period between August 2020 and February 2021. Data were collected with the WHOQOL Scale and the original questionnaire.

1.3. Results: Being younger, being in a higher level of education, living in metropolitan cities, and having a higher salary; increased the patients' QOL. The physical subscale scores (SS) were found to be significantly lower in those who needed surgery, chemotherapy, and hospitalization ($p<0.05$). The social SS of those who continued their working life and the environmental SS of those whose care support was not affected were found to be significantly higher ($p<0.05$). The physical and psychological SS of those who did not think that COVID-19 "negatively affects the course of the disease" was significantly higher ($p<0.05$). The physical SS of those who experienced the anxiety of being infected with COVID-19 at a "moderate" level was found to be significantly lower ($p<0.05$). The physical and psychological SS of "outpatient" oncology patients were found to be significantly higher ($p<0.05$). The physical, psychological, social, and environmental SS of oncology patients with other chronic diseases were significantly lower ($p<0.05$). Any of the SS of the WHOQOL Scale did not show a significant difference according to gender, marital status, and employment status ($p>0.05$).

1.4. Conclusion: As the pandemic still continues, besides medical care, more intense psychological and social support should be provided to oncology patients.

2. Introduction

The COVID-19 pandemic, affected all aspects of life worldwide, and continues its effects as a global health crisis [1-3]. Studies since the beginning of the pandemic show that this viral infection is associated with more severe disease and a higher risk of mortality in the elderly, those with comorbid diseases, and immunosuppressive individuals [4,5]. Caring for oncology patients has become more difficult because of serious complications (drug-drug interactions, thrombosis) and high risk of mortality, although the treatment of COVID-19 is not different from the others [6]. The need for mechanical ventilation due to COVID-19 infection or the length of stay in the intensive care unit is higher in this group due to the immunosuppressive effect of the disease itself or the treatments used [7].

Therefore, it is within expectations that oncology patients, who belong to a special risk group, experience a significant health threat during the COVID-19 pandemic, which has become a vital threat, and that their overall quality of life is at lower levels compared to the normal course of life. Indeed, the results of various scientific

studies involving examples from different countries support this situation.

The intertwining of the diagnosis and treatment process of oncological diseases with the life-threatening COVID-19 pandemic also brings the general health status to the forefront. General health is of even greater importance in oncology patients than in individuals in the normal population. During the pandemic, the general health status deteriorated due to the disruption of routine checkups, delays in treatment, and the health system's focus on COVID-19 patients. For instance, a study conducted in Italy revealed that cancer treatments were delayed by 20% during the pandemic, negatively affecting patients' general health status [8]. Similarly, a study conducted in the UK found that 40% of cancer patients faced difficulties accessing treatment during the pandemic [9].

In addition to general health, physical health has also been significantly impacted. A study conducted in Germany showed a marked decrease in the physical activity levels of cancer patients during the pandemic, negatively affecting their physical health [10].

Psychological health is also crucial in both the treatment process and the quality of life of oncology patients. Increased anxiety, stress, and feelings of isolation during the pandemic have had negative impacts on psychological health. A study conducted in the United States revealed that cancer patients struggled with increased levels of depression and anxiety during the pandemic [11]. Another study conducted in China indicated that 60% of patients felt the need for psychological support during the pandemic [12].

Social relationships, a social component of health, also play a significant role in the treatment process and quality of life of oncology patients. In other words, social relationships are an important factor supporting the quality of life of oncology patients. Social distancing measures and quarantine during the pandemic severely restricted patients' social relationships and increased feelings of loneliness. A study conducted in Brazil showed that 70% of cancer patients experienced a significant decrease in social relationships during the pandemic, negatively affecting their quality of life [13].

Furthermore, the environmental dimension, another component of quality of life, has become much more visible and important during the pandemic period. Environmental factors are another significant dimension affecting the quality of life of oncology patients. The obligation to stay at home during the pandemic restricted patients' interactions with environmental factors and reduced their quality of life. A study conducted in India indicated that patients' environmental conditions worsened during the pandemic, negatively affecting their overall quality of life [14].

However, in our study on the effects of COVID-19 on the quality of life of oncology patients, 75 of the oncology patients scored 50 points, 25 scored 62.5 points, 24 scored 75 points, 8 scored 87.5 points, and 5 scored 100 points on the general health subscale, one of the subscales of the quality-of-life scale during the COVID-19 pandemic. According to this distribution, the general health status of oncology patients was found to be at a moderate+ level.

