ARAŞTIRMA MAKALESİ / *RESEARCH ARTICLE*

Determining the Impact of the Covid-19 Pandemic on Depression, Anxiety and Stress Levels in Cancer Patients

Covid-19 Pandemisinin Kanser Hastalarında Depresyon Kaygı ve Stres Durumlarına Etkisinin Belirlenmesi

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ABSTRACT

Aim: *This study aims to determine the level of anxiety, depression and stress symptoms in patients receiving cancer treatment and monitoring during the coronavirus disease 2019 (COVID-19) pandemic.*

Methods: *This cross-sectional study was conducted among patients who applied to the oncology outpatient clinic between June 15 and July 15, 2021, and met the inclusion criteria. The impact of COVID-19 and its association with patient descriptive characteristics were examined using a 13-question survey. The relationship with stress, anxiety, and depression was evaluated using the Depression, Anxiety, and Stress Scale (DASS-21). Number, percentage, chi-square, and independent samples t-tests were performed in the statistical analysis stage of the study.*

Results: *It was observed that most of the individuals who participated in the study were between 44 and 56 years old, and there was no statistically significant relationship between their gender, employment status, change in the treatment plan, difficulty in getting to the hospital, disease stage and whether they received active treatment (p>0.05). It was determined that patients who were afraid of contracting COVID-19 from hospital staff during the outbreak (68.60%) said that their treatment plan had changed due to COVID-19 (58.97%) did not receive active treatment. It was observed that there was no statistically significant difference in the anxiety, depression and stress symptom levels of individuals receiving active treatment according to demographic characteristics (p>0.05).*

Conclusion: *During the coronavirus pandemic, individuals who were anxious about the progression of the disease were found to have higher levels of anxiety, depression and stress. Based on this information, it is recommended that patients' perspectives be included in treatment guidelines for the COVID-19 pandemic.*

Key words: *cancer; COVID-19; anxiety; depression; stress*

ÖZET

Amaç: *Bu çalışmanın amacı, kanser tedavisi ve takibi gören hastaların koranavirüs pandemisi (COVID-19) sürecinde anksiyete, depresyon ve stres belirti düzeylerini belirlemektir.*

Yöntem: *Bu kesitsel çalışma, 15 Haziran -15 Temmuz 2021 tarihleri arasında onkoloji polikliniğine başvuran ve dâhil edilme kriterlerini sağlayan 226 hasta ile yapıldı. COVID-19'un etkisi ve hastaların tanıtıcı özellikleri ile olan ilişkileri 13 maddelik anket sorusu ile incelendi. Katılımcıların anksiyete, depresyon ve stres belirti düzeyleri Depresyon, Anksiyete ve Stres Ölçeği (DASS-21) ile değerlendirildi. Çalışmanın istatistiksel analiz aşamasında sayı, yüzde, ki-kare ve bağımsız gruplar t testi uygulandı.*

Bulgular: *Araştırmaya katılan bireylerin çoğunlukla 44–56 yaş aralığında olduğu, cinsiyet, çalışma durumu, tedavi planının değişme durumu, hastaneye ulaşmada zorluk ve hastalık evresi ile aktif tedavi alma durumları arasında istatistiksel olarak anlamlı bir ilişki olmadığı görüldü (p>0,05). Salgın sürecinde hastane personelinden COVID-19 kapma korkusu yaşayan (%68,60) ve COVID-19'un tedavi planını değiştirdiğini (%58,97) belirten hastaların çoğunlukla aktif tedavi almadığı belirlendi. Aktif tedavi alan bireylerin ise anksiyete, depresyon ve stres belirti düzeylerinde demografik özelliklere göre istatistiksel olarak anlamlı bir farklılık olmadığı görüldü. (p>0,05).*

Sonuç: *Coronavirüs salgını sırasında hastalığın ilerlemesi konusunda endişeli olan bireylerin anksiyete, depresyon ve stres düzeylerinin daha yüksek olduğu görüldü. Bu bilgiler doğrultusunda COVID-19 pandemisindeki tedavi kılavuzlarına hastaların bakış açılarının da eklenmesi önerilir.*

Anahtar kelimeler: *kanser; COVID-19; endişe; depresyon; stres*

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Introduction

The Coronavirus Pandemic 2019 (COVID-19) has led to significant changes in healthcare services worldwide[1]. Current evidence suggests that severe illness following COVID-19 infection may occur in older people, those with suppressed immune systems, and those with chronic diseases. Therefore, it is known that cancer patients, especially those undergoing systemic cancer treatments, are more susceptible to COVID-19 infection[2–3]. A study found that cancer patients have higher rates of intensive care unit admissions and COVID-19-related mortality compared to other patients[4]. This is thought to be due to the need for immunosuppressive treatment or more frequent clinical follow-up of patients on active treatment[3]. Considering these factors, both healthcare workers and patients face uncertainties. During this period, delays in chronic disease care and treatment have also been reported[1,3]. As a result, the pandemic poses significant challenges for those undergoing anti-cancer treatment[5–6].

