

Research Article

Levels of Anxiety and Depression in Patients with Cancer During the COVID-19 Pandemic

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Abstract

Objectives: COVID-19 is a new respiratory disease that is spreading widely throughout the World. We aimed to investigate the level of anxiety and depression during COVID-19 pandemic among patients with various types of cancer.

Methods: A consecutive series of cancer patients who applied to the outpatient clinic were recruited. The semistructured sociodemographic and clinical data form, The Spielberger State-Trait Anxiety Inventory(STAI), Hospital Anxiety and Depression Scale(HADS), and Wong Baker Face Scale(WBFS) were completed by all participants. An abnormal score of STAI was considered when ≥ 40 . HADS scores below 7 are defined as “normal.”

Results: 180 patients with cancer were analyzed. 62.8% of them were female. The most common cancers were breast cancer (31.1%). Patients' mean HADS-A and HADS-D scores were 6.64 ± 4.12 and 6.63 ± 4.35 . The HADS-A scores were significantly higher in patients who receive active chemotherapy, afraid of to be infected with COVID-19 and afraid of their families to be infected with COVID-19 ($p=.013$, $p<0.001$, $p=.011$, respectively). The mean STAI-T score was 44.48 ± 8.42 and STAI-S score was 41.29 ± 10.29 . 72.2% patients showed a STAI-T score ≥ 40 , 55% patients showed a STAI-S score ≥ 40 . STAI-T and STAI-S scores were significantly higher in patients who are afraid of to be infected with COVID-19 than those who are not ($p=.032$, $p=.004$, respectively).

Conclusion: This study provides evidence that cancer patients have a high prevalence of anxiety and depression levels during the COVID-19 pandemic. The pandemic may have a greater effect on patients who receive active chemotherapy and all patients had significant fear about themselves and their families to be infected with COVID-19.

Keywords: Anxiety, Covid-19, cancer, depression

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In December 2019, a novel viral pneumonia of unknown cause emerged in Wuhan, Hubei, China. This novel virus was found to belong to the coronavirus family after deep analyses of the sequencing from lower respiratory tract samples, and it was named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).^[1,2] Coronavirus Disease

2019 (COVID-19), which is caused by the SARS-CoV-2 rapidly spread around the world and then declared as a pandemic by the World Health Organization (WHO). COVID-19 has already affected more than 700 million people and caused over seven million deaths worldwide since the first case has been announced.^[2]

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In Turkey, the first confirmed case was reported on March 11, 2020.^[3] After the first case was announced, many public or private hospitals have been declared as "pandemic hospitals" by the government and new inpatient wards where only patients with COVID-19 are treated have been established in these hospitals.

Diagnosis of cancer and subsequent treatment processes are experienced by many patients as a stressful experience.^[4] In this context, it can be said that cancer patients have a higher risk of psychological problems compared to healthy populations.^[5,6] Studies suggest that untreated psychological problems (primarily depression) in cancer patients are associated with a range of destructive outcomes such as treatment adherence problems, poorer survival rate, increased cost of healthcare, and worse quality of life.^[7-10]

It is generally considered that cancer patients are at risk for COVID-19. The presence of other comorbid diseases in cancer patients often and the immunosuppressant effects of the cancer itself and its treatment may contribute to their vulnerability to severe infections such as COVID-19.^[11,12] In this context, considering that the COVID-19 pandemic causes high rates of psychological problems even in the general population,^[13,14] cancer patients who are already susceptible appear to be highly likely to experience psychological problems. Indeed, in the recent studies evaluating psychological symptoms in patients with all types of cancer during the COVID-19 pandemic, it was found that depression was between 23.4% and 39.8%, and anxiety was between 17.1% and 59.1%.^[15-17]

In this study, we aimed to investigate the level of anxiety and depression during COVID-19 pandemic among patients with various types of cancer. The results of this study are important in terms of drawing attention to the possible psychological consequences of patients with cancer who are likely to be affected by the COVID-19 pandemic.

Methods

This cross-sectional study was conducted in accordance with the ethical principles of the Declaration of Helsinki with the approval of ministry of health and the local institutional ethics committee. Informed written consent was obtained from all patients.