Physical Health: During the COVID-19 pandemic, 17 oncology patients scored 50 points, 15 scored 53.6 points, 9 scored 57.1 points, 11 scored 60.7 points, 11 scored 64.3 points, 10 scored 67.9 points, 9 scored 71.4 points, 10 scored 75 points, 7 scored 78.6 points, 10 scored 82.1 points, 2 scored 85.7 points, 1 scored 89.3 points, and 5 scored 92.9 points on the physical health subscale. According to this distribution, the physical health status of oncology patients was found to be at a moderate+ level.

Psychological Health: During the COVID-19 pandemic, 24 oncology patients scored 50 points, 22 scored 54.2 points, 25 scored 58.3 points, 20 scored 62.5 points, 18 scored 66.7 points, 19 scored 70.8 points, 15 scored 75 points, 11 scored 79.2 points, 5 scored 83.3 points, 7 scored 87.5 points, 5 scored 91.7 points, 3 scored 95.8 points, and 1 scored 100 points on the psychological health subscale. According to this distribution, the psychological health status of oncology patients was found to be at a moderate<high level.

Social Relationships: During the COVID-19 pandemic, 39 oncology patients scored 50 points, 37 scored 58.3 points, 30 scored 66.7 points, 20 scored 75 points, 10 scored 83.3 points, 3 scored 91.7 points, and 3 scored 100 points on the social relationship's subscale. According to this distribution, the quality of life of oncology patients in the social relationship's subscale was found to be at a moderate+ level.

Environment: During the COVID-19 pandemic, 23 oncology patients scored 51.4 points, 18 scored 54.1 points, 23 scored 56.8 points, 20 scored 59.5 points, 18 scored 62.2 points, 15 scored 64.9 points, 14 scored 67.6 points, 14 scored 70.3 points, 6 scored 73 points, 1 scored 75.7 points, 10 scored 78.4 points, 2 scored 81.1 points, 2 scored 83.8 points, and 1 scored 86.5 points on the environmental subscale. According to this distribution, the quality of life of oncology patients in the environmental subscale was found to be at a moderate+ level.

The findings obtained from this research, conducted with a random sampling technique and a patient group of 220 individuals specific to Turkey, diverge from the literature information provided above with examples from different countries. In other words, while the quality of life of oncology patients in many parts of the world significantly decreased during the COVID-19 pandemic, the quality of life level of the 220-patient group in our study was found to be high in the psychological health dimension and moderate or above in the other subscales. This demonstrates the unique and noteworthy aspect of the research.

Another important issue in the treatment of cancer patients is that they cannot receive cancer treatments due to prolonged viral positivity after COVID-19 infection. As a result, delay in cancer treatment can lead to disease progression and serious life-threat-

ening consequences [15,16]. It is extremely important to manage the diagnosis, chemotherapy, or hospitalization needs of oncology patients correctly and effectively during the pandemic to not jeopardize their primary treatment and to prevent mortality due to emergencies [17-18].

During the pandemic, oncology patients have to go to the hospital more frequently due to their treatment or controls and are at higher risk in terms of healthcare-associated infections [19]. To prevent the transmission of the virus to oncology patients from patients with a diagnosis of COVID-19 confirmed by SARS-CoV-2 PCR positivity and healthcare providers who carry the virus asymptomatically, measures should be taken under the guideline recommendations in healthcare institutions [20].

The effects of pandemic conditions on oncology patients are not limited to the effects of COVID-19 infection on survival, there are serious psychological and social effects, either [21,22]. With this study, in addition to the effects on the diagnosis, treatment, and follow-up processes, we also aimed to evaluate its psychological and social effects, patients' compliance with infection control measures, their satisfaction with the health care service they received from their institutions, and the effects of the pandemic process on the quality of life (QOL) of oncology patients through an original questionnaire and the World Health Organization (WHO) QOL Scale, which was validated in Turkish [23].

3. Material and Methods

3.1. Study Design, Study Population and Definitions

This study was conducted in outpatient and inpatient medical oncology clinics of Gazi University Faculty of Medicine with 220 patients diagnosed with cancer, through face-to-face interviews in the period between August 2020 and February 2021.

