ORIGINAL ARTICLE

Coronaphobia: A barrier to ongoing cancer treatment?

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Abstract

Introduction: Increased stress levels caused by the pandemic might cause delays in cancer treatment. We conducted a survey among cancer patients undergoing treatment to evaluate their psychological wellbeing and treatment adherence during Coronavirus disease 19 (COVID-19) pandemic.

Material and Methods: Patients receiving active chemotherapy at a private oncology center between January and May 2021 were included. Healthy volunteers were employees of a district health directorate with no history of cancer or chronic disease. Treatment adherence was described as compliant if the prescribed treatment was received within a week and the information was gained from patient charts. Hospital anxiety and depression scale (HADS) and COVID-19 phobia scale (CP19-S) were administered to participants.

Results: 402 participants were included; 193 (48%) were cancer patients. The mean age of the participants was 44 years old and 68% of the participants were female. All participants' CP19-S mean score was 47.9. Patient group had significantly lower CP19-S ($p = 0.006$). Chronic disease and history of a shocking event were the factors associated with CP19-S. All participants reporting hospital anxiety were found to have significantly higher COVID-19 phobia levels ($p < 0.05$). Patients' mean HADS-anxiety score was significantly higher (7.3 vs. 6.5, $p = 0.027$). COVID-19 phobia was an independent factor increasing the level of anxiety and depression in both groups. Adherence to treatment was 100%.

Conclusion: The pandemic increased levels of anxiety, however, cancer treatment continued to be a priority in patients' lives. Strategies should be developed to support oncology patients cope with the pandemic and increase their courage to avoid treatment delays.

KEYWORDS
anxiety, cancer, COVID-19, depression, oncology, pandemic, psycho-oncology

1 | INTRODUCTION

Coronavirus disease 19 (COVID-19) has become an international public health emergency and the World Health Organization declared the pandemic on 11 March 2020.[1] Since then, the mitigation procedures including voluntary and mandatory quarantines, cancellation of mass gatherings, closure of educational institutions, physical distancing and mask mandates have imposed stress on the general

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population. Recent studies reported increased prevalence of psychological disorders due to the COVID-19 pandemic.[2-5] Oncology patients are expected to have additional anxiety since they are identified as a susceptible subgroup for COVID-19 with an increased risk of morbidity and mortality.[6] This information is supported by the studies reported from China and Italy where the case-fatality was higher in patients with cancer than those without (6% vs. 2%, respectively).[7,8]

Systemic treatments, especially cytotoxic therapies, are the cornerstone of cancer treatment in both adjuvant and palliative settings.[9,10] It is well documented that the patient adherence to treatment plays an important role in the effectiveness.[11] Oncology patients may experience additional psychological burden in terms of contracting the disease since treatments require frequent hospital visits.[5] Additionally, the fear of experiencing a more severe course of COVID-19 infection secondary to immunosuppressive state may prevent patients from applying to health care. For patients who are not receiving active treatment, the social distancing procedures and restrictions in access to care causing delays in surveillance visits may create additional fear of cancer recurrence.[12]

The first official COVID-19 case in Turkey was reported in March 2020 and safety measures taken by Turkey included limitations to ensure social distancing, restrictions on business hours, moving to online education at schools and curfews for certain groups and periods. The second wave of COVID-19 infection started in January 2021 and lasted until the end of May 2021. Since the start of the pandemic, oncology clinics continued to provide care.

There have been studies reporting the effects of the pandemic on oncology patients psychological wellbeing and its relation to treatment adherence,[13] however, the literature is lacking research on whether oncology patients are more vulnerable to the COVID-19 pandemic.

It is important to determine the anxiety levels of oncology patients in order to avoid possible treatment delays due to increased stress levels caused by the pandemic. The main objective of our study was to evaluate the psychological consequences of COVID-19 on oncology patients receiving active systemic treatment. We conducted a survey among oncology patients in Turkey undergoing active cancer treatment in order to evaluate their psychological wellbeing during COVID-19 pandemic and compared their anxiety, depression and COVID-19 phobia scores with healthy individuals. We also aimed to determine if COVID-19 phobia affected treatment adherence.

