Anxiety Levels in Cancer Patients during the First Months of the COVID-19 Pandemic

Seher Nazlı KAZAZ [1], Atila YILDIRIM [1]

ABSTRACT

Aim: COVID-19 remains the biggest health crisis in the age we live in. It is obvious that this pandemic will cause psychological and physical disorders. The aim of this study is to investigate the frequency of anxiety caused by the COVID-19 pandemic in patients with cancer and the factors that may affect it.

Material and Methods: This is an observational, single-center study involving 235 cancer patients admitted to our outpatient clinic. The Turkish validated "Generalized Anxiety Disorder-7" questionnaire form was preferred to evaluate patients' anxiety levels. We also asked patients how long they thought about COVID-19 during the day.

Results: More than one-third of the cancer patients had high and severe anxiety levels because of COVID-19. Severe anxiety was significantly higher in patients with metastatic disease ($p < 0.001$). In addition, the rate of severe anxiety was higher in patients with ECOG-PS 2-3 versus ECOG-PS 0-1 ($p < 0.001$). Those who thought about COVID-19 for more than 3 hours per day had severe anxiety scores ($p < 0.001$). There was no significant relationship between the age, gender or educational status of the patients with the time to focus on COVID-19 and anxiety levels (respectively; $p = 0.754$, $p = 0.283$, $p = 0.276$ and $p = 0.689$, $p = 0.628$, $p = 0.626$). However, approximately two-thirds of patients (66.40%) were more concerned about different issues than COVID-19.

Conclusion: In our study, most cancer patients surveyed were significantly concerned about both COVID-19 infection and delaying active cancer treatments, especially for patients with metastatic disease and poor performance status. In particular, patients in this group should be provided with more careful psychological support.

Keywords: Anxiety; cancer; COVID-19; pandemic.

COVID-19 Pandemisinin İlk Aylarında Kanser Hastalarında Kaygı Düzeyleri

ÖZ

Amaç: COVID-19, yaşadığımız çağın en büyük sağlık krizi olmaya devam etmektedir. Bu pandeminin psikolojik ve fiziksel rahatsızlıklara yol açacağı aşikardır. Bu çalışmanın amacı, kanserli hastalarda COVID-19 pandemisinin neden olduğu anksiyete sıklığını ve bunu etkileyebilecek faktörleri araştırmaktır.

Gereç ve Yöntemler: Çalışmamız, polikliniğimize başvuran 235 kanser hastasını içeren gözlemsel, tek merkezli bir çalışmadır. Hastaların anksiyete düzeylerini değerlendirmek için Türkçe geçerliliği olan "Genelleştirilmiş Anksiyete Bozukluğu-7" anket formu tercih edildi. Ayrıca hastalara gün içinde COVID-19 hakkında ne kadar düşündükleri soruldu.

Bulgular: Kanser hastalarının üçte birinden fazlasının COVID-19 nedeniyle yüksek ve şiddetli anksiyete düzeyleri vardı. Metastatik hastalığı olan hastalarda şiddetli anksiyete anlamlı olarak daha yüksekti ($p < 0.001$). Ek olarak, ECOG-PS 0-1'e kıyasla ECOG-PS 2-3 olan hastalarda şiddetli anksiyete oranı daha yüksekti ($p < 0.001$). COVID-19'u günde 3 saatten fazla düşünenlerin ciddi anksiyete puanları vardı ($p < 0.001$). Hastaların yaşı, cinsiyeti, eğitim durumu ile COVID-19'a odaklanma zamanı arasında ve anksiyete düzeyleri arasında anlamlı bir ilişki bulunmadı (sırasıyla; $p = 0.754$, $p = 0.283$, $p = 0.276$ ve $p = 0.689$, $p = 0.628$, $p = 0.626$). Bununla birlikte, hastaların yaklaşık üçte ikisi (%66,40) COVID-19'dan farklı konular hakkında daha fazla endişe duyuyordu.

Sonuç: Çalışmamızda, ankete katılan kanser hastalarının çoğu, özellikle metastatik hastalığı ve düşük performans durumu olan hastalar, hem COVID-19 enfeksiyonu hem de aktif kanser tedavilerinin ertelenmesi konusunda önemli ölçüde endişe duymuştur. Özellikle bu gruptaki hastalara daha dikkatli psikolojik destek sağlanmalıdır.

Anahtar Kelimeler: Anksiyete; COVID-19; kanser; pandemi.

