Research Article

The Impact of COVID-19 on Anxiety Levels of Cancer Patients

🆔 **Duygu Bayir Garbioglu,**[1] 🆔 **Arif Garbioglu,**[2] 🆔 **Nazan Demir,**[1] 🆔 **Mehmet Erdem Uzun,**[3] 🆔 **Mustafa Ersoy,**[1]
🆔 **Bulent Yildiz,**[1] 🆔 **Murat Dincer**[1]

[1]Department of Medical Oncology, Eskisehir Osmangazi University, Faculty of Medicine, Eskisehir, Turkey
[2]The Council of Forensic Medicine, Eskisehir Forensic Medicine Branch Office, Eskisehir, Turkey
[3]Department of Child and Adolescent Psychiatry, University of Health Sciences, Bursa Yuksek Ihtisas Training and Research Hospital, Bursa, Turkey

Abstract

Objectives: Coronavirus 2019 disease (COVID-19) has caused serious anxiety and fear around the world. Anxiety level may be higher in risky and chronic groups such as cancer patients.

In our study, it was aimed to evaluate the factors becoming potentially effective on the anxiety status and levels of cancer patients during the pandemic by means of questionnaires and psychiatric scales.

Methods: In this study, HADS (Hospital Anxiety and Depression Scale) and STAI 1-2 scales (State-Trait Anxiety Inventory) were applied for psychological evaluation through a questionnaire to help learning opinions on COVID-19 of 180 patients who were included in consecutively and whose follow-up and treatment continue at university hospital of oncology unit.

Results: In the study, it draws attention that more than half of the patients have a fear related to COVID-19. Median hads anxiety score of the patients was found as; 6 (0-18), depression score; 6 (0-17), median STAI-1 score; 38 (25-65), median STAI-2 score; 43 (23-74). In multivariate analysis, the followings were found as the independent risk factors related to the fear of COVID-19; female gender, high anxiety and STAI-2 scores as well as psychiatric disease presence in family and old age.

Conclusion: It is known that increased anxiety levels are observed in normal times in cancer patients. In this regard, the rates of anxiety level during the pandemic period in this patient group were found to be higher than the rates in the studies conducted before pandemic period.

Keywords: Coronavirus 2019 disease, cancer, anxiety, fear, STAI-1, STAI-2, HADS

Pandemic is referred to a disease prevalent over a wide region, country or continent. Since March 11, 2020 when coronavirus 2019 disease (COVID-19) was announced as a global pandemic by the World Health Organization, the number of cumulative case was reported as 159 million while the mortality was 3.3 million.[1]

The increase in the death rate together with the high infectivity prompts concern among people regarding CO-VID-19.[2] Unfortunately, the fear can increase the damage brought by the disease. Science world has essentially focused on infection controlling, effective vaccine development and creating a curative treatment regarding COVID-19, but the psycho-social aspect of the disease has not been addressed by the professionals yet.[3] It is known that the previous pandemics had adverse socio-economic, psychological, and socio-cultural effects.[4] Measures such as

isolation, quarantine and travel restrictions can be taken to have a grip on the pandemic. It is expected that this issue will cause a serious anxiety especially among vulnerable groups such as cancer patients, who are likely to have a barrier accessing to treatment options for their existing illnesses.[5] During pandemic, the leading oncology communities recommend decreasing the frequency of chemotherapy and the intensity of regimes of cancer patients as well as to minimize hospital visits in order to decrease the number of examination according to the risk status of patients.[7,8] However, it is also thought that these recommendations can cause concerns about not being able to receive adequate and effective healthcare services, creating an additional mental burden on cancer patients. The process becomes more complicated for cancer patients when it is considered that COVID-19 mortality is also higher in cancer patients compared to the normal population.[6] Moreover, anxiety lowers the standard of living and affects both adherence to medical treatment and responses to cancer treatment negatively.[9]

It is known that the anxiety levels of cancer patients are higher when compared to normal population. Therefore, it was aimed to evaluate the factors becoming potentially effective on the measures taken against COVID-19 by the cancer patients as well as on their status and level of anxiety during the pandemic by means of questionnaires and psychiatric scales as part of our study.

Methods

Volunteer patients whose follow-up and treatment process continue at the medical oncology clinic of a university hospital were included in this study consecutively between June 2020 and September 2020. Before starting the study planned as cross-sectional, approval of the Republic of Turkey Ministry of Health and local Ethics Committee consent (Date: 28.05.2020, decision no: 06, No: 25403353-050.99-E.50097) were obtained and the criteria of Helsinki Declaration were taken into consideration.