2 | MATERIALS AND METHODS

2.1 | Participants and study design

The study consisted of 402 participants of whom 193 were oncology patients undergoing chemotherapy, 209 of the participants were healthy volunteers. Patients receiving active chemotherapy at our oncology center in Istanbul, Turkey between January and May 2021, during the second wave of pandemic, were included in this study. Chemotherapy, targeted therapies and immunotherapy were included in the treatment protocols. Healthy volunteers were employees of the local Municipal Health Department, the inclusion criteria for this group was no history of cancer or chronic disease.

Written informed consent was obtained from all participants after full explanation of the purpose and nature of the data collection. The study was approved by an institutional review board and a special permission was obtained from the Ministry of Health.

Participants were asked to complete data collection forms, hospital anxiety and depression scale (HADS) and COVID-19 phobia scale (CP19-S) questionnaires. The surveys were conducted in-person.

2.2 | COVID-19 situation in Turkey during the study period

Second wave was more serious with regards to daily cases, hospitalizations and deaths in Turkey, at the time of this study the peak number of daily cases during this period reached up to 60.000. Although chemotherapy and radiotherapy services were not on hold, there was a shortage of in-patient services as well as limitations to surgeries. Turkey underwent full closure and reinstated the curfew on people aged 65 and older and people 20 and younger. Vaccination program was initiated for health care workers in January 2021, followed by vulnerable patient populations including oncology patients.

2.3 | Survey structure

The in-person surveys included data collection form, HADS and CP19-S questionnaires.[14,15]

The data collection form composed of 20 questions was used to inquire participants' demographic data including age, gender, occupation, education status, current living conditions and source of income. In addition, questions about their co-morbidities and preexisting/existing mental health conditions as well as their families were included.

C19P-S was developed by Arpaci et al. in Turkey to assess the severity of COVID-19 phobia.[15] The objects of the scale were created based on a comprehensive review of existing scales on fear, expert opinions, and participant interviews. CP19-S is a 20-item validated self-reporting instrument that measures COVID-19 phobia in 4 parts to include psychological (6 items), psycho-somatic (5 items), economic (4 items) and social (5 items) factors. All items in the scale are rated on a 5-point Likert-scale from "strongly disagree (1)" to "strongly agree (5)". The higher score indicates a greater phobia.

HADS is a 14-item validated questionnaire developed by Zigmond and Snaith in 1983.[14] It is used as a screening tool and severity measure for depression and anxiety. Although it was originally developed for patients in hospitals, it is valid in community settings. The validity and reliability study of the scale in Turkey was carried out by Aydemir et al.[16] It is a 14-item instrument rated on a 4-point Likert-scale. Anxiety and depression were independent measures. The possible scores ranged from 0 to 21 for anxiety and depression.

The severity of anxiety/depression symptoms score is assessed as follows: 0–7: none, 7–11: mild, >11: severe.

2.4 | Telemedicine consult

From the beginning of the pandemic, as a standard of care all patients had an initial phone consultation with a member of our oncology team (physician or nurse) within a week prior to their first treatment session. Their concerns were addressed and they were given a detailed explanation of the precautions taken in order to ensure their safety.

2.5 | Patient treatment adherence

All patients included in the study were followed-up for the duration of the study and their adherence to the treatment was reported. A chemotherapy chart review was used to determine treatment delays and no-shows. Treatment adherence was reported as compliant if the prescribed treatment was received within a week. Patients were classified as 100% adherent versus less than 100% adherent to treatment.

