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ORIGINAL ARTICLE

Anxiety, Depression, and Outbreak Anxiety and Related Factors in Patients with Cancer Receiving Radiotherapy during the COVID-19 Pandemic

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OBJECTIVE

This study aimed to investigate the factors associated with anxiety, depression, and outbreak anxiety during the COVID-19 pandemic in patients with cancer.

METHODS

This study was conducted at a university training and research hospital. Two groups (patients with cancer and their caregivers) were asked questions about the COVID period. The Hospital Anxiety Depression Scale (HADS) and the Outbreak Anxiety Scale were used to measure the variables.

RESULTS

COVID-19 was the most worrying situation among the two groups and was statistically higher than worry about cancer and other medical illnesses. When the HADS-Total, HADS-Depression (HADS-D), and HADS-Anxiety scores and outbreak anxiety were compared, there was no significant difference between the groups ($p>0.05$). However, outbreak anxiety was higher in the patient group living in rural areas ($p<0.05$). HADS-Total scores were higher in patients with delays in cancer treatment than those who lost their relatives during the pandemic ($p<0.05$). HADS-D was higher in those who lost their relatives, working individuals, and the palliative RT group ($p<0.05$). Further, those who had psychiatric histories had higher scores of outbreak anxiety ($p<0.05$).

CONCLUSION

Patients with cancer were particularly negatively affected by the COVID-19 pandemic, especially those with a previous psychiatric history. In addition, living in a rural area, delay in radiotherapy (RT), losing a relative due to COVID-19, and working and receiving palliative RT are other related factors.

Keywords: Epidemic, psychiatry, radiotherapy, worry.

INTRODUCTION

The COVID-19 pandemic led to billions of deaths and had physical and mental effects on people globally.[1,2] COVID-19 may progress more severely in a patient with underlying health conditions or comorbidities, and this may increase the patient's anxiety levels.[3,4] Depression and anxiety disorders are common psychi-

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atric disorders in patients with cancer. In a meta-analysis among 6213 patients with cancer, 23.4% had depression, while 17.7% had anxiety.[5] Cancer continued to exist during the pandemic and was one of the most severe medical diseases that adversely affected people's lives.[6] Even during a pandemic, cancer treatment process continues, and despite the quarantine conditions, patients have to continue to receive chemotherapy and radiotherapy (RT). This process can be an additional stressor for patients; however, how this process affects that patients have not been adequately studied.

RT is an effective treatment method that is frequently used alone or as a part of combined therapy to treat cancer. RT is needed in more than 50% of patients with cancer at a stage of the treatment process.[7] Patients with cancer are more susceptible to infections due to their weak immune systems as a result of cancer and treatments such as chemotherapy, RT, and surgery. Accordingly, it has been reported that the risk of death due to COVID-19 is quite high in patients with cancer.[3,7]

Psychiatric conditions such as psychological stress, anxiety, and depression have been shown to negatively affect the health and well-being of individuals during times of infectious disease epidemics.[8,9] Patients receiving RT (oncology patients) have accompanying psychiatric symptoms that affect the morbidity and mortality related to cancer.[10] In addition, psychiatric symptoms in this patient group cause an additional burden on their quality of life and self-care skills, increased burden for the caregiver, increased risk of suicide, and additional medical costs.[11–13]

The factors associated with anxiety and depression have been investigated in patients with cancer and sleep, somatoform, anxiety, and mood disorders have been found to be the most common ones.[14] In addition, it is known that the frequency of anxiety and depression increases in the general population during the pandemic period. However, the psychiatric conditions of patients with cancer who were stressed during this period and had to go to the hospital every day for RT have not been examined in comparative studies. Examining the symptoms of anxiety and depression in this group of patients and determining the related factors will promote the development of preventive mental health services and enable the patients receiving to access more versatile treatment. In this study, outbreak anxiety will be investigated in patients with cancer receiving RT. Patients who received RT during the COVID outbreak, their relatives who went to the hospital with them and healthy volunteers were evaluated cross-sectionally, and the groups were compared.