Patients diagnosed with cancer, who are over 18 years, receive chemotherapy and immunotherapy or targeted theraphy, whose follow-up and treatment continue at our oncology unit and who volunteer to participate in the research were included in the study. The patients with terminal cancer, having cognitive disorders at a level that hinders to perform questionnaire and test, and those who have known psychiatric disease history were excluded from the study.

Age, gender, diagnose date of the disease, malignancy area, disease stage, treatment type, accompanying people, existence of an additional disease, medications used, educational status, psychiatric history in the family or use of psychiatric medications were recorded to the prepared database. A questionnaire, which was composed of questions prepared for the study and ensured that the opinions of volunteers on COVID-19 pandemic are received, was applied to the participants (Questionnaire is attached).

HADS (Hospital Anxiety and Depression Scale) and STAI 1-2 scales (State-Trait Anxiety Inventory) were implemented for psychological evaluation.

HADS: It is a scale that scans anxiety and depression symptoms, is filled out by the patient and used often at the hospital.[10] It is composed of 14 questions in which every article receives a score between 0-3. Out of 14 questions, 7 give the anxiety scores while the remaining 7 give the depression scores and for each sub-group, the scores are evaluated as follows: 0-7 points, normal; 8-10 points, borderline, 11 points and above, abnormal.

STAI-1: State-trait anxiety inventory determines how a person express himself/herself at a particular moment and under certain conditions.

STAI-2: State-trait anxiety inventory determines how an individual feels regardless of the current situation and conditions.

The score that can be obtained in both tests ranges between 20-80, and it is interpreted as the higher the score, the higher the level of anxiety.[11]

Statistical Analysis

Statistical analysis of the study was performed using the SPSS 22.0 (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.), which is a package program. Continuous variables are expressed as mean±standard deviation (SD) or median (minimum-maximum), and categorical variables are expressed as frequency and percentage (%). Chi-square test was used to compare categorical values between groups while binary univariate and binary multivariate logistic regression tests were used to evaluate variables that could affect patients' fear levels associated with COVID-19. P<0.050 value was considered statistically significant.

Results

Of 180 patients included in the study, the data of 161 patients who completed the questionnaire and scale questions sufficiently were evaluated. The qualification criterion was determined as answering at least 70 percent of the questionnaire and scale questions. It was seen that 94 of the patients (58.4%) in the study were female and 67 (41.6%) were male. The median age of the group was found as 55 (24-84). When primary disease localizations frequency sequence is considered; the following rates were

found: breast (42.2%), colorectal (23.6%), lung (11.2%), upper gastrointestinal system (6.2%) and other regions (17.8%). It was seen that 78 percent (50.6%) of the patients were at advanced stage while 76 percent (49.4%) were at early stage. It was found that 112 patients received chemotherapy and 49 patients had targeted or immunotherapy treatments. It was seen that 68 (42.2%) patients have an additional chronic disease. Demographic and clinic features data of the patients were outlined in table 1.

Number of positive tests in group having SARS-Cov-2 PCR test were 5 (3.1%) while the number of patients with positive people among relatives were found to be 9 (5.6%). The number patients who did not take COVID-19 test was detected as 132 (82%). As shown in figure 1, 50.3% of the patients stated that they were concerned about COVID-19 disease. As outlined in figure 2, 81.3% of the patients reported that they had intermediate and above information level related to COVID-19 and that 45% of them reached this information through TV while 30% reached it from multiple

sources. It was detected that 54% of the patients found CO-VID-19 information on TV beneficial while it increased the anxiety level of the remaining patients. As shown in figure 3, all of the patients stated that they use mask in daily life, 39% of them stated that they follow all the rules such as using mask, social distancing, washing hands, not shaking hands, not using public transport vehicles while 26.3% of them reported that they wear gloves additionally. Patients reported that the most alarming issue in this period was not receiving treatment due to the pandemic (28.6%). While the
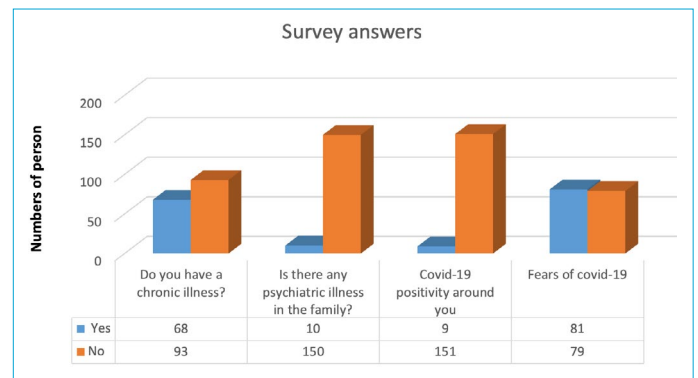
Table 1. Baseline patients characteristic