2.6 | Analysis

Data analysis was performed using SPSS (Statistical Package for the Social Sciences) version 25.0 (IBM Corp.) program. Descriptive statistical methods as well as Shapiro–Wilk and Kolmogorov–Smirnov tests were used to evaluate if the data obtained normal distribution. Normally distributed quantitative data was evaluated with ANOVA (Variance) analysis and multiple comparisons were made with Tukey Test in groups where the difference was significant. Quantitative data with abnormal distribution was evaluated with the Kruskal–Wallis Test and the Mann–Whitney U test was used for multiple comparisons in groups with significant differences. Chi-Square (Pearson Chi-Square, Continuity Correction, Fisher's Exact Test) tests were used in categorical data analysis. In addition, the level of correlation between two variables was examined with Pearson or Spearman correlation tests. Multivariate regression model was used to analyze the association between demographic and comorbidity data including history of psychiatric illness, loss of a relative and shocking, scary or dangerous event, while the COVID-19 phobia score was the dependent variable. The results were evaluated at the 95% confidence interval and $p < 0.05$ were considered statistically significant.

3 | RESULTS

3.1 | Demographic and clinical characteristics

Four hundred and two (402) participants completed the questionnaires; 193 (48%) were oncology patients and 209 (52%) were healthy volunteers. The mean age of the participants was 43.8 (SD = 13.5) years. 68% of the participants were female and 32% were male. Majority of them (70%) were married and living with family (92%). Two-hundred and forty-six (61%) participants were university graduates and 58% were employed.

Patient group consisted of breast cancer patients (53%), lung cancer patients (20%), gastrointestinal tumors (10%), gynecological tumors (9%) and others (8%). Patients receiving adjuvant/neo-adjuvant treatment with curative intent were 67% while 33% were being treated for metastatic disease. The detailed demographic characteristics are presented in Table 1.

3.2 | Depression and anxiety

The mean anxiety score of all participants was 6.9 (sd = 4, range = 0–20). Anxiety scores of 250 (62%) participants were within normal ranges, 84 (21%) were mild and 68 (17%) were severe. While there was no difference between two groups in terms of anxiety levels, it was determined that the mean HADS-anxiety score of the patients was significantly higher (mean = 7.3, sd = 3.8 vs. mean = 6.5, sd = 4, $p = 0.027$). The mean depression score of all participants was 6.5 (sd = 3.6, range: 0–20). Depression levels of 248 (62%) participants were assessed as mild, while 103 (26%) had moderate and 51 (13%) had severe depression. The mean depression scores were similar between patients and healthy volunteers ($p > 0.05$). Statistical analyses revealed that COVID-19 phobia was an independent factor increasing the level of anxiety and depression in both groups. Details of the HADS assessment are presented in Table 2.

3.3 | Phobia

All participants' CP19-S mean score was 47.9 (sd = 15.1, range: 20–100); subgroup analysis is given in Table 2. The patient group had significantly lower CP19-S scores when compared to healthy individuals (mean = 45.8, sd = 5 vs. mean = 49.9, sd = 14.9, $p = 0.006$).

Patients with chronic disease and a history of a shocking, scary, or dangerous event had significantly higher CP19-S levels ($p = 0.025$ and $p = 0.009$). In the linear regression analysis, independent factors associated with CP19-S were found to be chronic disease ($\beta = 0.14$, $t = 2.02$, $p = 0.045$) and a history of a shocking event ($\beta = 0.17$, $t = 2.45$, $p = 0.015$; Table 3).