Participants

In the present cross-sectional study, a consecutive series of cancer patients who applied to the outpatient clinic of Istanbul University-Cerrahpaşa, Cerrahpaşa Medical Faculty Medical Oncology Department between May and August 2020 were recruited. To determine performance status of patients, we used the Eastern Cooperative Oncology Group

Performance Status (ECOG PS) (0=best performance, 4=worst performance).^[18]

Criteria for inclusion were as follows: (1) aged over 18 years; (2) confirmation of cancer diagnosis after pathological examination; (3) with the ECOG PS of 0 or 1. The exclusion criteria were as follows: (1) the presence of any substance use disorder; (2) the diagnosis of psychosis, dementia, and intellectual disability; (3) with the ECOG PS of 2,3,4; and (4) illiteracy.

Conducting it in the early pandemic period is the limitation of the study. There is no vaccinated patient.

Measures

The semistructured sociodemographic and clinical data form, The Spielberger State-Trait Anxiety Inventory (STAI),^[19] Hospital Anxiety and Depression Scale (HADS),^[20,21] and Wong Baker Face Scale (WBFS)^[22] were completed by all participants. Sociodemographical and clinical variables such as age, gender, level of education, employment status, relationship status, diagnosis, stage of cancer, were collected via a semi-structured sociodemographic and clinical data form.

The Spielberger State-Trait Anxiety Inventory (STAI)

The STAI is a 40-item self-report Likert-type questionnaire that is used to assess levels of state anxiety and trait anxiety. The scale consists of two parts. The state anxiety scale (related to the ongoing pandemic, STAI-S) includes 20 items grouped on a four point intensity scale ('not at all', 'somewhat', 'moderately so' and 'very much so') and tests the subjective feelings of fear, nervousness and anxiety at the moment. The trait anxiety scale (basal anxiety, STAI-T) includes 20 items grouped on a four point intensity scale ('not at all', 'somewhat', 'moderately so' and 'very much so') and tests chronic subjective feelings of fear, nervousness and anxiety. STAI's adaptation to Turkish population was achieved by Öner et al.^[23] The score for the STAI questionnaire ranges from 20 to 80 points and is split into four groups: no anxiety (20), mild (21–39), moderate (40–59), and severe anxiety (60–80). An abnormal score of STAI was considered when ≥ 40 .

Hospital Anxiety and Depression Scale (HADS)

The HADS is a 14-item self-report rating questionnaire that is commonly used to assess anxiety and depression of a patient. It contains two subscales measuring symptoms of depression (7 items) and anxiety (7 items) during the previous week. The items are scored on a four-point rating scale from 0 to 3. In each subscale the scores range from 0 to 21, with higher scores indicating higher levels of anxious or depressive state. Also scores below 7 are defined as "normal."^[24,25]

Wong Baker Faces Scale (WBFS)

The WBFS shows a series of faces ranging from a happy face at “0 = no hurt”, to a crying face at “10 = hurts” like the worst pain imaginable. Based on the faces or written descriptions, the patient chooses the face that best describes their level of pain.

Statistical Analysis

Commercial software (SPSS version 22.0[®], SPSS, Chicago IL, USA) was used for the statistical analysis. Standard descriptive statistics were used to summarize all variables. The Kolmogorov–Smirnov test was used to analyse the normal distribution of data. The use of nonparametric tests at data analysis was used as they were not normally distributed. The Mann–Whitney U-test was applied in two-way group comparisons, and the chi-square test for quantitative data. The statistical significance level was set to $p < .05$.

Results

The data from 180 patients with cancer who completed the questionnaires were analyzed in medical oncology outpatient clinic. 113 (62.8%) of them were female. Median age was 57 (min 28–max 84). Sociodemographic and clinical characteristics of patients are shown in Table 1.