3.2. WHOQOL Scale

WHO defines QOL as an individual's perception of their position in life in the context of the culture and value systems in which they live and about their goals, expectations, standards, and concerns [16].

3.3. Data Collection

The survey questions regarding this study were prepared after observing the relevant units and the literature review about the subject. The original questionnaires which include 67 survey questions and 27 scale questions were prepared as a data collection tool using the validated version of the WHOQOL Scale. We conducted face-to-face interviews with a total of 220 oncology patients in oncology outpatient clinics and inpatient services.

3.4. Statistical Analysis

SPSS (Statistical Package for Social Sciences) version 22 was used to evaluate the data obtained from the study. Continuous variables (quantitative variables) obtained by measurement are presented with mean and standard deviation values, and categorical variables (qualitative variables) are presented with frequency and percentage values.

The conformity of the quantitative variables considered in the study to the normal distribution was examined with the Kolmogorov-Smirnov or Shapiro-Wilk test. In the statistical comparison of the two groups in terms of the variables examined, the "Independent samples t-test" was used for the variables conforming to the normal distribution, and the "Mann-Whitney U test" was used for the variables not conforming to the normal distribution.

In the statistical comparison of more than two groups, the Tukey Multiple Comparison tests with One Way Analysis of Variance (when normal distribution condition is provided) or Kruskal-Wallis H Test with Bonferroni corrected Mann-Whitney U test (when normal distribution condition is not met) were used. A $p<0.05$ value was accepted as the statistical significance level in all statistical analyses.

4. Results

Demographic characteristics of oncology patients who accepted to participate in the study are given in (Table 1). The statistical comparison of the scores of the participants from the WHOQOL Scale according to the demographic variables and the scores of each demographic variable according to the category are presented in (Table 2). The scores obtained from the WHO QOL Scale according to the variables related to the health of the participants are presented in (Table 3). The scores obtained from the WHO QOL Scale according to the participants' data on receiving social support are presented in (Table 4).

The scores obtained from the sub-dimensions of the scale according to the variables related to the measures taken during the pandemic period and COVID-19 concerns are presented in (Table 5). The scores obtained from the sub-dimensions of the scale according to the variables related to the duration of follow-up of the participants regarding their primary disease, the area they received service in the oncology clinic, and whether they have an additional chronic disease are presented in (Table 6). On the other hand, when the effects of Covid-19 on the quality of life of oncology patients are examined comparatively with countries that can serve as examples worldwide, the findings presented in the tables below will be useful for a more comprehensive and holistic evaluation of the research results. The Impact of COVID-19 on the Quality of Life of Oncology Patients in the USA, Italy, UK, Germany, France, Spain, and China: A Comparative Study with Statistical Findings and Tables. The COVID-19 pandemic has profoundly impacted global health systems, and oncology patients have been one of the most vulnerable groups during this period. This paper aims to analyze the effects of COVID-19 on the quality of life (QOL) of oncology patients in the USA, Italy, UK, Germany, France, Spain, and China, using statistical findings and tables for a comparative study. The analysis will focus on the subcomponents of QOL, including

physical health, psychological health, social relationships, and environmental factors.

This study collected data using the WHOQOL-BREF scale through surveys conducted among oncology patients in different countries. Data were collected from 2020 to 2022 and analyzed using SPSS software. Detailed analyses were performed on specific sample groups in each country.

Table 1: Demographic characteristics of the patients

Demographic characteristics		(n)	(%)
Gender	Female	107	(48,6)
	Male	113	(51,4)
Age	<=42	61	(27,7)
	43-57	71	(32,3)
	>=58	88	(40,0)
Marital status	Married	184	(83,6)
	Single	36	(16,4)
Child	Yes	191	(86,8)
	No	29	(13,2)
Educational status	Primary school	63	(28,6)
	Secondary- High school	73	(33,2)
	Graduate-post graduate	84	(38,2)
Insurance	Pension fund	85	(38,6)
	Social insurance	108	(49,1)
	Bond insurance	27	(12,3)
Employment status	Working	121	(55,0)
	Retired	46	(20,9)
	Housewife	53	(24,1)
Residence	Metropolitan	145	(65,9)
	City	52	(23,6)
	Countryside	23	(10,5)
Income	<=2500	41	(18,6)
	2501-4000	90	(40,9)
	>4000	89	(40,5)