MATERIALS AND METHODS

This study aimed to investigate the factors associated with anxiety, depression, and epidemic anxiety during COVID-19 in patients with cancer admitted to the Sakarya Training and Research Hospital Radiation Oncology unit in RT. This study was approved by the Ethics Committee of Sakarya University Medical Faculty (approval number: 71522473/050.01.04/528, issued on October 20, 2020). Among the patients who applied for the study for 3 months (between November 01, 2020, and February 01, 2021), those who volunteered to participate were recruited consecutively. The data of the patients were compared with their caregivers. In this study, relatives or spouses who help the patient to regularly visit the hospital for follow-up medical care were defined as caregivers. The groups were formed as follows.

Patient Group

Patients with cancer applying for RT.

Caregiver Group

Caregivers of the recruited patients.
The following scales were applied to the patients.

Sociodemographic-clinical Data Form

This was prepared by the study team in accordance with the aims of the study. It includes sociodemographic and clinical information about thr RT process such as age, gender, place of residence, family structure, and (if there is) clinic diagnosis of the participants.

Outbreak Anxiety Scale

This was developed by Yazici et al.[15] to evaluate epidemic anxiety during the corona period, and its validity and reliability were done. It is a Likert scale consisting of 15 items.

Hospital Anxiety Depression Scale (HADS)

This was developed by Zigmond and Snaith to determine the risk of anxiety and depression in patients and measure the level and change of severity.[16] The validity and reliability study of the scale was conducted by Aydemir et al.[17] in Türkiye. It is used not to diagnose, but to identify anxiety and depression in a short time and determine the risk group. Seven (odd numbers) of a total of 14 questions measure anxiety and seven (even numbers) measure depression, and responses are scored on a four-point Likert scale between 0 and 3. It has questions for HADS depression (HADS-D) and anxiety (HADS-A) and the sum of these scores is pointed as total score (HADS-T).

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Table 1 Sociodemographic features for the groups

Sociodemographic features	Patients		Caregivers		p
	n	%	n	%	
Gender					
Male	44	44	45	45	p=0.500
Female	56	56	55	55	χ^2=0.020
Education level					
Primary school or lower	59	59	25	25	p<0.001
Middle school	18	18	12	12	χ^2=34.62
High school	17	17	38	38	
University	6	6	25	25	
Marital status					
Married	79	79	75	75	p=0.266
Single	16	16	23	23	χ^2=2.646
Separated	5	5	2	2	
Working status					
Working	11	11	37	37	p<0.001
Irregular employment	4	4	6	6	χ^2=20.00
Not working	85	85	57	57	
Personal income					
Yes	65	64	57	57	p=0.193
No	36	36	43	43	χ^2=1.02
Household					
Alone	5	5	3	3	p=0.365
Nuclear family	80	80	89	89	χ^2=3.17
Extended family	12	12	6	6	
Other	3	3	2	2	
Residence					
Rural	32	32	29	29	p=0.379
Urban	68	68	71	71	χ^2=0.21
Means of transport					
Private vehicle	84	84	81	81	p=0.355
Public transport	16	16	19	19	χ^2= 0.312

Statistical Analysis

Statistical analysis was carried out using SPSS 22.0 software package. Differences between the groups regarding the frequencies were analyzed using the Chi-square test. The mean score differences between the groups were compared using Student's t-test for variables that fit a normal distribution and the Mann–Whitney U-test for those that do not fit a normal distribution. Independent samples t-test was used to compare the means of the two groups. The means for more than two groups were compared using a one-way analysis of variance. Kruskal–Wallis test was used in the case of non-normal distribution. Bonferroni test was used for *post hoc* analysis when there was a difference between group averages. Pearson correlation analysis was used in the case of normal distribution, and the Spearman test was used in the case of the non-normal distribution for correlation analysis. The level of significance was accepted as 0.05.

RESULTS

Sociodemographic Features

In this study, 200 (100 in each group) participants were evaluated, and 56% of the participants in the patient group and 55% in the caregiver group were women. There was no significant difference between the groups in terms of gender distribution (X^2=0.020, p>0.05).