Table 1. Sociodemographic and clinical characteristics of the cancer patients

Variables	Median	
	N	%
Age (year)	57 (min=28–max=84)	
Gender		
Male	67	37.2
Female	113	62.8
Education		
University	20	11.1
High school	32	17.8
Secondary school or less	128	71.1
Marital status		
Married	153	85
Single	19	10.6
Divorced	8	4.4
Employment status		
Working in pandemic	30	16.7
Not working in pandemic	81	45
Housewife	69	38.3
Smoking status		
Never	85	47.2
Current	22	12.2
Ex-smoker	73	40.6

In terms of cancer types of the patients, the most common cancers were breast cancer (31.1%), gastrointestinal cancer (24.5%) and lung cancer (10.5%), respectively. Patients with stage 4 disease comprised 79 (43.9%) of all patients. While 48 (26.7%) of the patients did not describe pain, only 3 patients had 9–10 points on the WBFS. The cancer-related characteristics of the patients are summarized in Table 2. One hundred (55.6%) of participants had a chronic disease. Three of the patients were receiving active radiotherapy (1.7%) and, 77 (42.8%) active chemotherapy. Of those not receiving active chemotherapy, 29 patients were receiving hormone therapy or tyrosine kinase inhibitor. Apart from that, 55 (30.6%) of the patients were using NSAIDs and 12 (6.7%) of them were using opioids. Nineteen of the patients (10.6%) had a history of previous or current psychiatric illness.

In terms of patients' relationships with COVID-19, 9 participants (5%) had friends or relatives diagnosed with COVID-19 and only one participant had a previous history of COVID-19. 136 (75.6%) of the patients were afraid of being infected with the COVID-19, and 151 (83.9%) of the patients afraid of their families to be infected (Table 3).

Table 2. The cancer-related characteristics of the patients.

	N	%
Tumor type		
Lung	19	10.5
Breast	56	31.1
Gastrointestinal	44	24.5
Genitourinary	9	5
Gynaecological	24	13.3
Others	28	15.6
ECOG PS		
0	63	35
1	117	65
Stage		
1	16	8.9
2	51	28.3
3	34	18.9
4	79	43.9
Pain Scale (WBFS)		
0	48	26.7
1–2	44	24.4
3–4	43	23.9
5–6	32	17.8
7–8	10	5.6
9–10	3	1.7

ECOG PS = Eastern Cooperative Oncology Group Performance Status;
WBFS = Wong Baker Faces Scale.

Patients' mean HADS-A and HADS-D scores were 6.64 ± 4.12 and 6.63 ± 4.35 , respectively (Table 3). While 31.1% of the patients scored above 7 points in terms of HADS-A scores, 33.8% of the patients scored above 7 points in terms of HADS-D scores. Patients who received active chemotherapy, NSAID and opioid had mean HADS-D score above 7

(mean score 7.30 ± 4.73 , 7.76 ± 4.81 , 8.50 ± 5.19 respectively). The HADS-D scores were only significantly higher in patients using NSAID ($p=.024$). The HADS-A scores were significantly higher among women ($p=.026$). The HADS-A scores were significantly higher in patients who receive active chemotherapy, use NSAID, afraid of to be infected

Table 3. Comparison of the participants divided into groups in terms of scores of HADS-A, HADS-D, STAI-S, and STAI-T.