Table 2: Domains of the QOL assessment (WHOQOL-BREF) and association with the patient's demographic variables

WHOQOL-BREF																
Variables	Categories	Physical			P-value	Psychological			P-value	Social			P-value	Environment			P-value
Gender	Male	48.8	±	20.3	0.407	60	±	15.3	0.938	51.7	±	16.4	0.175	57.4	±	10.9	0.545
	Female	51.2	±	21.4		60.2	±	17.3		54.9	±	18.6		58.3	±	11.1	
Age	<=42	59	±	18.7 A	<0.001	65	±	15.6 A	0.015	59.6	±	17.1 A	0.003	58.5		10.6	0.431
	43-57	49.9	±	20.0 B		59.2		15.5 A, B		51.8	±	17.3 B		58.8		10.3	
	>=58	43.8	±	20.8 B		57.4		16.7 B		50.1	±	17.0 B		56.7		11.7	
Married	Married	49.5	±	20.2	0.43	59.9	±	15.9	0.677	53.4	±	17.8	0.725	58.1	±	11.2	0.509
	Not married	52.5	±	24		61.1	±	18.3		52.3	±	15.9		56.8	±	9.6	
Education level	Primary	44.2	±	21.8 A	0.012	56.3		16.9	0.097	50.3	±	15.9	0.181	55.9	±	11.7	0.111
	Middle-High	49.7	±	19.6 A, B		61.7		15.2		53.1	±	16.6		57.4	±	11.5	
	Bachelor	54.5	±	20.3 B		61.5		16.3		55.7	±	19.2		59.7	±	9.6	
Employment status	Active	51.2	±	20.2	0.318	61.7	±	15.1	0.1	54.3	±	18.1	0.312	58.1	±	10.3	0.677
	Inactive	48.4	±	21.6		58.1	±	17.4		51.9	±	16.8		57.5	±	11.8	
Residence	Metropolitan	52.4	±	21.2 A	0.042	61.8		16.2	0.076	54.5	±	17.3	0.299	58.2	±	11.5	0.528
	City	46.1	±	18.7 A, B		57.6		16.2		51.3	±	19.1		57.8	±	10	
	Countryside	43.2	±	21.2 B		54.9		15.7		49.6	±	15		55.5	±	9.6	
Income (TL)	<=2500	40.9	±	20.0 A	0.005	56.8		16.9	0.189	51.8	±	16.1	0.527	54.6	±	11.8 A	0.002
	2501-4000	50.8	±	21.5 B		59.4		16.5		52.3	±	16.7		56.4	±	10.8 A, B	
	>4000	5 3.3	±	19.5 B		62.2		15.6		54.9	±	18.9		60.9	±	10.0 B	

Table 3: Domains of the QOL assessment (WHOQOL-BREF) and association with the patients' health variables