The mean age in the patient group was 56.15±12.57 years (19–83 years) and 41.48±14.02 years in the caregiver group (18–71 years). The age of the patient group was significantly higher than the caregiver (p<0.05). The sociodemographic data of the groups are presented in Table 1.

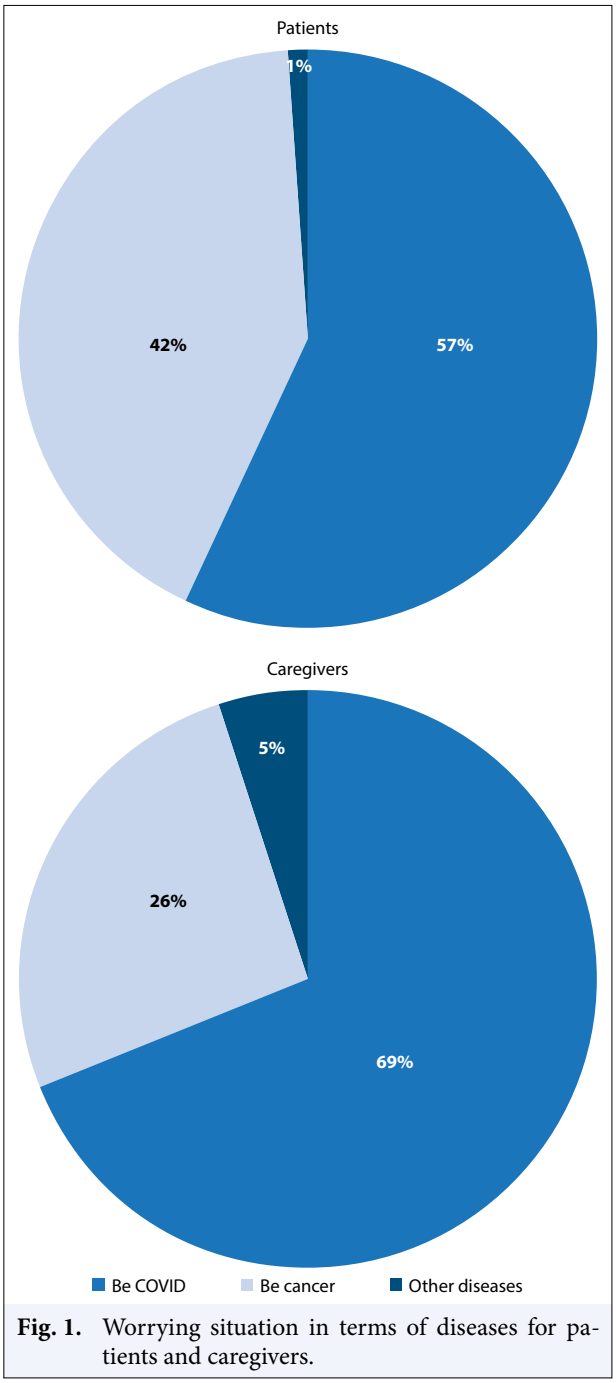

Fig. 1. Worrying situation in terms of diseases for patients and caregivers.

The Concerns of the Patients with Cancer and Their Caregivers Regarding the Pandemic

When asked "which one has been more worrying in recent months," COVID-19 was reported as the most worrying situation by the two groups, and this was statistically higher in the two groups than the concern about cancer and other medical diseases (X^2=7.22, p=0.027). Figure 1 illustrates how the patients and the caregivers are worried about these diseases.

Having COVID-19 and Contact with Someone Who has COVID-19

When the groups were compared, there was no significant difference between the patient group and the other group in areas such as having COVID-19 and loss of relatives (X^2:1.68, p=0.166).

Transport to Hospital

Patients and caregivers (90.9% for the patient group; 93.1% for the caregivers) preferred to visit the hospital accompanied by someone (X^2: 0.312, p=0.355).

The proportion of participants considering giving up RT (even though RT was required) due to the pandemic was 24.5% in the patient group and 10% in the caregiver group, and this was significantly higher in the patient group (X^2=7.14 p=0.006).