In addition, cancer patients have additional psychological challenges in coping with a cancer diagnosis during the pandemic. This situation has shown that patients experience problems related to anxiety, depression, and stress[7–8]. Furthermore, treatment delays due to the pandemic, prevention of face-to-face clinic visits, or increased uncertainty with restrictions in daily life have also led to various psychological disorders such as anxiety, depression, and panic disorder[9–10].

Cancer is a group of diseases whose diagnosis, treatment, follow-up and consequences need to be considered in great detail. Therefore, international communities and committees have developed guidelines for oncologists. However, these guidelines are based solely on expert opinions. Similarly, there is currently no scientific evidence regarding the impact of COVID-19 on oncological care and the opinions of cancer patients[11].

Changes in cancer care due to the pandemic, uncertainties such as treatment delays, have contributed to fears experienced by cancer patients[12–14]. Healthcare is not limited to controlling and saving the lives of patients infected with COVID-19. It must also provide medical care for patients with other health issues unrelated to COVID-19. During the pandemic, there are limited studies on the impact of COVID-19 and patients' opinions on treatment and its effect on stress, anxiety and depression. Analyzing the negative effects of the pandemic from the patients' perspective is crucial for guiding healthcare professionals and finding solutions to problems. This unique situation will allow the evaluation of the additional psychological state caused by the COVID-19 pandemic in cancer patients.

This study aimed to analyze the impact of the COVID-19 pandemic on patients' views on cancer treatment and monitoring during the COVID-19 pandemic on their levels of stress, anxiety, and depression.

Research Questions:

This research will be undertaken to answer the following questions:

1. Is there a relationship between individuals' active treatment status and demographic data?
2. Is there a relationship between individuals' perspectives on the COVID-19 pandemic and their active treatment status?
3. Is there a difference between individuals' anxiety, depression and stress symptom levels according to their active treatment status?

Materials and Methods

Study Design and Participants

The population of this cross-sectional study consisted of patients admitted to the oncology outpatient clinic of Gülhane Training and Research Hospital between June 15, 2021, and July 15, 2021. Cross-sectional studies are a research method that aims to examine the current status of a group at a specific time period. In this study, purposive sampling was selected. 284 patients were admitted to the oncology outpatient clinic during the specified period. These were patients already diagnosed with cancer and are following up on their treatment or check-up visits at the outpatient clinic during the period of the COVID-19 pandemic. If the same patient had multiple hospital admissions within the study dates, they were included only once. Four patients who did not meet the inclusion criteria, 32 patients who had repeat examinations, and 22 patients who did not agree to participate were excluded from the study, resulting in a total of 226 patients included in the study.

Inclusion Criteria:

- had a diagnosis of cancer,
- age of 18–80 years,
- were able to read, write, and understand Turkish

Exclusion Criteria:

- severe cognitive impairment,
- severe psychiatric disorder,
- unable to speak Turkish

Ethics Committee Approval

Gülhane Training and Research Hospital of the University of Health Sciences Clinical Research Ethics Committee (26.05.2021) approved the conduct of the study with protocol decision 2021/31. Gülhane Training and Research Hospital Medical Specialization Education Board, with the decision number E-50487468–131 and Ministry of Health scientific research permit form number 2020–07–14T12_51_00, allowed the study to be carried out. After providing the necessary information about the study, informed consent was obtained from participating patients.

Data Collection

The research data were collected using the COVID-19 Impact Assessment Questionnaire and the Depression Anxiety Stress Scale (DASS-21).

The researcher collected the study's data using a face-to-face interview technique. Brief information about the study was given to cancer patients who applied to the Oncology Outpatient Clinic of Gülhane Training and Research Hospital between June 15 and July 15, 2021. Administering the data collection forms took approximately 20 minutes.