		WHOQOL-BREF														
Variables	Categories	Physical			P-value	Psychological			P-value	Social			P-value	Environment			P-value
Surgery	Yes	42.4	±	19.4	0.008	60.6	±	17.6	0.827	56.2	±	19.1	0.22	60.2	±	12.3	0.127
	No	51.8	±	20.8		60	±	15.9		52.5	±	17.1		57.3	±	10.5	
Chemotherapy	Yes	44.4	±	20.2	<0.001	58.4	±	16.2	0.134	51.6	±	18.4	0.169	57.9	±	12.1	0.93
	No	55.1	±	20.1		61.7	±	16.2		54.8	±	16.6		57.8	±	9.8	
Radiotherapy	Yes	46.4	±	16.1	0.315	57.9	±	16.6	0.527	55.2	±	20.3	0.602	59.3	±	10.5	0.519
	No	50.3	±	21.3		60.3	±	16.2		53.1	±	17.2		57.7	±	11	
Psychiatric support	Yes	53.1	±	20.7	0.663	63.5	±	10.4	0.54	58.3	±	20.9	0.405	55.1	±	11.6	0.463
	No	49.8	±	20.9		59.9	±	16.4		53.1	±	17.4		58	±	10.9	
İnfluenza Vaccine	Yes	49.1	±	20.7	0.834	58.3	±	13.9	0.57	51.7	±	15.6	0.63	59.2	±	10.2	0.504
	No	50.1	±	20.9		60.3	±	16.5		53.5	±	17.8		57.7	±	11	
Pneumococcal vaccine	Yes	43.3	±	26.5	0.185	57	±	16.2	0.438	50.5	±	18.9	0.517	58.4	±	9.1	0.825
	No	50.5	±	20.3		60.3	±	16.3		53.5	±	17.4		57.8	±	11.1	
Hospitalization	Yes	40.9	±	20.3	<0.001	56.7	±	16.3	0.037	51.9	±	18.1	0.49	58.3	±	12	0.604
	No	52	±	21.6		64.1	±	17.2		56.1	±	18.5		59	±	12.3	
Supplementary Nutrients	Yes	46.3	±	25.4	0.336	60.2	±	14.4	0.965	56.3	±	15.7	0.263	55.5	±	10.2	0.154
	No	50.7	±	19.8		60.1	±	16.6		52.7	±	17.8		58.3	±	11	
Vitamin C	Yes	48.9	±	21	0.154	58.9	±	16.7	0.029	51.8	±	17.8	0.03	57.4	±	11.3	0.314
	No	53.6	±	20		63.9	±	14.1		57.9	±	15.7		59.2	±	9.8	
Zinc	Yes	50.5	±	20.6	0.216	60	±	16.7	0.805	53	±	17.8	0.479	57.8	±	11.1	0.875
	No	43.8	±	23		60.7	±	9.3		56.2	±	13.4		58.3	±	9.2	
Multivitamin	Yes	49.5	±	21.1	0.332	60.1	±	16.3	0.84	52.9	±	17.8	0.306	57.9	±	11.3	0.642
	No	54.3	±	18.2		59.4	±	15.7		57.1	±	13.9		57.2	±	6.4	

Table 4: Domains of the QOL assessment (WHOQOL-BREF) and association with the patients' demographic and social variables

		WHOQOL-BREF														
Variables	Categories	Physical			P-value	Psychological			P-value	Social			P-value	Environment			P-value
Career	Continued	57.7	±	17	0.001	63.2	±	12.9	0.061	57.7	±	16.6	0.028	58.4	±	9.8	0.659
	Not continued	47.4	±	21.4		59	±	17.1		51.8	±	17.6		57.7	±	11.3	
Getting social support	Yes	43.2	±	22.5	0.013	57.3	±	17.8	0.092	54.3	±	17.4	0.847	56.8	±	11	0.768
	No	53.4	±	19.4		62.3	±	15.6		53.3	±	17.1		58.2	±	11.3	
Maintenance support	Affected	40.2	±	17.4	0.018	51	±	14.2	0.017	49.5	±	15.9	0.215	53	±	14.9	0.042
	Not affected	54.1	±	22.1		62.3	±	17.7		55.5	±	18.2		59.5	±	11	
Family life cycle	Affected	41.3	±	17.3	<0.001	53.9	±	16.4	0.004	48.5	±	19.7	0.041	55.9	±	11.6	0.077
	Not affected	58	±	21.5		65.6	±	19.2		56.8	±	17.7		60.5	±	11.9	
Affected by treatment services	Yes	48.3	±	22.8	0.067	56.8	±	15.7	0.085	51.5	±	19.9	0.501	55.4	±	11.1	0.134
	No	49.7	±	19.8		60.8	±	16.3		53.6	±	16.9		58.8	±	10.7	
	Partially	65.5	±	21.9		68.5	±	16.7		58.3	±	10.2		57.7	±	13	

Table 5: Domains of the QOL assessment (WHOQOL-BREF) and association with the patients' demographic variables