Psychiatric Help-seeking, Diagnosis, and Treatment

The groups participating in the study were evaluated separately for psychiatric help-seeking, diagnosis, and treatment in three different periods: lifetime, during their current illness (cancer), and the COVID-19 pandemic. There was no significant difference between the groups (p>0.05) in times of lifelong "feeling need for psychiatric help" (patients: 23%; caregivers: 21%), "seeking psychiatric help" (patients: 17%; caregivers: 19%), "having a psychiatric diagnosis" (patients: 13%; caregivers: 9%), and "getting psychiatric treatment" (patients: 15%; caregivers: 12%).

After the Diagnosis of Cancer

The proportion of the patient group (10%) receiving psychiatric treatment was higher than the caregivers (2%) (X^2: 5.67, p<0.05). There was no significant difference in the remaining variables (i.e., "feeling in need of psychiatric help," "seeking psychiatric help," and "getting psychiatric diagnosis") following the diagnosis of cancer.

During the Pandemic

A significantly higher proportion of the patients compared to the caregivers (p<0.05) were "seeking psychiatric help" (6% and 0%, respectively), "getting psychiatric diagnosis" (5% and 0%, respectively), and "receiving psychiatric treatment" (6% and 0%, respectively).

Comparing Groups for Outbreak Anxiety, Anxiety, and Depression

When the HADS-T, HADS-D, and HADS-A mean scores and outbreak anxiety were compared, there was no significant difference between the groups (p>0.05). Table 2 presents the groups according to the scores above the threshold for anxiety, depression, and pandemic anxiety on the scales. While there was no signif-

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Table 2 Individuals at risk in terms of HADS-A, HADS-D, HADS-T and outbreak anxiety scores by groups

	Severity	Patients n=100		Caregivers n=99		p
		n	%	n	%	
HADS-D	Normal	67	67	59	59.6	χ^2=1.22
	Borderline	19	19	22	22.2	p=0.543
	High risk	14	14	18	18.2	
HADS-A	Normal	69	69	59	59.6	χ^2=7.92
	Borderline	23	23	18	18.2	p=0.019
	High risk	8	8	22	22.2	
Outbreak anxiety	Low risk	86	88.7	85	85.9	χ^2=0.34
	High risk	11	11.3	14	14.1	p=0.355

HADS-A: Hospital Anxiety Depression Scale-anxiety; HADS-D: HADS-depression; HADS-T: HADS-total score

icant difference between the groups in the distribution of depression and epidemic anxiety risk group rates, anxiety was significantly higher in the caregiver group.

When outbreak anxiety and HADS mean scores were compared according to sociodemographic features in the whole sample (n=200), there was no significant difference in terms of age, gender, with whom the participant lived, receiving psychiatric diagnosis and treatment during the pandemic, currently receiving psychiatric treatment, the presence of a person to chat with, having COVID-19 during the pandemic, having someone with COVID-19 close, and contact with a person with COVID-19 (p>0.05).

The patient and the caregiver groups were evaluated in terms of the relationship of HADS-A, HADS-D, HADS-T, and outbreak anxiety scores with disease and treatment. Accordingly, there was no significant difference regarding diagnosis, stage, disease duration, RT duration, and post-cancer RT process. Having COVID-19 during RT made the underlying disease more severe and disrupted the RT process. There was no significant difference in terms of making COVID-19 more severe, delaying or not receiving RT during the pandemic (p>0.05).

Factors Associated with COVID-19 Anxiety

In Terms of Living Place

Outbreak anxiety was higher in the patient group living in rural areas than those living in urban areas (p=0.021).

Lifelong Psychiatric Diagnosis

Outbreak anxiety was higher in caregivers with a psychiatric diagnosis than those without a diagnosis (p=0.005).

In the correlation analysis for scale scores, in each group, the outbreak anxiety scores were positively correlated with the HADS-A, HADS-D, and HADS-T scores. Outbreak anxiety scores and correlation analysis for HADS-A, HADS-D, and HADS-T scores are presented in Table 3.