According to the independent sample t-test results, female gender ($p = 0.003$), having a chronic disease ($p = 0.042$), diagnosis of psychiatric illness ($p = 0.048$) and being exposed to a shocking, scary, or dangerous event ($p = 0.005$) were statistically related to higher CP19-S levels in the healthy group. Moreover, in the multilinear regression models, age ($\beta = 0.20$, $t = 2.47$, $p = 0.014$) and female gender ($\beta = 0.27$, $t = 3.63$, $p \leq 0.001$) were found to be independent

TABLE 1　Demographic characteristics of participants

		Groups		
		N = 402 n(%)	Patient (n = 193) n(%)	Healthy volunteers (n = 209) n(%)
Age (Mean ± SD)		43.8 ± 13.5	51.2 ± 12.5	36 ± 9.5
Gender	Female	273(68)	171(89)	102(49)
	Male	129(32)	22(11)	107(51)
Tumor characteristics	Breast cancer		102 (53)	
	Lung cancer		39(20)	
	Gastrointestinal cancer		19(10)	
	Gynecological cancers		17 (9)	
Treatment intent	Curative		129 (67)	
	Palliative		64 (33)	
	Others		16 (8)	
Marriage status	Married	280(70)	151(78)	129(62)
	Single	122(30)	42(22)	80(38)
Education level	Primary school	67(17)	46(24)	21(10)
	High school	89(22)	55(29)	34(16)
	University	214(53)	78(40)	136(65)
	Post-graduate	32(8)	14(7)	18(9)
Employment status	Yes	232(58)	73(38)	159(76)
	No	170(42)	120(62)	50(24)
Living	Alone	32(8)	16(8)	16(8)
	Spouse/Children	290(72)	162(84)	128(61)
	Other	80(20)	15(8)	65(31)
Smoking/Alcohol use	Yes	85(21)	36(19)	49(23)
	No	317(79)	157(81)	160(77)
Comorbidity	Yes	122(30)	73(38)	49(23)
	No	280(70)	120(62)	160(77)
Psychiatric illness	Yes	56(14)	40(21)	16(8)
	No	346(86)	16(8)	193(92)
Natural disaster experience (earthquake, flood)	Yes	153(38)	93(48)	60(29)
	No	249(62)	100(52)	149(71)
Shocking, scary or dangerous event[a]	Yes	60(15)	42(22)	18(9)
	No	342(85)	151(78)	191(91)

Abbreviation: SD, Standard deviation.

[a]Event other than diagnosis of cancer.

factors increasing CP19-S. CP19-S evaluation details for both groups are presented in Table 4.

All participants reporting hospital anxiety were found to have significantly higher COVID-19 phobia levels ($p < 0.05$). There was no statistically significant correlation between depression levels and hospital anxiety among healthy volunteers ($p > 0.05$). However, the patients with hospital anxiety had significantly higher depression levels when compared to patients not reporting increased anxiety ($p < 0.05$). This correlation is presented in Table 4.

3.4 | Patient treatment adherence

All patients (100%) received their assigned treatments within a week of their appointment showing 100% adherence to treatment.

TABLE 2 HADS ve CP19-S scores

	N = 402 Mean ± SD	Patients (n = 193) Mean ± SD	Healthy volunteers (n = 209) Mean ± SD	t	p
HAD-Anxiety	6.9 ± 4	7.3 ± 3.8	6.5 ± 4	**2.222**	**0.027***
Anxiety level	n(%)	n(%)	n(%)	χ²	p
Normal (0–7)	250(62)	115(60)	135(65)	1.96	0.375
Borderline (8–10)	84(21)	46(24)	38(18)		
Abnormal (11≤)	68(17)	32(17)	36(17)		
HAD-Depression	6.5 ± 3.6	6.1 ± 4	6.8 ± 3.3	1.8	0.068
Depression level	n(%)	n(%)	n(%)	χ²	p
Mild (0–7)	248(61)	123(63.7)	125(59.8)	0.657	0.720
Moderate (8–10)	103(26)	47(24.4)	56(26.8)		
Severe (11≤)	51(13)	23(11.9)	28(13.4)		
CP19-S	Mean ± SD	Mean ± SD	Mean ± SD	t	p
CP19-S- psychological	17.7 ± 5.8	17.4 ± 6.0	18 ± 5.5	0.955	0.340
CP19-S -psychosomatic	9.1 ± 4.1	8.1 ± 3.6	10 ± 4.2	**4.812**	**<0.001***
CP19-S -Social	13.2 ± 4.7	12.8 ± 4.9	13.6 ± 4.4	1.606	0.109
CP19-S -Economic	7.9 ± 3.2	7.4 ± 3.2	8.3 ± 3.2	**2.896**	**0.004***
CP19-S -Total	47.9 ± 15.1	45.8 ± 15	49.9 ± 14.9	**2.771**	**0.006***

Note: * = p < 0.05.