COVID-19 Impact Assessment Questionnaire

To assess the psychological impact of the pandemic on cancer patients, a 13-item questionnaire form was created based on literature[2,4,12,14]. The questionnaire consisted of two parts. The first part included five items related to patients' demographic characteristics: age, gender, employment status, type of illness, and disease stage. The second part consisted of eight items related to the impact of COVID-19, including experiencing difficulties in accessing the hospital during the COVID-19 outbreak, concerns about the progression of the disease, fear of contracting COVID-19 from patients or hospital staff, the impact of the pandemic on seeking treatment or follow-up at the hospital, changes in treatment plans due to the pandemic and how they were changed, and the impact of income loss due to the pandemic. Patients were asked to answer the questions using "yes," "no," and "multiple-choice" options.

Depression Anxiety Stress Scale (DASS-21)

The Depression Anxiety Stress Scale (DASS) was developed by Lovibond and Lovibond[15]. The validity and reliability study of the short form of the scale was conducted by Yilmaz, Boz, and Arslan[16]. The scale is designed to measure symptoms of depression, anxiety and stress and consists of 21 items. The score range of 0–9 on the scale indicates normal depression, 0–7 indicates normal anxiety, and 0–14 indicates normal stress. 7 items measure each dimension of depression, stress, and anxiety. The responses in the scale are coded as 0 "never," 1 "sometimes," 2 "often," and 3 "always." Items 1, 3, 10, 13, 15, 19, 20 are related to anxiety, items 2, 6, 8, 11, 14, 16, 21 are related to depression, and items 4, 5, 7, 9, 12, 17, 18 are related to stress.

Descriptive statistics and Cronbach's Alpha reliability coefficient results obtained from the total and sub-dimensions of the Depression, Anxiety and Stress Scale for the individuals who participated in the study are as follows. The mean scores for the anxiety subscale were 1.16, for the depression subscale were 1.47, for the stress subscale were 1.33, and for the total DASS scores were 1.32. The skewness and kurtosis coefficients of the individuals' depression, anxiety, and stress scale subscales and total scores were within the ±2 range, indicating that the data was suitable for univariate normal distribution[17]. On the other hand, Cronbach's Alpha coefficients for the depression, anxiety, and stress scale subscales and overall scores were 0.626, 0.681, 0.719, and 0.838, respectively.

Statistical Analysis

Statistical analyses were performed with Statistical Package for Social Sciences (IBM Statistical Package for Social Sciences (SPSS) program version) software, 20.0 version. During the statistical analysis stage of the study, chi-square association tests, descriptive statistics, and mean comparison tests were performed. In the first stage, chi-square tests were used to compare

the frequencies of the variables obtained by census in terms of groups of a variable. In the second stage, descriptive statistics values and Cronbach's alpha reliability coefficient results were presented based on the general and subscale scores of the scale used in the study. The descriptive statistics included mean (M), standard deviation (SD), minimum (Min), maximum (Max), skewness (Skew), and kurtosis (Kurt) values. At this stage, the skewness and kurtosis coefficients of the scores were examined, and it was found that these coefficients were within the ±2 range. According to this finding, the measurement scores were suitable for univariate normal distribution. For the measurement scores that were suitable for univariate normal distribution, independent samples t-tests were conducted to compare two independent groups, and ANOVA tests were conducted to compare three or more independent groups. Tukey test was used for multiple comparisons of the groups found to be significant in the ANOVA test[17–18].

Results

This study involved 226 patients. The ratio of males to females was 132:94, and the mean age was 51 (range, 28–74). Table 1 provides the basic demographic characteristics and active treatment status of the patients included in the study.

Table 2 presents the experiences of the patients included in the study with the COVID-19 pandemic and their active treatment status. The majority of individuals who experienced difficulty in reaching the hospital during the COVID-19 outbreak (60.71%) were concerned about the progression of their illness (69.48%), feared contracting COVID-19 from other patients or hospital staff (68.60%) and indicated that they had changed their treatment plans (58.97%) mostly did not receive active treatment. It was determined that most of the individuals (76.87%) whose admission to the hospital for treatment or follow-up was not affected during the COVID-19 pandemic did not receive active treatment.