Table 3 Outbreak anxiety scores; Correlation analysis for HADS-A, HADS-D, HADS-T scores

	Outbreak anxiety scores		
	Patients	Caregivers	
HADS-A	0.448	0.668	r
	0.000	0.000	p
HADS-D	0.270	0.504	r
	0.007	0.000	p
HADS-total	0.418	0.650	r
	0.000	0.000	p

HADS-A: Hospital Anxiety Depression Scale-anxiety; HADS-D: HADS-depression

Factors Associated with Anxiety and Depression Scores

In the patient group, HADS-D was higher in working individuals than in non-working ones (p=0.023). In the caregiver group, HADS-T and HADS-D were higher among those who did not have their own income than those who have their own income (p=0.008 and p=0.003, respectively).

Lifelong Psychiatric Diagnosis

In the caregiver group, HADS-D and HADS-A were higher in those who had a psychiatric diagnosis than those who did not (p=0.001).

In Terms of Losing a Relative due to COVID-19

In the patient group, HADS-T and HADS-D were higher in those who lost their relatives than those who

did not (p=0.021 and p=0.012, respectively). A significant difference was found between the groups regarding the HADS-D scores of the patients according to the treatment method. According to the post-hoc Bonferroni analysis, HADS-D scores were higher in the palliative RT group than in the definitive RT group (p=0.018). HADS-T scores were higher in patients with *delay in cancer treatment* due to the pandemic than those without delay in treatment (p=0.049).

DISCUSSION

This study aimed to evaluate anxiety due to the pandemic and related factors in individuals with cancer compared with their caregivers. A total of 200 participants were included in the study and were evaluated in two separate groups.

Sociodemographic Features

The age of the patient group was significantly higher than the caregiver group, as the patients with cancer were more in the geriatric age group, while those who accompanied them were their younger relatives. This can be considered a manifestation of the destructive aspect of cancer in geriatric groups, which has been reported in the literature.[18] However, since this issue is not the direct focus of the study, there is no in-depth causal research on this subject in this study.

Patients with Cancer, Caregivers, and the Pandemic

In this study, having COVID-19 was the most worrying situation for both the patients and the caregivers and was statistically higher than anxiety about cancer and other medical illnesses. Hence, COVID-19 can be regarded as the main stressor for patients with cancer, as it turns out they were more worried about having COVID-19 than cancer itself and other medical conditions. This concern has reached the level of thinking about quitting RT in one out of every four patients in a study by Tuğrul et al.,[19] an approximate 70% decline in the delivery of patient services in Radiation Oncology was reported during the COVID-19 pandemic in Türkiye. Epidemic and pandemic outbreak periods are stressful and can trigger and aggravate psychiatric symptoms, especially anxiety.[15,20] The pandemic/epidemic period comes with many uncertainties, causing people to start thinking if they will be ill too or lose beloved ones or bothering about when the pandemic will end or if they will be quarantined. And many unpredictable situations related to the disease as well as its economic and social dimensions come into play.[21] Unpredictability is one of the most stressful conditions in life and the uncertainty of having COVID-19, while already struggling with cancer may lead to an increase in anxiety.[22] We did not explore the reasons for the worries about outbreak anxiety in this study, but previous studies have highlighted being female, having physical and psychiatric disorders, having close contact with patients with COVID-19 infection and infected colleagues or family members, high exposure risk, quarantine experience and high concern about epidemics, increased anxiety among the masses, and some negative analyses and misinformation during outbreaks[23] Wang et al.[5] showed that anxiety due to COVID-19 is a risk factor for mental diseases in patients with cancer. The results of our study also showed that patients with cancer during the COVID-19 period while still needing medical assistance due to the nature of the disease were also concerned about COVID-19.

In this study, patients and caregivers were worried about COVID-19 and some even planned to quit RT to avoid probable contact with people infected with COVID-19. However, they declared the need for a companion (probable contact with COVID-19) while coming to the hospital despite all avoidance. This gives an idea of the dilemma that patients experience due to cancer and COVID-19 anxiety. This may be because cancer is stuck between the realistic needs it poses by its nature and the worry of having COVID-19.