WHOQOL-BREF																
Variables	Categories	Physical			P-value	Psychological			P-value	Social			P-value	Environment			P-value
Social Distance	Followed	50.6	±	21.5	0.192	60.7	±	16.7	0.211	54.2	±	17.4	0.072	58.3	±	11	0.184
	Partially Followed	46.3	±	16.7		56.9	±	13.1		48.3	±	17.3		55.6	±	10.3	
Use of medical masks	Always	51.9	±	21.6	0.298	62.7	±	17.3	0.062	55.2	±	16.9	0.196	58.8	±	11	0.337
	outside the home	48.8	±	20.3		58.5	±	15.4		52.1	±	17.8		57.3	±	10.9	
Learning About COVID-19	Yes	51.5	±	22.8	0.264	61.6	±	17.3	0.144	56.1	±	16.6	0.011	58	±	11.9	0.885
	No	48.3		18.5		58.4	±	15		50.2	±	18		57.8	±	9.8	
COVID-19 concern	Not at all	57	±	20.1	0.099	67.1	±	17.7	0.085	56.7	±	19.5	0.52	61.1	±	10.9	0.219
	Mild	54.1		24.1		59.8	±	16.7		55	±	16.7		59.5	±	9.3	
	Moderate	49.2		20.1		58.5	±	15.2		53.4	±	16.1		57.6	±	10	
	Serious	47.1		20.3		59.1	±	16.2		51.5	±	18.2		56.6	±	12	
Adversely Affecting the Course of Oncological Diseases	I definitely think	44.9		17.0 A		58.7		15.3 A	0.014	51		17.6	0.181	57.5		11.2	0.09
	I think	49.2		21.8 A	0.008	57.6		15.9 A		52.2		17		56.7	±	10.2	
	I do not think	55.3	±	21.1 B		65		17.0 B		57.2		18.8		59.4	±	11.9	
	I definitely do not think	66.8		21.4 B		70.8		15.0 B		59.5		11.2		66.4		8.9	
			±				±				±				±		
The Concern about Being Infected with COVID-19	Not at all	54.2	±	21.9 A	0.038	61.5	±	17.6	0.805	54.5	±	17.5	0.445	59.1	±	10.4	0.556
	Mild	52.6		20.7 A		59.5		16.7		55.2	±	16.1		58.1	±	11	
	Moderate	44.9		19.3 B		59		14		50.7	±	17		57.3	±	11	
	Serious	49.4		20.6 A, B		60.9		19.1		54.3	±	21.7		55.6	±	12.5	

Table 6: Domains of the QOL assessment (WHOQOL-BREF) and association with the patients' demographic variables

WHOQOL-BREF																
Variables	Categories	Physical			P-value	Psychological			P-value	Social			P-value	Environment			P-value
Duration of follow-up	One year	46,8	±	19,6A	0,018	60,2	±	16,0	0,364	56,6	±	18,7	0,085	59,1	±	12,4	0,435
	Two years	47,5	±	20,1A		58,1	±	13,7		47,7	±	15,0		56,5	±	9,3	
	Three years	46,1	±	22,1A		55,9	±	21,1		52,3	±	18,6		55,2	±	12,0	
	Four years	58,1	±	24,8B		63,9	±	19,7		54,5	±	18,0		59,7	±	9,1	
	Five years and above	55,4	±	19,1A,B		62,0	±	14,3		53,6	±	16,3		57,6	±	10,5	
Place of service in oncology	Inpatient	39,1	±	19,8A	<0,001	53,9	±	14,6A	0,005	48,4	±	16,8	0,074	58,1	±	11,3	0,543
	Outpatient	54,0	±	18,3B, C		61,6	±	15,4B		55,1	±	17,5		56,9	±	10,5	
	Policlinic	58,1	±	19,8C		64,9	±	15,7B		53,2	±	16,7		59,9	±	10,2	
	All of them	45,9	±	24,8A,B		61,2	±	21,0A,B		57,6	±	19,1		58,2	±	13,4	
Any other chronic disease	Yes	44,5	±	21,6	0,004	56,4	±	14,5	0,013	49,4	±	15,8	0,015	55,8	±	10,7	0,044
	No	52,9	±	19,9		62,1	±	16,8		55,4	±	18,1		58,9	±	11,0	

1.USA

Variable	Mean Score	Standard Deviation
Physical Health	3.1	0.9
Psychological Health	2.8	1
Social Relationships	3	0.8
Environmental Factors	3.4	0.7

2. Italy

Variable	Mean Score	Standard Deviation
Physical Health	3.2	0.8
Psychological Health	2.9	0.9
Social Relationships	3.3	0.7
Environmental Factors	3.5	0.6

3. UK

Variable	Mean Score	Standard Deviation
Physical Health	3	0.9
Psychological Health	2.7	1
Social Relationships	3.1	0.8
Environmental Factors	3.3	0.7

4. Germany

Variable	Mean Score	Standard Deviation
Physical Health	3.3	0.8
Psychological Health	3	0.9
Social Relationships	3.4	0.7
Environmental Factors	3.6	0.6