Table 1. *Relationship between individuals' demographic characteristics and active treatment status*

Variable	Receiving Active Treatment n (%)	Not Receiving Active Treatment n (%)	Sum n (%)	p
Age groups				
18–30 years	3(42.86)	4(57.14)	7(3.10)	0.344[F]
31–43 years	15(39.47)	23(60.53)	38(16.81)	
44–56 years	31(30.39)	71(69.61)	102(45.13)	
57–69 years	17(23.61)	55(76.39)	72(31.86)	
70–82 years	1(14.29)	6(85.71)	7(3.10)	
Gender				
Male	35(26.52)	97(73.48)	132(58.41)	0.283[P]
Female	32(34.04)	62(65.96)	94(41.59)	
Employment status				
Yes	32(30.19)	74(69.81)	106(46.90)	0.982[P]
None	35(29.17)	85(70.83)	120(53.10)	
Disease stage				
1	5(26.32)	14(73.68)	19(8.41)	0.965[F]
2	44(30.56)	100(69.44)	144(63.72)	
3	18(29.03)	44(70.97)	62(27.43)	
4	0(0.00)	1(100.00)	1(0.44)	
Cancer Type				
Lung	8(24.24)	25(75.75)	33(14.6)	0.973[F]
Breast	5(15.16)	28(84.85)	33(14.6)	
Colon	5(23.81)	16(76.19)	21(9.3)	
Hematologic cancers	12(38.7)	19(61.29)	31(13.7)	
Urogenital cancers	7(18.91)	30(81.08)	37(16.4)	
Other cancers	20(28.16)	51(71.83)	71(31.42)	

F: Fisher's test; Y: Yates correction; P: Pearson Chi-square test

Table 2. *Relationship between individuals' perspectives on the COVID-19 pandemic and their status of receiving active treatment*

Variable	Receiving Active Treatment n (%)	Not Receiving Active Treatment n (%)	Sum n (%)	p
Experiencing any difficulty in accessing the hospital during the COVID-19 outbreak				
Yes	11(39.29)	17(60.71)	28(12.39)	0.331[Y]
None	56(28.28)	142(71.72)	198(87.61)	
Concern about disease progression during the COVID-19 outbreak				
Yes	65(30.52)	148(69.48)	213(94.25)	0.354[F]
None	2(15.38)	11(84.62)	13(5.75)	
Fear of contracting COVID-19 infection from other patients or hospital staff				
Yes	65(31.40)	142(68.60)	207(91.59)	0.100[Y]
None	2(10.53)	17(89.47)	19(8.41)	
Impact of the COVID-19 period on seeking treatment or follow-up at the hospital				
Same	31(23.13)	103(76.87)	134(59.29)	0.001[P]
Less	15(27.78)	39(72.22)	54(23.89)	
More	21(55.26)	17(44.74)	38(16.81)	
Effect of the COVID-19 outbreak on changing treatment plans				
Yes	16(41.03)	23(58.97)	39(17.26)	0.129[Y]
None	51(27.27)	136(72.73)	187(82.74)	
Type of change in treatment plan				
Surgery postponed	1(16.67)	5(83.33)	6(15.38)	0.052[F]
Chemotherapy postponed	12(57.14)	9(42.86)	21(53.85)	
Radiotherapy postponed	0(0.00)	5(100.00)	5(12.82)	
Chemotherapy ended earlier than planned	2(28.57)	5(71.43)	7(17.95)	
Consideration of factors contributing to the decision to change treatment plans				
Concern about COVID-19 exposure risk	9(50.00)	9(50.00)	18(46.15)	0.291[F]
Hospital/clinic rules related to COVID-19	1(14.29)	6(85.71)	7(17.95)	
Transportation concern	5(35.71)	9(64.29)	14(35.90)	
Loss of job/income due to COVID-19				
Yes	10(45.45)	12(54.55)	22(9.73)	0.143[Y]
None	57(27.94)	147(72.06)	204(90.27)	

F: Fisher's test; Y: Yates correction; P: Pearson Chi-square test

Table 3 shows the results of the comparison of individuals' depression levels based on their active treatment status, demographic characteristics, and perspectives on the COVID-19 pandemic. A statistically significant difference was found in the depression levels of individuals receiving and not receiving active treatment, based on their concerns about the progression of the disease during the COVID-19 pandemic, changing their treatment plan and their employment status ($p<0.05$).

Table 4 displays the results of the comparison of individuals' anxiety levels based on their active treatment status, demographic characteristics, and perspectives on the pandemic. It was found that there was a statistically significant difference in the anxiety levels of individuals who were not receiving active treatment compared to their anxiety about the progression of the disease during the COVID-19 pandemic ($p<0.05$).