1 Karadeniz Technical University School of Medicine, Medical Oncology Department, Trabzon/TURKEY

Sorumlu Yazar / Corresponding Author: Seher Nazlı KAZAZ , e-mail: drnazli@gmail.com

INTRODUCTION

The virus disease COVID-19 (Coronavirus disease-2019) seen in China in December 2019 was accepted by the World Health Organization as a pandemic in January 2020 (1). The pathogen has been identified as a novel enveloped RNA betacoronavirus currently known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (2). COVID-19 continues to exert its influence by constantly changing and creating new variants from the moment it first emerged to the present day. Omicron variant, the last variant of the COVID-19, emerged in the last quarter of 2021 and has taken the whole world under its influence (3). As in all over the world, COVID-19 is spreading in Turkey, and daily morbidity and mortality rates are increasing.

The rapid spread of the pandemic has challenged the capacity of the countries' health systems. However, these outbreaks cause psychological problems such as anxiety, sleep disturbance and fear (4,5). In this process, some chronic diseases were considered as risk groups. Among these, cancer patients and especially those receiving chemotherapy and immunosuppressive drugs have more risk for mortality (5). This causes anxiety among cancer patients. Anxiety disorder is a common psychiatric disorder in patients diagnosed with cancer (6). In a study conducted by Nikbakhsh N. et al., fear and anxiety were observed in 46% of patients with cancer (7). Anxiety negatively affects the quality of life of cancer patients as well as the general population. In addition, it is known to reduce patients' compliance with medical treatment (8). There were only a few studies conducted on the fear and anxiety caused by COVID-19 in cancer patients in the literature.

This study aimed to investigate the frequency of anxiety caused by the COVID-19 outbreak and related factors that may affect it in patients with cancer during the pandemic (9).

MATERIAL AND METHODS

Patients and study design

A cross-sectional prospective single-center study was conducted using a survey to evaluate the anxiety levels of various types of cancer patients in response to the COVID-19 outbreak. This study was approved by Karadeniz Technical University Medical Faculty, Medical Oncology Outpatient Clinic in July and August 2020.

The sample size was calculated using the open. Epi (Open source epidemiologic Statistics for Public Health) software. The expected prevalence of anxiety is taken as 60% and deviation as 6%. At a 95% confidence interval, the calculated sample size was 205 contributors, and we included 235 participants in the study. Diagnoses and metastasis status of patients were recorded from patients' files. The patients' Eastern Cooperative Oncology Group Performance Status (ECOG-PS) was evaluated and noted. In our study, we used a screening test called "Generalized Anxiety Disorder-7", which was validated in the Turkish language and consisted of 7 questions (10). The GAD-7 is a self-administered patient questionnaire, which takes approximately 1-2 minutes to complete.

It was thought to be the most appropriate test for this study since it was validated in the Turkish language and was a self-administered and short-term questionnaire in pandemic conditions. It is a Likert-type quartet scale (0 = none, 1 = many days, 2 = more than half of the days, 3 = almost every day) containing 7 items, which evaluates the experiences asked in the scale items during the last 2 weeks. According to the answers given to the questions in the survey, the GAD-7 score of the participants was determined. In scoring, 0-4: mild anxiety, 5-9: moderate anxiety, 10-14: high anxiety and 15-21: severe anxiety. Scores of 5, 10, and 15 were taken as the cut-off points for mild, moderate, and severe anxiety, respectively. The internal consistency of the GAD-7 was excellent (Cronbach □=0.92) for the original questionnaire (9). The Cronbach's alpha coefficient was found to be 0,852 for the total score of GAD-7 in the Turkish validated GAD-7 questionnaire (10).

In addition to examining the demographic characteristics of the patients in the study, the patients were asked how long they thought of COVID-19 in one day [less than 1 hour, 2-3 hours or more than 3 hours]. Patients who underwent routine control or treatment process were included in this study.

Patients who were over 18 years of age, who did not have organic brain syndrome, who were not in the terminal period of cancer, and who agreed to participate in the study were included in the study. Individuals with brain metastases or primary brain tumors were excluded from the study.

Since this was a survey study, when the participants were informed about the study, their verbal consent was accepted as their completion of the questionnaire. So, verbal informed consent was obtained before the interview. The study was approved by the Ethics Board Committee of Karadeniz Technical University Medical Faculty (Ref No: 24237859-275 Date: 13.05.2020) and ethical principles laid down in the Declaration of Helsinki have been followed. The submission of the answered questionnaire was regarded as consensual to participate in the study.

Statistical Analysis

"IBM Statistical Package for Social Science [SPSS□ 23.0" program was used for the analyses. Descriptive statistics were applied to identify the items included in the questionnaire. We used numbers and percentages when presenting descriptive data. Since the age variable is not normally distributed, it is given with median, minimum and maximum values. The Chi-square test was used to compare categorical variables. We admitted values of p <0.05 in the comparison results between the groups as statistically significant.