Abbreviations: SD, Standard deviation; t, Independent, Samples Test; χ², Chi-Square Tests.

TABLE 3 Multi-linear regression of factors associated with COVID-19 phobia

	Patient					Healthy volunteers				
	Unstandardized coefficients		Standardized coefficients			Unstandardized coefficients		Standardized coefficients		
Factors	B	SE.	β	t	p	B	SE.	β	t	p
Age	-	-	-	-	-	0.31	0.12	0.20	2.47	**0.014***
Gender (Female = 1, Male = 0)	-	-	-	-	-	7.89	2.17	0.27	3.63	**<0.001***
Siblings	-	-	-	-	-	0.57	0.57	0.07	1.00	0.319
Comorbidities (Yes = 1, No = 0)	4.41	2.18	0.14	2.02	**0.045***	0.26	2.61	0.01	0.10	0.920
Psychiatric illness diagnosis (Yes = 1, No = 0)	-	-	-	-	-	2.37	4.08	0.04	0.58	0.562
Loss of a relative (Yes = 1, No = 0)	-	-	-	-	-	1.20	3.25	0.03	0.37	0.712
Shocking, scary or dangerous event (Yes = 1, No = 0)	6.27	2.57	0.17	2.45	**0.015***	6.53	3.72	0.13	1.76	0.081
Model	R² = 0.06			F = 5.61		R² = 0.16			F = 6.54	
	Adjusted R² = 0.05			p = 0.004		Adjusted R² = 0.12			p = <0.001	

Note: * = p < 0.05, Linear Regression (Method = Enter), **Dependent variable** = COVID 19 Phobia. Statistically significant values are in bold.

4 | DISCUSSION

To our knowledge this is the first study examining the influence of COVID-19 related anxiety on patients with cancer and healthy individuals. Comparing the HADS and CP19P-S scores of oncology patients with healthy volunteers. Pandemic is a traumatic life event that affected all of the population. Our study showed, although oncology patients had high coronaphobia scores, they were significantly lower than the healthy participants, and despite oncology patients having high coronaphobia scores, their treatments were not delayed.

Oncology patients and survivors are especially prone to chronic distress and they experience long term psychological problems which are usually neglected. Regardless of cancer stage, whether