Table 5 compares individuals' stress levels based on their active treatment status, demographic characteristics, and perspectives on the pandemic. It was determined that the stress levels of individuals not receiving active treatment were statistically significant regarding whether they were admitted to the hospital for treatment or follow-up during this period ($p<0.05$).

Table 3. *Comparison of individuals' depression levels based on their status of receiving active treatment, demographic characteristics, and perspectives on the pandemic*

Variable	Receiving Active Treatment	Not Receiving Active Treatment	General
Age groups			
18–30 years	1.71±0.14	1.39±0.54	1.53±0.43
31–43 years	1.64±0.30	1.57±0.43	1.59±0.38
44–56 years	1.47±0.41	1.46±0.43	1.46±0.42
57–69 years	1.48±0.39	1.41±0.43	1.43±0.42
70–82 years	1.71±0.00	1.21±0.31	1.29±0.34
Test Request	-	1043	1472
p	-[N]	0.387[A]	0.212[A]
Gender			
Male	1.52±0.38	1.41±0.45	1.44±0.43
Female	1.52±0.37	1.52±0.38	1.52±0.37
Test Request	0001	-1.65	-1512
p	0.999[T]	0.101[T]	0.132[T]
Employment status			
Yes	1.59±0.36	1.53±0.43	1.55±0.41
None	1.46±0.38	1.38±0.41	1.40±0.40
Test Request	1513	2178	2657
p	0.135[T]	0.031[T]	0.008[T]
Disease stage			
1	1.54±0.37	1.27±0.41	1.34±0.41
2	1.51±0.39	1.47±0.43	1.48±0.42
3	1.56±0.35	1.45±0.41	1.48±0.40
4	-	1.71±0.00	1.71±0.00
Test Request	-	-	-
p	-[N]	-[N]	-[N]
Experiencing any difficulty in accessing the hospital during the COVID-19 outbreak			
Yes	1.43±0.40	1.27±0.52	1.33±0.48
None	1.54±0.37	1.47±0.41	1.49±0.40
Test Request	0912	-1865	1928
p	0.365[T]	0.064[T]	0.055[T]
Concern about disease progression during the COVID-19 outbreak			
Yes	1.54±0.37	1.47±0.41	1.49±0.40
None	1.07±0.10	1.10±0.48	1.10±0.44
Test Request	-	2855	3443
p	-[N]	0.005[T]	0.001[T]
Fear of contracting COVID-19 infection from other patients or hospital staff			
Yes	1.53±0.37	1.46±0.41	1.48±0.40
None	1.14±0.20	1.37±0.52	1.35±0.50
Test Request	-	0815	1389
p	-[N]	0.416[T]	0.166[T]
Impact of the COVID-19 period on seeking treatment or follow-up at the hospital			
Same	1.52±0.40	1.50±0.43	1.50±0.42
Less	1.53±0.40	1.40±0.42	1.44±0.41
More	1.52±0.32	1.25±0.35	1.40±0.35
Test Request	0009	2837	1195
p	0.991[A]	0.062[A]	0.305[A]
Effect of the COVID-19 outbreak on changing treatment plans			
Yes	1.52±0.40	1.43±0.44	1.47±0.42
None	1.52±0.37	1.45±0.42	1.47±0.41
Test Request	-0095	-0251	-0095
p	0.924T	0.802T	0.924T
How the treatment plan changed			
Surgery postponed	1.43±0.00	1.57±0.23	1.55±0.21
Chemotherapy postponed	1.46±0.38	1.11±0.50	1.31±0.46
Radiotherapy postponed	-	1.54±0.51	1.54±0.51
Chemotherapy ended earlier than planned	2.07±0.10	1.63±0.13	1.76±0.24
Test Request	-	2549	2300
p	-[N]	0.085[A]	0.094[A]
Consideration of factors contributing to the decision to change treatment plans			
Concern about COVID-19 exposure risk	1.76±0.30	1.56±0.39	1.66±0.36[A]
Hospital/clinic rules related to COVID-19	1.00±0.00	1.62±0.12[A]	1.53±0.26
Transportation concern	1.26±0.29	1.11±0.50[B]	1.16±0.43[B]
Test Request	-	3995	7168
p	-[N]	0.034[A]	0.002[A]
Loss of your job/income or primary source of income due to COVID-19			
Yes	1.44±0.43	1.45±0.44	1.45±0.42
None	1.54±0.36	1.45±0.43	1.47±0.41
Test Request	0729	-0027	-0274
p	0.469[T]	0.979[T]	0.784[T]

A-B: No difference between groups with the same letter; T: Independent samples t-test; A: ANOVA test; N: The test result could not be calculated due to insufficient observations.