RESULTS

The median age of the patients was 59.0 (min:21, max:82) years. One hundred fourteen patients (48.50%) were female, and 121 patients (51.50%) were male. The patients who had less than middle-high school education level were 57%. The most frequent diagnoses of the patients in this study were gastrointestinal cancers (32.30%) and breast cancer (26.80%). Additionally, 43.40% of these patients were metastatic; 56.60% were nonmetastatic. The ECOG performance status of 82.10% of patients was 0-1; the rest was 2-3. The demographic

characteristics of the study participants are shown in Table 1.

Table 1. Socio-demographic characteristics of the 235 cancer patients enrolled in the study

	n (%)
Sex	
Female	114 (48.5)
Male	121 (51.5)
Age (years)	
18-35	11 (4.7)
36-50	45 (19.1)
51-65	127 (54)
>65	52 (22.2)
Martial Status	
Married	208 (88.5)
Never-Married	15 (6.4)
Others*	12 (5.1)
Who lives with	
Living with family	231 (98.3)
Living alone	4 (1.7)
Educational Background	
Illiterate	15 (6.4)
Primary school	119 (50.6)
High school	69 (29.4)
University	32 (13.6)
Job	
Working	33 (14)
Not-working	202 (86)
Comorbidities	
Absent	116 (49.4)
Present	119 (50.6)
ECOG-PS	
0-1	193 (82.1)
2-3	42 (17.9)
Cancer types	
Gastrointestinal System	76 (32.3)
Breast	63 (26.8)
Lung	44 (18.7)
Others**	52 (22.2)
Stages	
Non-metastatic	133 (56.6)
Metastatic	102 (43.4)

*"Others" included widowed and divorced. ** "Others" included; prostate carcinoma, malignant melanoma, renal cell carcinoma, over carcinoma, sarkoma, head and neck cancers, testis cancer, bladder cancer, timoma, endometrium cancer and thyroid cancer*

Table 2. Average time to focus on the COVID-19 outbreak in a day and Generalized anxiety disorder status of the participants

Time to focus on the COVID-19	n (%)
<1 hour	120 (51.1)
1-2 hours	49 (20.8)
≥3 hours	66 (28.1)
Anxiety score of the participants	
Mild anxiety (0-4)	105 (44.7)
Moderate anxiety (5-9)	47 (20)
High anxiety (10-14)	23 (9.8)
Severe anxiety (15-21)	60 (25.5)

The Cronbach alpha value of the GAD-7 scale used in this study was found to be 0.928. The average time to focus on the COVID-19 outbreak in a day and generalized anxiety disorder (GAD) status of the patients are given in Table 2. According to the GAD-7 score, 44.70% of the patients were classified as "mild anxiety", 20% as "moderate anxiety", 9.80% as "high anxiety" and one-fourth of the patients were classified as "severe anxiety".

The responses of the patients for GAD-7 scale items are given in Table 3. More than half (57.40%) of the patients expressed varying rates of nervousness, concern, and anxiety during the day. Approximately two-thirds (66.40%) of the patients said that they were more concerned about issues other than COVID-19. More than half (56.60%) of the patients became angry quickly or uneasy because of COVID-19. 53.60% of the patients said that they were afraid that something very bad would happen because of COVID-19.

The relation between the demographic characteristics of patients and their anxiety scores is shown in Table 4. Severe anxiety was observed with a higher rate in patients with metastatic disease, while mild anxiety was more common in patients without metastasis (p <0.001). Severe anxiety was higher in patients with ECOG-PS 2-3, and mild anxiety was higher in patients with ECOG-PS 0-1 (p <0.001). However, when the patients' age, gender, and educational status were compared with the time to focus on COVID-19, no significant relationship was found between these parameters (respectively; p=0.754, p=0.283, p=0.276). Although most people with metastatic diseases thought about COVID-19 for more than 3 hours a day, most of the patients who did not have metastatic diseases thought about less than 1 hour a day, which was statistically significant (p<0.001). The time to think about COVID-19 was significantly higher in those with ECOG-PS 2-3 than in those with ECOG-PS 1-2 (p=0.001).

When we consider the relationship between the times to focus on COVID-19 thinking periods and anxiety scores, it was seen that patients with long COVID-19 thinking periods during the day also had higher anxiety scores, and this was statistically significant. In other words, those who thought about COVID-19 for more than 3 hours per day had severe anxiety scores (p<0.001) (Table 5).