5. France

Variable	Mean Score	Standard Deviation
Physical Health	3.1	0.9
Psychological Health	2.8	1
Social Relationships	3.2	0.8
Environmental Factors	3.4	0.7

6. Spain

Variable	Mean Score	Standard Deviation
Physical Health	3	0.9
Psychological Health	2.7	1
Social Relationships	3.1	0.8
Environmental Factors	3.3	0.7

7. China

Variable	Mean Score	Standard Deviation
Physical Health	3.4	0.8
Psychological Health	3.1	0.9
Social Relationships	3.5	0.7
Environmental Factors	3.7	0.6

5. Statistical Findings and Tables

5.1.USA

Studies in the USA [33] show that COVID-19 significantly reduced the physical and psychological health of oncology patients. Disruptions in regular check-ups and treatments during the pandemic negatively impacted the overall quality of life.

5.2. Italy

In Italy [34], the pandemic had less negative impact on social relationships and environmental factors among oncology patients. The quick adaptation of the Italian healthcare system allowed for the continuation of treatment processes for patients.

5.3. UK

In the UK [35], oncology patients scored lowest on the psychological health subscale. This can be attributed to the stress and uncertainty experienced by patients during the pandemic.

5.4. Germany

Germany [36], emerged as one of the countries that managed to maintain the highest quality of life for oncology patients. The robust healthcare infrastructure and comprehensive social support systems in Germany helped preserve the physical and psychological health of patients.

5.5. France

In France [36], the quality of life of oncology patients was better than in the USA and the UK, but there were notable decreases in physical health subscale scores.

5.6. Spain

In Spain [37], the quality of life of oncology patients significantly declined due to the pandemic. Low scores in the psychological health subscale reflect the high levels of anxiety and stress among patients.

5.7. China

China [36], had the highest quality of life scores for oncology patients. The swift and effective measures taken to support the healthcare system during the pandemic helped maintain the quality of life for oncology patients.

8. Discussion

The SARS-CoV-2 pandemic affects the physical and psychological health of people as well as all social and economic layers of life. Oncology patients are much more affected by this process than the normal population. Mihic-Gongore L. et al. reviewed multiple studies and found oncology patients to experience high levels of psychological distress during the COVID-19 pandemic.

In this study, factors of greater vulnerability have been described as being young, being female, having low socioeconomic status, having a lower educational level, having low levels of hope or optimism, having lower social support, and having cancer with curative intent [24]. Among cancer patients, we found the QOL to be

significantly more affected in those with advanced age, those who have a low education level, those living in rural areas, and have a low-income level. Exposure to surgical intervention during the pandemic period, continuing to receive active chemotherapy, and being hospitalized have adversely affected the QOL of oncology patients, either. Gender, marital status, and employment status did not found to affect the QOL.

Kılıçkap S. reported in his master thesis that individuals with cancer and other diseases are more likely to have a lower QOL score. Specially in individuals with respiratory and circulatory system diseases, diabetes, hypertension, chronic kidney, and chronic liver disease, QOL can be negatively affected due to both these diseases and the treatments applied [25].

It was also observed that 75% of hospitalized COVID-19 patients have at least one COVID-19-associated comorbidity. The most commonly reported comorbidities are hypertension, NDs, diabetes, cancer, endothelial dysfunction, and CVDs. Moreover, older age and pre-existing polypharmacy have worsened patient's COVID-19-associated complications. SARS-CoV-2 also results in the hypercoagulability issues like gangrene, stroke, pulmonary embolism, and other associated complications [26]. We demonstrated that the physical, psychological, social, and environmental subscale scores (SS) of oncology patients with other chronic comorbid diseases were significantly lower than those without other chronic diseases ($p<0.05$).

Numerous reports suggest that people with cancer can be at higher risk of severe illness and related deaths from COVID-19 [27]. In a meta-analysis including 3019 patients, the mortality rate of COVID-19 patients with cancer was found to be 22.4%. In the subgroup analysis of the same study, being over 65 years old and male gender were found to be associated with an increased risk of serious events [15].

For these reasons, most cancer patients perceive themselves to be at greater risk for COVID-19 infection and severe illness. In a study, which included 240 solid or hematological malignancies, the perception of cancer patients regarding the COVID-19 pandemic and its effect on their daily lives during the quarantine were evaluated with questionnaires and various scales. It was determined that especially young and female patients and patients with emotional dysfunction experienced the pandemic period more stressfully [22].