Groups (N; %)	HADS-A Mean \pm SD	HADS-D Mean \pm SD	STAI-S Mean \pm SD	STAI-T Mean \pm SD
Total score	6.64 \pm 4.12	6.63 \pm 4.35	41.29 \pm 10.29	44.48 \pm 8.42
Female (N=113; 62.8%)	7.09 \pm 4.15	6.51 \pm 4.35	41.76 \pm 10.66	44.84 \pm 8.46
Male (N=67; 37.2%)	5.88 \pm 3.97	6.84 \pm 4.38	40.51 \pm 9.67	43.88 \pm 8.39
P	0.026	0.574	0.336	0.417
Having chronic diseases				
Yes (N=100; 55.6%)	7.11 \pm 4.10	6.74 \pm 4.43	40.68 \pm 9.97	45.02 \pm 7.71
No (N=80; 44.4%)	6.05 \pm 4.10	6.50 \pm 4.28	42.06 \pm 10.70	43.81 \pm 9.24
P	0.089	0.738	0.377	0.347
Receiving active chemotherapy				
Yes (N=77; 42.8%)	7.58 \pm 4.52	7.30 \pm 4.73	43.53 \pm 10.80	45.30 \pm 8.54
No (N=103; 57.2%)	5.93 \pm 3.66	6.14 \pm 4.01	39.62 \pm 9.61	43.87 \pm 8.32
P	0.013	0.127	0.014	0.289
Using NSAID drugs				
Yes (N=55; 30.6%)	7.71 \pm 4.39	7.76 \pm 4.81	43.53 \pm 10.01	46.60 \pm 8.55
No (N=125; 69.4%)	6.17 \pm 3.92	6.14 \pm 4.06	40.32 \pm 10.30	43.55 \pm 8.22
P	0.032	0.024	0.064	0.024
Using opioids				
Yes (N=12; 6.7%)	7.83 \pm 4.84	8.50 \pm 5.19	43.75 \pm 12.45	49.58 \pm 9.25
No (N=168; 93.3%)	6.55 \pm 4.06	6.50 \pm 4.27	41.12 \pm 10.14	44.12 \pm 8.27
P	0.392	0.146	0.383	0.031
Previous or current psychiatric illnesses				
Yes (N=19; 10.6%)	7.95 \pm 4.77	6.58 \pm 5.14	45.16 \pm 12.71	46.89 \pm 10.72
No (N=161; 89.4%)	6.48 \pm 4.02	6.64 \pm 4.27	40.84 \pm 9.92	45.16 \pm 12.71
P	0.157	0.686	0.098	0.177
Afraid of infected with COVID-19				
Yes (N=136; 75.6%)	7.29 \pm 4.09	6.96 \pm 4.47	42.54 \pm 10.02	45.26 \pm 8.28
No (N=44; 24.4%)	4.64 \pm 3.54	5.61 \pm 3.85	37.43 \pm 10.28	42.09 \pm 8.50
P	0.000	0.121	0.004	0.032
Afraid of their families to be infected with COVID-19				
Yes (N=151; 83.9%)	6.93 \pm 4.12	6.79 \pm 4.37	42.07 \pm 9.94	44.99 \pm 8.30
No (N=29; 16.1%)	5.14 \pm 3.85	5.79 \pm 4.27	37.24 \pm 11.30	41.86 \pm 8.70
P	0.011	0.319	0.017	0.058
Stage				
1	5.27 \pm 2.91	5.40 \pm 3.48	38.53 \pm 6.25	44.13 \pm 6.03
2	6.67 \pm 4.10	6.04 \pm 3.70	42.59 \pm 10.42	45.67 \pm 8.53
3	5.88 \pm 3.17	5.82 \pm 2.92	38.76 \pm 9.64	43.74 \pm 9.23
4	7.29 \pm 4.56	7.62 \pm 5.20	42.29 \pm 10.81	44.28 \pm 8.36
P*	0.31	0.30	0.21	0.88

HADS-A = Hospital Anxiety and Depression Scale – Anxiety; HADS-D = Hospital Anxiety and Depression Scale – Depression; STAI-S = Spielberger State-Trait Anxiety Inventory – State; STAI-T = Spielberger State-Trait Anxiety Inventory – Trait; NSAIDs = Nonsteroidal anti-inflammatory drugs; COVID-19 = Coronavirus Disease 2019. P*Kruskal-wallis analyse.

with COVID-19 and afraid of their families to be infected with COVID-19 ($p=.013$, $p=.032$, $p=.000$, $p=.011$, respectively) (Table 3).

The mean STAI-T score (trait anxiety) was 44.48 ± 8.42 and 130 patients (72.2%) showed a STAI-T score ≥ 40 . The mean STAI-S score (state anxiety) was 41.29 ± 10.29 and 99 patients (55%) showed a STAI-S score ≥ 40 . STAI-T test were significantly higher in patients using NSAID and patients using opioid ($p=.024$, $p=.031$, respectively). STAI-T scores were significantly higher in patients who are afraid of to be infected with COVID-19 than those who are not ($p=.032$) (Table 3). STAI-S scores were significantly higher in patients who receive active chemotherapy than who do not. ($p=.014$). STAI-S scores were significantly higher in patients who are afraid of to be infected with COVID-19 and afraid of their families to be infected with COVID-19 than who are not ($p=.004$, $p=.017$, respectively) (Table 3). Receiving active chemotherapy was associated with a significant increase in STAI-S values ≥ 40 ($p=.003$), but not of STAI-T values ($p=.422$). Afraid of themselves and their families to be

infected with COVID-19 was associated with a significant increase in STAI-S values ≥ 40 ($p=.001$, $p=.005$, respectively). The comparison of patients with STAI-S and STAI-T scores of the groups below 40 points and above 40 points is shown in Table 4.