Characteristics of patients	n	(%)
Number of patients	161	100
Median age (range)	55 (24-84)	
Gender		
Female	94	(58.4)
Male	67	(41.6)
Primer tumor site		
Breast	68	(42.2)
Colorectal	38	(23.6)
Lung	18	(11.2)
Upper gastrointestinal	10	(6.2)
Other	27	(16.8)
Treatment		
Chemotheraphy	112	(69.5)
Targeted tharaphy or immunotheraphy	49	(30.5)
Stage		
Early stage	76	(49.4)
Metastatic	78	(50.6)
Marital status		
Married	143	(88.8)
Single	8	(5.0)
Divorced/widow	10	(6.2)
Education status		
Primary school	73	(45.4)
Secondary school	25	(15.5)
High school	33	(20.5)
University	30	(18.6)
Chronic illness		
Yes	68	(42.2)
No	93	(57.8)

Figure 1. Survey answers for chronic illness, psychiatric illness in the family, covid-19 positivity around and fears of covid-19.
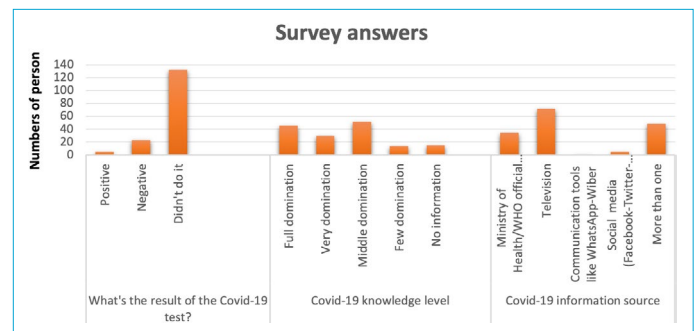

Figure 2. Survey answers for the results of covid-19 test, covid-19 knowledge level and covid-19 information source.
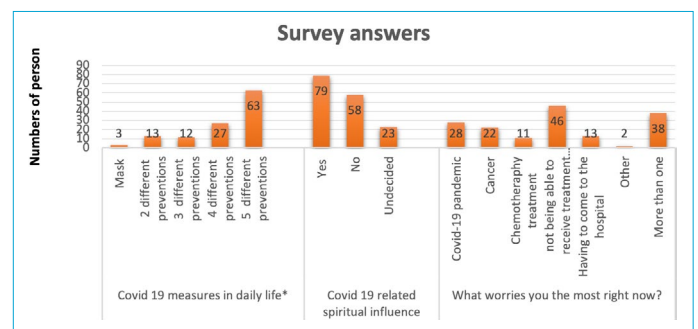

Figure 3. Survey answers for covid-19 measures in daily life, covid-19 related spiritual influence and the most worrying situation during the pandemic period.

*covid-19 measures in daily life; mask, social distancing, washing hands, not shaking hands, not using public transport vehicles, wearing gloves.

rate of patients who are concerned about multiple factors was 23.8%, it was observed that the COVID-19 pandemic alone was a cause of concern in 17.5% of patients.

In the study population, the rate of those with a depression score of 8 and above was found to be 39.5%, while the rate of those with an anxiety score of 8 and above was found to be 34%. Median HADS anxiety score was found as; 6 (0-18), depression score; 6 (0-17), median STAI-1 score; 38 (25-65), median STAI-2 score; 43 (23-74).

A significant relationship was found between depression level and fear of COVID-19 (p=0.044). It was observed that the of depression level increased in those who were not university graduate [(p=0.014), OR:1.935, 95% CI:1.044-3.586]. It was found that the presence of additional chronic disease increases the risk of depression [(p=0.047), OR:1.402, 95% CI:1.006-1.952]. Anxiety was observed more frequent in fe-

male gender [(p=0.033), OR:1.405, 95% CI:1.011-1.953]. Fear of COVID-19 was found significantly associated with anxiety level [(p=0.001), OR:3.486, 95% CI:1.799-6.757]. A significant relationship was observed between the presence of psychiatric disease in the family and anxiety level. [(p:0.002), OR:2.014, 95% CI: 1.709-2.373]. The correlations between HADS-A and HADS-D categorical scores with the clinical-demographic characteristics of the patients is shown in Table 2.