DISCUSSION

In this study, we evaluated the anxiety levels of cancer patients about COVID-19. Our survey study shows a high prevalence of GAD in cancer patients treated in our clinic during COVID-19 pandemic. Anxiety symptoms were more likely to occur in patients with metastatic disease and ECOG-PS 2-3 and those who spent too much time focusing on the pandemic.

The Coronavirus Disease-2019 pandemic, which is still ongoing with variants (11), affected the whole world and killed thousands of people. Just like it disrupted the physical health of many people, it also caused psychological problems such as anxiety, panic, and sleep disorders in many people. Cancer is a disease in which psychiatric disorders are likely to appear (12). In a study conducted by Zhang et al. in China, the mortality rates due to COVID-19 infection were approximately 10 times higher in cancer patients compared to the normal population (13).

Table 3. The Responses of the patients for "The generalized anxiety disorder-7 (GAD-7)" scale items

	Not at all	Several Days	More than half the days	Nearly every day
	n (%)	n (%)	n (%)	n (%)
1. Feeling nervous, anxious or on edge	100 (42.6)	49 (20.8)	53 (22.6)	33 (14.0)
2. Not being able to stop or control worrying	124 (52.8)	33 (14.0)	67 (28.5)	11 (4.7)
3. Worrying too much about different things	79 (33.6)	33 (14.0)	25 (10.6)	98 (41.8)
4. Trouble relaxing	111 (47.2)	53 (22.5)	57 (24.3)	14 (6.0)
5. Being so restless that it is hard to sit still	132 (56.1)	35 (14.9)	61 (26.0)	7 (3.0)
6. Becoming easily annoyed or irritable	102 (43.4)	49 (20.9)	37 (15.7)	47 (20.0)
7. Feeling afraid as if something awful might happen	109 (46.4)	46 (19.6)	28 (11.9)	52 (22.1)

Table 4. Relation between socio-demographic characteristics of cancer patients and their anxiety scores about COVID-19

Socio-demographic Characteristics	Anxiety score of the participants				p value
	Mild anxiety (0-4) n (%)	Moderate anxiety (5-9) n (%)	High anxiety (10-14) n (%)	Severe anxiety (15-21) n (%)	
Sex					
Female	55 (48.2)	23 (20.2)	9 (7.9)	27 (23.7)	0.628
Male	50 (41.3)	24 (19.8)	14 (11.6)	33 (27.3)	
Age (years)					
18-35	7 (63,6)	1 (9.1)	1 (9.1)	2 (18.2)	
36-50	21 (46.7)	6 (13.3)	4 (8.9)	14 (31.1)	0.689
51-65	53 (41.7)	30 (23.6)	15 (11.8)	29 (22.9)	
>65	24 (46.2)	10 (19.2)	3 (5.8)	15 (28.8)	
Martial Status					
Married	93 (44.7)	46 (22.1)	18 (8.7)	51 (24.5)	
Never-Married	6 (40.0)	0 (0.0)	4 (26.7)	5 (33.3)	0.259
Others*	6 (50)	1 (12.5)	1 (6.25)	4 (31.25)	
Who lives with					
Living with family	103 (44.6)	47 (20.3)	23 (10.0)	58 (25.1)	0.534
Living alone	2 (50.0)	0 (0.0)	0 (0.0)	2 (50.0)	
Educational Background					
Illiterate	8 (53.3)	3 (20.0)	0 (0.0)	4 (26.7)	
Primary school	49 (41.2)	25 (21.0)	15 (12.6)	30 (25.2)	0.626
High school	35 (50.7)	14 (20.3)	6 (8.7)	14 (20.3)	
University	13 (40.6)	5 (15.6)	2 (6.3)	12 (37.5)	
Job					
Working	12 (36.4)	6 (18.2)	4 (12.1)	11 (33.3)	0.617
Not-working	93 (46.0)	41 (20.3)	19 (9.4)	49 (24.3)	
Comorbidities					
Absent	59 (49.7)	21 (17.6)	13 (10.9)	26 (21.8)	0.312
Present	46 (39.7)	26 (22.4)	10 (8.6)	34 (29.3)	
Stage					
Metastatik	33 (32.4)	17 (16.7)	14 (13.7)	38 (37.1)	<0.001
Non-metastatic	72 (54.1)	30 (22.6)	9 (6.8)	22 (16.5)	
ECOG-PS					
0-1	94 (48.7)	44 (22.8)	15 (7.8)	40 (20.7)	<0.001
2-3	11 (26.2)	3 (7.1)	8 (19.0)	20 (47.7)	

*"Others" included widowed ans divorced.