Discussion

In this study, we examined the anxiety and depression levels of cancer patients during the COVID-19 pandemic. The present study suggest that the COVID-19 pandemic increases the anxiety levels of cancer patients in the context of various cancer-related conditions and this increase is more pronounced in women.

Early studies that examined the psychological effects of COVID-19 on the general population have shown that this disease increases the depression and anxiety levels of people.^[12,14,26-28] A recent meta-analysis found that the prevalence of depression was 33.7 % and anxiety was 31.9% in the general population during the COVID-19

Table 4. Comparison of the groups according to STAI-T (Total score < 40 vs. ≥ 40) and STAI-S (Total score < 40 vs. ≥ 40) scores.

Groups (N; %)	STAI-T <40 N=50 (%)	STAI-T ≥ 40 N=130 (%)	P	STAI-S <40 N= 81 (%)	STAI-S ≥ 40 N=99 (%)	p
Female (N=113; 62.8%)	30 (60)	83 (63.8)	.633	45 (55.6)	68 (68.7)	.070
Male (N=67; 37.2%)	20 (40)	47 (36.2)		36 (44.4)	31 (31.3)	
Having chronic diseases						
Yes (N=100; 55.6%)	25 (50)	55 (42.3)	.352	50 (61.7)	50 (50.5)	.132
No (N=80; 44.4%)	25 (50)	75 (57.7)		31 (38.3)	49 (49.5)	
Receiving active chemotherapy						
Yes (N=77; 42.8%)	19 (38)	58 (44.6)	.422	25 (30.9)	52 (52.5)	.003
No (N=103; 57.2%)	31 (62)	72 (55.4)		56 (69.1)	47 (47.5)	
Using NSAID drugs						
Yes (N=55; 30.6%)	13 (26)	42 (32.3)	.411	19 (23.5)	36 (36.4)	.061
No (N=125; 69.4%)	37 (74)	88 (67.7)		62 (76.5)	63 (63.6)	
Using opioids						
Yes (N=12; 6.7%)	1 (8.3)	11 (91.7)	.120	4 (33.3)	8 (8.1)	.400
No (N=168; 93.3%)	49 (98)	119 (91.5)		77 (95.1)	91 (91.9)	
Previous or current psychiatric illnesses						
Yes (N=19; 10.6%)	5 (10)	14 (10.8)	.880	6 (7.4)	13 (13.1)	.214
No (N=161; 89.4%)	45 (90)	116 (89.2)		75 (92.6)	86 (86.9)	
Afraid of infected with COVID-19						
Yes (N=136; 75.6%)	34 (68)	102 (78.5)	.144	52 (64.2)	84 (84.8)	.001
No (N=44; 24.4%)	16 (32)	28 (21.5)		29 (35.8)	15 (15.2)	
Afraid of their families to be infected with COVID-19						
Yes (N=151; 83.9%)	8 (76)	113 (86.9)	.074	61 (75.3)	90 (90.9)	.005
No (N=29; 16.1%)	12 (24)	17 (13.1)		20 (24.7)	9 (9.1)	

STAI-S = Spielberger State-Trait Anxiety Inventory – State; STAI-T = Spielberger State-Trait Anxiety Inventory – Trait; NSAIDs = Nonsteroidal anti-inflammatory drugs; COVID-19 = Coronavirus Disease 2019.