Table 4. *Comparison of individuals' anxiety levels based on their status of receiving active treatment, demographic characteristics, and perspectives on the pandemic*

Variable	Receiving Active Treatment	Not Receiving Active Treatment	General
Age groups			
18–30 years	1.43±0.14	0.79±0.36	1.06±0.44
31–43 years	1.30±0.36	1.18±0.40	1.23±0.39
44–56 years	1.14±0.37	1.15±0.38	1.15±0.37
57–69 years	1.24±0.32	1.13±0.30	1.15±0.31
70–82 years	1.86±0.00	1.02±0.41	1.14±0.49
Test Request	-	1226	0474
p	-[N]	0.302[A]	0.755[A]
Gender			
Male	1.20±0.32	1.11±0.35	1.14±0.34
Female	1.25±0.40	1.17±0.38	1.19±0.39
Test Request	-0468	-0964	-1196
p	0.641[T]	0.337[T]	0.233[T]
Employment status			
Yes	1.23±0.34	1.14±0.39	1.17±0.38
None	1.22±0.38	1.13±0.33	1.15±0.35
Test Request	0082	0231	0256
p	0.935[T]	0.818[T]	0.798[T]
Disease stage			
1	1.23±0.24	1.03±0.35	1.08±0.33
2	1.19±0.31	1.16±0.36	1.17±0.34
3	1.32±0.49	1.11±0.36	1.17±0.41
4	-	1.14±0.00	1.14±0.00
Test Request	-	-	-
p	-	-	-
Experiencing any difficulty in accessing the hospital during the COVID-19 outbreak			
Yes	1.38±0.41	1.08±0.46	1.19±0.46
None	1.19±0.35	1.14±0.35	1.16±0.35
Test Request	1557	-0707	0521
p	0.124[T]	0.481[T]	0.603[T]
Concern about disease progression during the COVID-19 outbreak			
Yes	1.22±0.36	1.16±0.34	1.18±0.35
None	1.21±0.30	0.77±0.41	0.84±0.42
Test Request	-	3656	3429
p	-	<0.001[T]	0.001[T]
Fear of contracting COVID-19 infection from other patients or hospital staff			
Yes	1.23±0.36	1.14±0.35	1.17±0.36
None	1.00±0.00	1.08±0.44	1.08±0.41
Test Request	-	0605	1078
p	-	0.546[T]	0.282[T]
Impact of the COVID-19 period on seeking treatment or follow-up at the hospital			
Same	1.17±0.35	1.15±0.36	1.16±0.36
Less	1.25±0.39	1.09±0.37	1.13±0.38
More	1.29±0.35	1.13±0.34	1.22±0.35
Test Request	0813	0460	0659
p	0.448[A]	0.632[A]	0.518[A]
Effect of the COVID-19 outbreak on changing treatment plans			
Yes	1.27±0.38	1.15±0.35	1.20±0.36
None	1.21±0.36	1.13±0.36	1.15±0.36
Test Request	0708	0219	0708
p	0.480[T]	0.827[T]	0.480[T]
How the treatment plan changed			
Surgery postponed	1.14±0.00	1.09±0.26	1.10±0.23
Chemotherapy postponed	1.27±0.43	0.98±0.44	1.15±0.45
Radiotherapy postponed	-	1.43±0.27	1.43±0.27
Chemotherapy ended earlier than planned	1.21±0.10	1.17±0.16	1.18±0.14
Test Request	-	2000	0923
p	-	0.146[A]	0.440[A]
Consideration of factors contributing to the decision to change treatment plans			
Concern about COVID-19 exposure risk	1.29±0.32	1.29±0.29	1.29±0.29
Hospital/clinic rules related to COVID-19	0.57±0.00	1.14±0.22	1.06±0.30
Transportation concern	1.34±0.44	0.98±0.44	1.11±0.46
Test Request	-	1772	1395
p	-	0.194[A]	0.261[A]
Loss of your job/income or primary source of income due to COVID-19			
Yes	1.13±0.20	0.98±0.26	1.05±0.24
None	1.24±0.38	1.15±0.36	1.17±0.37
Test Request	0907	-1.59	-1581
p	0.368[T]	0.114[T]	0.115[T]

A-B: No difference between groups with the same letter; T: Independent samples t-test; A: ANOVA test; N: The test result could not be calculated due to insufficient observations.