State anxiety level was detected higher in metastatic patients [(p=0.011), OR:2.428, 95% CI:1.224-4.817]. STAI-1 anxiety level was found to be higher in elderly patients [(p=0.030), OR:2.089, 95% CI:1.069-4.084]. The level of trait anxiety was found to be statistically significantly higher in those with fear of COVID-19 [(p=0.035, OR: 2.048, 95% CI: 1.046-4.007]. The correlations between HADS-A and HADS-D categorical scores with the clinical-demographic characteristics of the patients is shown in Table 3.

Table 2. The correlations between HADS-A and HADS-D categorical scores with the clinico-demographic characteristics of the patients

	HADS-A categorical score			HADS-D categorical score		
	OR	95% CI	P	OR	95% CI	P
Gender (male vs. female)	1.405	1.011-1.953	0.033	1.176	0.620-2.233	0.619
Age (<55 vs. ≥55)	1.338	0.859-2.083	0.158	1.679	0.887-3.178	0.111
Marital status (maried vs. single)	0.988	0.360-2.710	0.982	0.586	0.205-1.673	0.314
Education status (unıversity vs. other**)	0.853	0.384-1.892	0.695	1.935	1.044-3.586	0.014*
Stage (metastatic vs. early stage)	1.206	0.892-1.630	0.220	1.498	0.784-2.862	0.220
Treatment (chemotheraphy vs. targeted theraphy-immunotheraphy	1.526	0.761-3.063	0.233	1.035	0.521-2.057	0.922
Chronic illness (present vs. absent)	1.012	0.536-1.913	0.970	1.402	1.006-1.952	0.047
Phyciatric illness in the family (present vs. absent)	2.014	1.709-2.373	0.002	1.538	0.987-2.395	0.134
Covid-19 fears (present vs. absent)	3.486	1.799-6.757	0.001	1.743	0.921-3.298	0.087

*Other (not a universtiy graduate), p<0.05: statistically significant.

Table 3. The relationship of STAI-1 and STAI-2 categorical scores with clinico-demographic characteristics of patients

	STAI-1 categorical score			STAI-2 categorical score		
	OR	95% CI	p	OR	95% CI	p
Gender (male vs. female)	0.988	0.505-1.931	0.970	1.341	0.938-1.917	0.930
Age (<55 vs. ≥55)	2.089	1.069-4.084	0.030	1.276	0.562-2.897	0.560
Marital status (maried vs. single)	0.710	0.239-2.110	0.536	1.286	0.451-3.665	0.638
Education status (university vs. other**)	0.474	0.204-1.103	0.790	0.578	0.255-1.311	0.187
Stage (metastatic vs. early stage)	2.428	1.224-4.817	0.011*	1.015	0.724-1.423	0.930
Treatment (chemotheraphy vs. targeted theraphy-immunotheraphy	1.082	0.527-2.222	0.830	1.591	0.776-3.264	0.204
Chronic illness (present vs. absent)	1.193	0.613-2.323	0.603	1.050	0.539-2.044	0.886
Phyciatric illness in the family (present vs. absent)	0.886	0.245-3.204	0.209	1.015	0.281-3.674	0.981
Covid-19 fears (present vs. absent)	1.431	0.737-2.778	0.202	2.048	1.046-4.007	0.035

*metastatic, **other (not a universtiy graduate), p<0.05: statistically significant.

Gender, age, anxiety, high values of STAI-2 and psychiatric disease in family were determined as independent variables related to the fear of COVID-19 when evaluated with multivariate analysis. The findings are shown in Table 4.

Discussion

In our study, the pandemic-related anxieties of cancer patients whose treatment process continues during COVID-19 pandemic, their knowledge levels on COVID-19, information sources, the measures they took and the anxiety levels of patients in this period were evaluated through different scales. Gender distribution of the patients was similar and the distribution of the disease regions was also compatible with the literature.[12] It was found that more than half of the patients have a fear related to COVID-19. 81.3% of the patients reported that they have information above medium-level regarding COVID-19. Patients stated that they use medical masks alongside following the rules such as washing hands frequently and keeping social distance. However, it was noted that 26% of the patients use medical gloves even though it is not among the suggestions. Despite the frequent hospital visits, it was determined that the fact that the cancer patients followed COVID-19 measures provides a lower COVID-19 positivity rate for cancer patients compared to the normal population.