Table 5. Relation between time to focus on the COVID-19 between the stage, ECOG-PS and anxiety score of the participants

	Time to focus on the COVID-19			
	< 1 hour n (%)	1-2 hours n (%)	≥3 hours n (%)	p value
Stage				
Metastatik	35 (34.3)	27 (26.5)	40 (39.2)	<0.001
Non-metastatic	85 (63.9)	22 (16.5)	26 (19.6)	
ECOG-PS				
0-1	109 (56.5)	37 (19.1)	47 (24.4)	<0.001
2-3	11 (26.2)	12 (28.6)	19 (45.2)	
Anxiety score of the participants				
Mild anxiety (0-4)	95 (79.2)	10 (20.5)	0 (0.0)	
Moderate anxiety (5-9)	24 (20.0)	18 (36.7)	5 (7.6)	<0.001
High anxiety (10-14)	1 (0.8)	15 (30.6)	7 (10.6)	
Severe anxiety (15-21)	0 (0.0)	6 (12.2)	54 (81.8)	

We believe that anxiety is gaining more importance in cancer patients and their relatives during COVID-19 pandemic. In this study, we evaluated the general anxiety disorder in cancer patients about COVID-19. GAD-7 has been evaluated in many studies for screening for anxiety in cancer patients and has demonstrated adequate diagnostic accuracy area under the curve (AUC) and is therefore applicable for screening for GAD in cancer patients (14,15).

In a study in which 218 cancer patients were included, and the same scale was used, anxiety was observed in 35.80% of the patients (15). In our study, the anxiety rate in cancer patients was 55.30%. In light of this information, the anxiety rate was found to be very high during the COVID-19 pandemic period. We believe that the high mortality and morbidity of COVID-19, as well as the necessity of strict isolation measures and quarantines in the country, increased fear and anxiety in society.

Anxiety in cancer patients, unlike the general population, was not found to be associated with age, gender, or educational status (16). Our study was also found in accordance with this literature. However, anxiety has been associated with metastatic disease in some types of cancer (17). In our study, anxiety symptoms were significantly higher in patients with advanced-stage metastatic cancer and in those with high ECOG performance scores (ECOG 3-4).

When asked about the time they spent thinking about COVID-19 during the day, significant relations were detected in metastatic patients and those with ECOG performance scores between 3-4. Also, positive relations were detected between the COVID-19 thinking period and the GAD-7 scale in our study.

Huanga Y. and Zhao N. conducted a web-based cross-sectional study to determine the anxiety levels in the voluntary general population during the COVID-19 pandemic in China, and used the standardized GAD survey to determine the anxiety scores (18). Similarly, high and severe anxiety scores were detected more in their participants. Approximately one-third of our cancer patients had high and severe anxiety. The study conducted by Huanga Y. and Zhao N. and our study showed similarities in that there were no differences between the anxiety scores in men and women. However, in the study conducted by Sigorski D et al., it was found that COVID-19-related anxiety scores were higher in women than in men (19). Also, in the study of Sigorski et al., no significant differences were detected between the ages of the participants in terms of Coronavirus-related anxiety, as it was the case in our study.

Wang et al. conducted a survey study on the anxiety and psychological stress scores caused by the COVID-19 pandemic in the general population in China by using the Depression, Anxiety and Stress Scale [DASS-21] and found that the anxiety scores of women and those with low levels of education were higher (20); however, our study showed that there were no differences between the genders and the educational levels. No significant differences were detected between the age, marital status, and anxiety scores in both studies. In addition, this study found a positive relationship between the time of patients spend thinking about COVID-19 during the day and GAD, in line with the results of our study.

When the limitations of our study are considered, the analysis results indicate a snapshot of a particular time period and 220 patients, and there are no comparisons of how they change in time during this pandemic period. Because the GAD-7 questionnaire is a screening test, patients with high scores should be evaluated by psychiatrists. Despite these limitations, the present study is very important in terms of determining the anxiety levels in cancer patients during COVID-19. Because the pandemic continues with variants, there is an increasing concern and anxiety in risky populations such as cancer. For that reason, it is important that this group should be determined with such studies and directed by the primary physicians to psychologist in order to provide psychological support to the patients who need it.

CONCLUSION

In our study, most participants were significantly concerned about COVID-19 infection and delaying active cancer treatments, especially for patients with metastasis and poor performance status. In particular, patients in this group should be provided with more careful psychological support.

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

Authors's Contributions: Idea/Concept: S.N.K.; Design: S.N.K.; Data Collection and/or Processing: S.N.K., A.Y.; Analysis and/or Interpretation: S.N.K., A.Y.; Literature Review: S.N.K., A.Y.; Writing the Article: S.N.K., A.Y.; Critical Review: S.N.K.

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