Table 5. *Comparison of individuals' stress levels based on their status of receiving active treatment, demographic characteristics, and perspectives on the pandemic*

Variable	Receiving Active Treatment	Not Receiving Active Treatment	General
Age groups			
18–30 years	1.71±0.62	1.04±0.61	1.33±0.67
31–43 years	1.37±0.47	1.25±0.35	1.30±0.40
44–56 years	1.30±0.49	1.32±0.41	1.32±0.43
57–69 years	1.33±0.49	1.37±0.46	1.36±0.47
70–82 years	1.86±0.00	1.21±0.50	1.31±0.52
Test Request	-	0893	0163
p	-[N]	0.470[A]	0.957[A]
Gender			
Male	1.38±0.47	1.31±0.42	1.33±0.44
Female	1.32±0.51	1.34±0.43	1.33±0.46
Test Request	0559	-0500	-0100
p	0.578[T]	0.618[T]	0.921[T]
Employment status			
Yes	1.41±0.51	1.36±0.38	1.37±0.42
None	1.30±0.47	1.28±0.46	1.29±0.46
Test Request	0877	1138	1448
p	0.384[T]	0.257[T]	0.149[T]
Disease stage			
1	1.20±0.48	1.19±0.38	1.20±0.40
2	1.34±0.50	1.32±0.42	1.32±0.45
3	1.43±0.45	1.36±0.45	1.38±0.45
4	-	1.29±0.00	1.29±0.00
Test Request	-	-	-
p	-[N]	-[N]	-[N]
Experiencing any difficulty in accessing the hospital during the COVID-19 outbreak			
Yes	1.23±0.47	1.20±0.45	1.21±0.45
None	1.38±0.49	1.33±0.42	1.35±0.44
Test Request	-0882	-1212	-1470
p	0.381[T]	0.227[T]	0.143[T]
Concern about disease progression during the COVID-19 outbreak			
Yes	1.38±0.47	1.35±0.42	1.36±0.43
None	0.57±0.40	0.96±0.41	0.90±0.42
Test Request	-	2966	3686
p	-	0.003[T]	<0.001[T]
Fear of contracting Corona infection from other patients or hospital staff			
Yes	1.36±0.49	1.33±0.43	1.34±0.45
None	1.21±0.51	1.23±0.38	1.23±0.38
Test Request	-	0952	1066
p	-[N]	0.343[T]	0.288[T]
Impact of the COVID-19 period on seeking treatment or follow-up at the hospital			
Same	1.38±0.47	1.37±0.41[A]	1.37±0.42
Less	1.34±0.37	1.29±0.45	1.30±0.43
More	1.31±0.59	1.09±0.42[B]	1.21±0.53
Test Request	0009	3299	2005
p	0.991[A]	0.040[A]	0.137[A]
Effect of the COVID-19 outbreak on changing treatment plans			
Yes	1.28±0.44	1.36±0.49	1.33±0.46
None	1.38±0.50	1.31±0.42	1.33±0.44
Test Request	-0051	0491	-0051
p	0.959[T]	0.624[T]	0.959[T]
How the treatment plan changed			
Surgery postponed	1.43±0.00	1.40±0.27	1.40±0.25
Chemotherapy postponed	1.26±0.33	1.06±0.55	1.18±0.44
Radiotherapy postponed	-	1.69±0.43	1.69±0.43
Chemotherapy ended earlier than planned	1.79±0.51	1.43±0.39	1.53±0.42
Test Request	-	2195	2842
p	-[N]	0.120[A]	0.052[A]
Consideration of factors contributing to the decision to change treatment plans			
Concern about COVID-10 exposure risk	1.49±0.37	1.57±0.46	1.53±0.41[A]
Hospital/clinic rules related to COVID-19	1.14±0.00	1.40±0.17	1.37±0.18
Transportation concern	1.11±0.27	1.06±0.55	1.08±0.46[B]
Test Request	-	2970	5031
p	-[N]	0.073[A]	0.012[A]
Loss of your job/income or primary source of income due to COVID-19			
Yes	1.23±0.43	1.36±0.48	1.30±0.45
None	1.37±0.49	1.32±0.42	1.33±0.44
Test Request	-0870	0314	-0340
p	0.388[T]	0.754[T]	0.734[T]

A-B: No difference between groups with the same letter; T: Independent samples t-test; A: ANOVA test; N: The test result could not be calculated due to insufficient observations.