There are a limited number of studies investigating COVID-19-related fear and anxiety in cancer patients, and in one of these studies, it was found that cancer-related anxiety in cancer patients was higher than the anxiety of COVID-19.[13] In our study, patients stated that the most worrying situation was not being able to receive cancer treatment due to the pandemic and they included COVID-19-related anxiety less among the options. In another study, although fear of COVID-19 and anxiety of cancer patients were similar to the general population, following COVID-19 measures was found to be more effective compared to the general population, as we observed in our study.[14]

Table 4. Binary multivariate analysis of effective parameters on Covid-19 fears

Variable	OR (odd ratio)	95% (confidance interval)	p
Age (≥55 vs. <55)	0.133	0.035–0.501	0.003
Gender (male vs. female)	0.296	0.110–0.797	0.016
STAI-2 categorical score	2.614	1.161–5.884	0.020
Phyciatric illness in the family (present vs. absent)	0.078	0.008–0.807	0.032
Anxiety categorical score	3.947	1.888–8.251	0.001

$p < 0.05$: statistically significant.

Considering the studies investigating the anxiety status of different groups of cancer patients in the pre-pandemic period, the median hads scores differ considerably from each other as 4.7/2.9, 5.6/4.0, 7.4/3.2.[15-17] In our study, the median hads scores were found to be 6/6, which were higher than the ones in pre-pandemic studies. In another study in which anxiety and depression in cancer patients were compared with the general population, the median hads scores were found to be 7.19/6.44 and it was found that the frequency of anxiety and depression in cancer patients was approximately twice that of the general population.[18] In a study involving patients with breast cancer in China during COVID-19 pandemic process, it was concluded that anxiety, depression and sleep disorders were observed more frequently in the group with co-morbid diseases and whose treatment plans were changed due to the pandemic.[19] In the study of Yildirim et al. evaluating the anxiety and depression status of cancer patients before and during the pandemic, it was shown that increased anxiety and depression during the pandemic period also caused delays in cancer treatment.[20]

In a study investigating the anxiety levels of cancer patients during COVID-19 period, the average STAI-1 score was detected as 41.65±9.73 while stai-2 score was 41.91±8.02, and it was reported that there was no significant difference between the two components.[13] In our study, the median STAI-2 score was calculated higher than the STAI-1 score. This result is actually interpreted as that cancer patients have higher rates of anxiety compared to the normal population in non-pandemic times and that these patients are under a chronic stress load.

In our study, when evaluated in multivariate analysis, it was found that the female gender, high anxiety and STAI-2 scores as well as old age and psychiatric disease presence in family were the independent variables related to the fear of COVID-19. In this context, it is thought that the presence of publications about the more aggressive course of COVID-19 in elderly people and the intensive quarantine measures applied to elderly people in our country caused more fear of COVID-19 elderly cancer patients.

Our study has some limitations. The fact that the study was conducted in a single center, the small sampling size, different stages, different disease locations, and differences in the anticancer treatments received by the patients are considered as limitations. On the other hand, due to the lack of a verified fear of COVID-19 scale in our country, the questionnaire questions we prepared for this study were used to investigate patients' COVID-19-related measure and anxiety status. This will make it difficult to generalize the results of the study. However, the fact that the anxiety and

depression rates of patients who participated in the study without a psychiatric history were detected high indicates that providing social and psychological support programs in vulnerable groups is very important.

Conclusion

It was shown in the studies conducted in different countries and populations that the anxiety levels increase in societies during epidemic periods. It is known that increased anxiety levels are observed in normal times in cancer patients. In this regard, the rates of anxiety level during the pandemic period in this patient group were found to be higher than the rates in the studies conducted before pandemic period. Considering that the state of anxiety adversely affects the course of disease in this group of patients with short survival times, it is thought that psychological (mental) support plans for these patients should be made meticulously.

Disclosures

Ethics Committee Approval: Eskisehir Osmangazi University Non-Interventional Clinical Research Ethics Committee (Date: 20.05.2020, decision no: 06, No: 25403353-050.99- E.50097).

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Conflict of Interest: None declared.

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