pandemic.^[14] On the other hand, it is known that cancer patients have higher levels of depression and anxiety compared to the general population.^[7,29] In studies involving patients with all types of cancer during the COVID-19 pandemic,^[15-17] occurrence rates for depression and anxiety ranged from 23.4%¹⁶ to 39.8%¹⁵ and from 17.1%¹⁶ to 59.1%¹⁵, respectively. We found that depression levels, which we evaluated with HADS in cancer patients, were similar to the results of these studies (33.8%). In terms of anxiety levels evaluated with two separate scales (HADS and STAI), while our results (for HADS-A = 31.1%, for STAI-S = 55%, for STAI-T = 72.2%) were higher than those of Wang et al.^[16] (17.1%), and Ng et al.^[17] (19.1%), they were similar to the study of Miaskowski et al.^[15] (state = 48.4%, trait = 59.1%). In addition, we found that cancer patients fear that they or their families will become infected with COVID-19 significantly higher. In this context, the results of both our and the previous studies indicate that cancer patients have higher depression and anxiety levels than both the general population during the pandemic and their pre-pandemic conditions.^[30] It can be said that this is not surprising due to reasons such as cancer patients have a higher risk of infection both from the disease itself and from immunosuppression, COVID-19 leads to worse outcomes, difficulties in meeting medical needs depending on the intensity of health systems and delay or discontinuation anticancer therapy.^[31,32]

In our study, although there was no significant difference in STAI scores, anxiety levels were significantly higher in women than in men in terms of HADS-A scores. In general, anxiety disorders are known to be more common in women.^[33] Similarly, anxiety during the COVID-19 outbreak has been found to be more common in women.^[34,35]

We found no difference between those with and without chronic disease in terms of depression and anxiety. Özdin et al.,^[34] in their study conducted in Turkey, showed that patients with chronic disease had a higher rate of anxiety and depression. Also in this study, participants' mean HADS anxiety and depression scores were 6.8 ± 4.2 and 6.7 ± 4.2 , respectively. It can be thought that the patients' anxiety connected with "having a cancer" overshadows the anxiety related by other comorbid diseases and does not affect the anxiety level in this context.

We detected that patients who are receiving active chemotherapy have more state anxiety independent from basal anxiety. On the other hand, we found that the rate of moderate-to-severe state anxiety (STAI-S scores ≥ 40) in patients who are receiving active chemotherapy was significantly higher compared to those without chemotherapy. Studies have shown that delaying or discontinuation of

chemotherapy for any reason negatively affects patients' survival.^[36] Therefore, patients with cancer receiving active chemotherapy may need to come to the hospital periodically. It can be stated that cancer patients are open to a serious state of anxiety because they have to choose between the periodically coming to the hospital, which increases the risk of getting COVID-19 infection and the negative course of their disease when they do not receive anticancer treatment. Considering that fear and anxiety due to COVID-19 increase the rates of chemotherapy postponement,^[37] it should be taken into account by clinicians that cancer patients face a serious distress.

In the present study, we found higher trait anxiety in patients using NSAIDs and opioids. It is known that patients with cancer or treatment-related pain are more likely to be anxious than cancer patients without pain.^[38] We can interpret this finding as patients who experience consistently high levels of pain and additionally anxiety use NSAIDs and opioids more frequently. On the other hand, it should be kept in mind that NSAIDs can cause psychiatric disorders such as depression and anxiety.^[39]

In this study, there was no significant difference in STAI and HADS scores between patients with and without psychiatric disorders. This may be because cancer patients with psychiatric disorders are receiving appropriate psychiatric treatment.

This study had some limitations. First, there was no control group in our study. Comparing the results of cancer patients with a control group containing a sample from the general population would yield more valuable results. Second, the inventories evaluating depression in more detail could be preferred. Third, the sample size was relatively small. The fact that there were more patients in terms of cancer types would have enabled the analysis to be expanded. Further, we also used self-report measures that may have been affected by social desirability bias, especially when considering cancer patients.

Conclusion

In conclusion, this study provides evidence that cancer patients have a high prevalence of anxiety and depression levels during the COVID-19 pandemic. Our findings suggest that the pandemic may have a greater effect on patients who receive active chemotherapy and all patients had significant fear about themselves and their families to be infected with COVID-19. Clinicians need to take into account the risk of anxiety and depression that may develop in cancer patients during the pandemic and help provide psychiatric treatments for appropriate patients.

Disclosures

Ethics Committee Approval: This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of Istanbul University-Cerrahpasa Cerrahpasa Medical Faculty, Date: 08.07.2020, No: 86135.

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