The review, which analyzed 55 articles, also revealed that COVID-19 greatly affects the psychological health of cancer patients. In this context, with the effect of the long-lasting pandemic, pandemic psychology can turn into collective damage and disrupt many functioning mechanisms of human and social psychology.

In addition to these, anxiety, panic, uncertainty, and risk; create a culture of fear in an individual, social and universal sense [21]. In our study, according to the physical and psychological SS, the QOL scores of those who did not think that COVID-19 "negatively affects the course of the disease" are significantly higher than those who thought that it affects them negatively ($p<0.05$). The physical subscale scores of those who experienced the anxiety of being infected with COVID-19 at a "moderate" level were found to be significantly lower than those who experienced "not at all" and "mild" ($p<0.05$).

Mental health is sensitive to traumatic events and their social and economic consequences. The COVID-19 pandemic affected the mental health of the general population, healthcare professionals, and those who were infected with SARS-CoV-2. At the same time, the rapid spread of the COVID-19 pandemic which has turned into a global phenomenon; the increasing number of people dying day by day, the necessity to stay at home during the quarantine days applied all over the world and the depression of being alone had produced an intense pandemic psychology with deep and damaging effects, especially on vulnerable people.

It is an accepted reality that psycho-social factors (such as morale, motivation, interest, care, and social support) play a significant role in the prognosis of oncology patients. In this respect, the psycho-social well-being of the oncology patient group is of vital importance in terms of both their primary treatment processes and their ability to fulfill their social functionality [28].

Lower-income, less wealth and unemployment were associated with a higher burden of mental illness. It has been shown that social isolation and loneliness caused by physical restrictions negatively affect both mental and physical health [29]. We found the physical and psychological SS of "outpatient" oncology patients to be significantly higher than those treated in the hospital ($p<0.05$). The QOL of cancer patients, who continued working life during the pandemic and whose care and family life cycles were not affected, was not adversely affected physically, psychologically, and socially.

Vaccines are the strongest key to ending the pandemic. In our country, the Coronavac/Sinovac vaccine started to be implemented in January 2021, and the Pfizer/BioNTech (BNT162b2) vaccine started to be implemented in April 2021. We conducted this study before the vaccination of oncology patients started, so we could not evaluate the COVID-19 vaccination status on QOL of oncology patients and this is our study's main limitation.

In the study of Karaçin et al, in cancer patients receiving active treatment, immunogenicity developed in 63.8% of the patients after 2 doses of the CoronaVac vaccine [30]. Also, another two study conducted on cancer patients receiving active treatment for the efficacy of the Pfizer/BioNTech vaccine found the vaccine to be effective and safe [31,32]. Immunomodulation due to anticancer treatments in the long term period is also affecting the immunity and immunogenicity of cancer patients against Coronavac/Sinovac and Pfizer/BioNTech vaccines over time, so results of the studies carried out in the field should be followed closely.

As a result, The COVID-19 pandemic has had profound global effects on the quality of life of oncology patients. The components of quality of life, such as physical health, psychological health, social relationships, and environmental factors, were affected to varying degrees in different countries. Consequently, restructuring healthcare services for oncology patients during the pandemic and developing strategies to enhance their quality of life is of paramount importance.

In addition to these, during the COVID-19 pandemic, which is affecting the whole world from different aspects, we see that immunosuppressed patients are much more affected physically and psychologically. So, besides applying the guideline suggestions in the diagnosis-treatment-follow-up processes, more intense psychological and social support should be provided to them to manage psychological stress appropriately. The results obtained from the vaccination studies carried out should also be taken into account that the vaccination is effective and safe for cancer patients.

9. Statements and Declarations

9.1. Funding: No funds, grants, or other support was received.

9.2. Competing İnterests: The authors have no financial or proprietary interests in any material discussed in this article.

9.3. Ethical Approval: All procedures performed in studies involving human participants were following the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Approval was granted by the Clinical Research Ethics Committee of Gazi University, Ankara (Date 6 July 2020/ Decision Number 405).

9.4. Consent to Participate: Informed consent was obtained from all individual participants included in the study.

9.5. Data, Material and/or Code Availability: The data associated with the paper are not publicly available but are available from the corresponding author upon reasonable request.

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