T A B L E 4 Demographic characteristics of Patients according to CP19-S

Variables	Category	Patients (n = 193) Mean ± SD	r/t/F	p	Healthy volunteers (n = 209) Mean ± SD	r/t/F	p
Age	All	-	−0.070[a]	0.340	-	0.200[a]	**0.008***
Gender	Female	46 ± 15.1	0.523[b]	0.601	53 ± 14.7	2.982[b]	**0.003***
	Male	44.2 ± 14			46.9 ± 14.5		
Marital status	Married	45.6 ± 15.3	0.293[b]		51.1 ± 14.8	1.466[b]	0.144
	Single	46.4 ± 13.9			48 ± 14.9		
Education level	Primary school	43.6 ± 14.5	0.620[c]	0.539	51.5 ± 12.3	0.268[c]	0.766
	High school	46.5 ± 14.7			50.9 ± 14.8		
	University	46.4 ± 15.4			49.4 ± 15.3		
Employment	Yes	45.7 ± 15.1	0.032[b]	0.975	49.8 ± 15.5	0.215[b]	0.830
	No	45.8 ± 15			50.28 ± 12.7		
Living	Alone	44.8 ± 11.6	0.432[c]	0.650	50.5 ± 17.8	1.280[c]	0.280
	Spouse/Children	45.5 ± 15.3			51.1 ± 14.6		
	Others	49.1 ± 14.7			47.5 ± 14.7		
Smoking/alcohol use	Yes	44.8 ± 15.5	0.422[b]	0.674	50 ± 16.3	0.073[b]	0.942
	No	46 ± 14.9			49.8 ± 14.5		
Comorbidity	Yes	48.9 ± 15.9	2.262[b]	**0.025***	53.1 ± 11.6	2.061[b]	**0.042***
	No	43.9 ± 14.1			48.9 ± 15.7		
Psychiatric illness	Yes	48.4 ± 15.9	1.244[b]	0.215	56.9 ± 14.2	1.987[b]	**0.048***
	No	45.1 ± 14.7			49.3 ± 14.8		
Natural disaster experience	Yes	45.3 ± 12.5	0.392[b]	0.696	51.2 ± 14.6	0.789[b]	0.431
	No	46.2 ± 17			49 ± 15		
Shocking, scary or dangerous event	Yes	51.1 ± 16.3	2.654[b]	**0.009***	59 ± 13.7	2.814[b]	**0.005***
	No	44.3 ± 14.3			49 ± 14.7		
Hospital anxiety during Covid-19 pandemic	Yes	50.5 ± 14.5	4.715[b]	**<0.001***	55.6 ± 14.6	4.735[b]	**<0.001***
	No	40.8 ± 13.9			46.1 ± 13.9		

Note: * = p < 0.05.

Abbreviation: SD, Standard deviation.

[a]a(**r**) = Pearson correlation test.

[b]b(**t**) = Independent Samples *t* Test.

[c]c(**F**) = One-Way ANOVA test.

curative or palliative, 10%–20% of patients experience depression and anxiety.[17] Detection and prevention of distress is important since it can affect treatment adherence.[18] Several previously reported studies linked anxiety disorders to postponement of chemotherapy.[19,20]

Healthcare systems all around the world have been challenged by the COVID-19 pandemic. Although several precautions and adjustments were taken for the safety of oncology patients, they continued to experience high stress levels due to losses related to COVID-19. The initial studies that reported higher mortality rates for oncology patients added to the preexisting anxiety and depression of our patients, challenging them to make decisions between cancer and COVID-19.[21]

In the current study, oncology patients had higher HADS scores when compared to the control group. However, although their coronaphobia was high it was significantly lower than the healthy participants. This might have resulted in limited hospital anxiety leading to no treatment deferrals. Cancer remains to be the main life-threatening disease even during a pandemic, as COVID-19 is a probability whereas cancer is a reality for our patient population. It is a possibility that lower CP19-S scores can be related to our telemedicine visits which aimed to address concerns of patients regarding safety

measures for COVID-19, however one should also consider oncology patients have more experience coping with health threats. Since the onset of the pandemic, as a standard of care we obtained telemedicine visits prior to the first treatment session in order to provide detailed information about precautions. Informing our patients appropriately had critical importance in our pandemic strategy. Using telemedicine since the beginning of the pandemic resulted in no treatment postponements among our patients, although their wellbeing was affected more during the second wave of the pandemic. Karacin et al.[22] also used telemedicine as an important tool for the management of pandemic and investigated the effects of pandemic on the chemotherapy adherence. They reported lower chemotherapy deferral rates after this strategy was implemented.

Zhang et al.[23] investigated the psychological effects of chemotherapy interruption due to COVID-19 and they reported especially patients with advanced refractory tumors had higher anxiety levels. They suggested phone counseling as a strategy to offer relief while reducing the psychological harm caused by treatment interruption. Although we found telemedicine interactions helpful, we agree that further psycho-social support including support from family and friends as well as online personalized and group therapies, behavioral psychotherapy through video conferencing should be provided for oncology patients in order to help them cope with the uncertainty.[24]

Our study is in correlation with Pigozzi et al. who used an emotional vulnerability index to define the pandemics effects on oncology patients and reported that female patients were more vulnerable.[25] The majority (40%) of their patients also had breast cancer. However, unlike Pigozzi et al. our study showed increasing age was associated with higher coronaphobia scores.