Psychiatric Help-seeking, Diagnosis, and Treatment

In this study, participants were separately evaluated for their psychiatric assistance status for three different periods: Lifelong, during cancer, and during the COVID-19 outbreak. There was no significant difference between the groups; the rate of lifelong feeling need for psychiatric help was 21%–23%, the rate of seeking help was 17%–19%, the rate of psychiatric diagnosis was 9%–13%, and the rate of receiving treatment was around 12%–15%. After the diagnosis of cancer, psychiatric diagnosis was at higher rates in the patients rather than the caregivers. This shows that the disease is more devastating for individuals who experience it themselves. In addition, the rates of referral to psychiatric help, diagnosis, and treatment were higher in the patient group than in the caregiver group during the pandemic. This suggests that the group with cancer is more vulnerable to psychiatric symptoms and more prone to be affected by social stressors. In the literature, a close relationship and frequent comorbidity between

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psychiatric disorders and cancer have been shown.[24,25] However, despite common psychiatric symptoms, patients with cancer do not get enough psychiatric help.[10,26] This is consistent with our findings, as the individuals who needed help were almost twice those who received treatment in this study.

Comparing Groups for Outbreak Anxiety, Anxiety, and Depression

The COVID-19 pandemic era has become an important stressor for psychiatric disorders. In a study conducted in January and February 2020 to examine the psychological stress level throughout the country in China, a significant psychological strain was found in 35% of the questions asked to approximately 53,000 people.[27] In a survey that evaluated 1593 people in Wuhan, China, in February 2020, anxiety and depression symptoms were found to be 8.3% and 14.6%, respectively.[28] Having cancer in this period is an additional significant risk factor for psychiatric disorders.[29] We found in this present study, the proportion of patients with cancer with depression was 14%, anxiety 8%, and outbreak anxiety 11%. This result suggests not to underestimate the probable high rates of psychiatric disorders during pandemic periods.

Factors Associated with COVID-19 Anxiety, Anxiety, and Depression

This study revealed that having some type of psychiatric history is an important risk factor for both the current HADS scores and the outbreak anxiety scores in both groups. A relationship between the need for psychiatric support during the pandemic and outbreak anxiety was found in both groups. Feeling the need for psychiatric help during the pandemic and having high epidemic anxiety scores have been demonstrated previously and are consistent with our results.[5,9] In this study group, other related factors for anxiety and depression were identified as losing a relative during the period and not having an own income. Patients who had to work also had higher HADS scores. In a previous study in China, low economic income, low education level, intense anxiety about the transmission of infection, lack of psychosocial support, and perception of poor health status were found to be associated with high levels of anxiety and depression.[28]

In this study, patients who received palliative RT had higher HADS-D scores than those who received definitive RT. The HADS-D and HADS-T scores of those who experienced a delay in treatment during the pandemic were higher than those without a delay in treatment. It has been previously shown that the possibility of treatment delay during the COVID period is associated with psychological stress.[30] During the COVID pandemic, delaying RT may be caused by external conditions such as an overload of the health system or by the patient's demand. In both cases, the relationship between delay in treatment and increased anxiety should be considered.

The fact that the evaluation was made with screening questions and scores because a one-to-one psychiatric diagnosis could not be performed due to the pandemic constitutes a limitation to this study.

CONCLUSION

COVID-19 was the most worrying situation for the two groups included in this study and was statistically higher than anxiety about cancer and other medical illnesses. Patients with cancer were particularly negatively affected by the COVID outbreak, especially those with a psychiatric history. In addition, living in a rural area, delay in RT, losing a relative due to COVID-19, working, and receiving palliative RT were other related factors.

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Conflict of Interest: All authors declared no conflict of interest.

Ethics Committee Approval: The study was approved by the Sakarya University Faculty of Medicine Non-interventional Ethics Committee (no: 71522473/050.01.04/528, date: 20/10/2020).

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