Akagunduz et al. also used CP19-S to assess the effect of coronaphobia on treatment and follow-up adherence.[13] Our results are in concordance regarding the high coronaphobia scores among oncology patients. They reviewed patients' compliance to treatment and follow-up visits. Unlike our 100% adherence rate, they reported a 41% compliance rate which could be attributed to higher non-compliance to follow-up visits.

Although our patient population consisted of several tumor types and a variety of stages, our patient group was only assessed for their adherence to chemotherapy; whether these results can be generalized to other treatment modalities can be questioned. Rodrigues-Oliveira et al.[26] investigated the effect of COVID-19 on the anxiety levels of patients receiving RT for head and neck cancer using the HADS scale. His results suggested complying with treatment schedules despite increased COVID-19 anxieties. Although the radiotherapy treatment modality has a potentially more concerning schedule that necessitates a patient's daily presence at the hospital, when compared with chemotherapy, these patients also did not defer the RT even though telemedicine was not used.

Although not shown in our study, depression may lead to treatment refusal and deferral. Giese-Davis et al.[27] reported better outcomes in metastatic breast cancer patients when their depression is managed.

Our study revealed significantly higher CP19-S scores on psychosomatic and economic domains in healthy participants when compared to oncology patients. This was an unexpected finding, since one would expect the patient group would have higher concerns on both domains. However, it should be noted that usually at the time of diagnosis, oncology patients tend to develop coping mechanisms for phobia concerning psychosomatic and economic issues.

4.1 | Clinical implications

Patients and healthy participants that reported increased anxiety for hospital visits, had significantly higher HAD anxiety, HAD depression and CP19-S scores. Although there wasn't any significant correlation among healthy participants in terms of anxiety and depression scores, cancer patients reporting anxiety were also found to have significant levels of depression. It is important to define the contributing factors as well as coping strategies. A periodical virtual mood assessment can help us define the patients at risk for depression.

4.2 | Study limitations

Our study has some limitations. Patients included in the present study were heterogeneous in terms of their cancer diagnoses and our control group selection itself might introduce a bias. Although we did not aim to make a case-control study, one can criticize the distinct characteristics of two groups included in this study. The rate of breast cancer patients being highest among the patient group created a gender imbalance with potential effects on coronophobia and HADS scores. Another weakness of our study is that we did not have a baseline pre-pandemic psychological evaluation, and neither of our questions addressed their psychological status before COVID-19.

5 | CONCLUSION

Oncology patients are already vulnerable for depression and anxiety, the disease itself carries the stigma of a chronic, potentially fatal illness. Although the pandemic increased levels of anxiety, cancer treatment continued to be a priority in our patients' lives and they aimed to continue their ongoing treatments without interruptions. Our study supports that strategies including phone consults should be developed in order to aid oncology patients coping with the pandemic and increase their courage to avoid treatment delays.

manuscript. No writing assistance was utilized in the production of this manuscript.

CONFLICT OF INTEREST

N/A.

ETHICS STATEMENT

The authors state that they have obtained appropriate institutional review board approval and have followed the principles outlined in the Declaration of Helsinki for all human or animal experimental investigations. It was approved by Acibadem University Ethics Committee (approval reference number: 2020-25/23).

AUTHOR CONTRIBUTIONS

O Sonmez conceived and designed the study. All contributed to the design, analysis and interpretation of the data. E Tezcanli prepared the first draft and all contributed to subsequent drafts and the final paper. All authors read and approved the final manuscript.

CONSENT TO PARTICIPATE

Informed consent was obtained from all individual participants included in the study.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.