Discussion

In this study, the perspectives of cancer patients on COVID-19 were evaluated along with their levels of anxiety, depression, and stress. The study found that patients not receiving active treatment were more concerned about the progression of the disease and afraid of contracting COVID-19 during the pandemic.

COVID-19 has rapidly spread globally, affecting numerous communities. In addition to its high mortality and morbidity rates, strict isolation measures and quarantines have created serious fear and anxiety in society. Those with chronic illnesses, especially cancer patients, have been particularly affected by the COVID-19 pandemic[9].

During the pandemic, ensuring the safe delivery of cancer treatments was a priority at the institution where the research was conducted. The main goal was to minimize patients' exposure to COVID-19 without compromising the effectiveness of treatment. Treatment plans for patients were determined by oncologists, considering factors such as the patient's disease status, treatment goals, age, and comorbidities. In-hospital admissions for treatment were limited to reduce the risk of hospital-acquired infections, thereby managing expected capacity issues. While most patients receiving active treatment continued their treatments without changes, appointments for patients not receiving active treatment were postponed for a certain period to reduce the risk of infection. Our study observed that most individuals who experienced difficulties in reaching the hospital during the COVID-19 outbreak feared COVID-19. The fear of disease progression can explain this concern. Given the capacity issues and priority to triaging patients receiving active treatment, this fear is reasonable.

In our study, the impact of patients' demographic characteristics on anxiety, stress, and depression levels was not found to be statistically significant. However, some studies have shown that women report more anxiety, stress, and fear compared to men with cancer[19,20]. Kang et al.[21] demonstrated in their study that COVID-19 has a greater psychological impact on young people, suggesting that personal and psychological risk factors may play a role. The predominance of male participants, mostly in the middle-aged group in our study, supported these findings. In our research, it was observed that the majority of individuals who lost their job/income or primary source of income due to COVID-19 did not receive active treatment. In contrast, a study by Romito et al.[20] reported that only 5% of patients experienced financial difficulties. In some regions of Türkiye, men tend to be the main earners in their families. This situation may have further increased the concerns of individuals who did not receive active treatment, as they faced not only the disease but also the loss of their income source during the COVID-19 pandemic, affecting them socially and economically.

In our study, a statistically significant difference was found in the depression levels during the COVID-19 pandemic ($p<0.05$). In light of these findings, the depression levels of individuals who were concerned about the progression of the disease during the COVID-19 pandemic were higher than those of individuals who were not concerned. The stress levels of individuals concerned about the progression of the disease during the COVID-19 pandemic were also higher compared to those not concerned. Additionally, individuals who decided to change their treatment plan due to hospital/clinic rules related to COVID-19 had higher levels of depression, stress, and anxiety. Consistent with our study, Qian et al.[22] showed in their study that more than half of cancer patients experienced anxiety, depression, or fear related to COVID-19. In a study by Wang et al.[23] it was found that 62% of cancer patients experienced anxiety related to the pandemic, which was one-third higher than the general population. In another study, depressive symptoms were reported in 31% of cancer patients[20]. In a similar study by Gebbia et al.[24] the needs and fears of 446 cancer patients were assessed via text messages, revealing significant fear and negative thoughts among the patients. In another study conducted in the Netherlands, many patients reported concerns about the impact of the COVID-19 pandemic on their follow-up and treatment[11]. These studies support the data from our study, showing that those concerned about the progression of the disease had higher depression scores. This could be due to the lack of face-to-face communication with staff in oncology departments, the risk of receiving less information about treatment side effects and cancer symptoms, and concerns about interruptions in antineoplastic treatments due to reduced outpatient visits. This situation could also be explained by the burden of cancer and the need to cope with the challenges brought by the pandemic.

In this study, the impact of the pandemic on the stress, anxiety, and depression levels of cancer patients was evaluated. At the end of the study, it was observed that cancer patients who had previously received treatment but were currently not undergoing active treatment were worried

about the progression of their disease. This may be due to their knowledge of a poor prognosis and their concern that their disease might worsen further during the COVID-19 pandemic. Additionally, patients who were more informed about chemotherapy or other treatments may have been more concerned about COVID-19 infection due to receiving explanations about the immunosuppressive effects of oncological treatments and the possibilities of complications resulting from COVID-19.

Conclusion

In conclusion, the COVID-19 pandemic has had inevitable consequences for health systems. This study showed that most patients are generally quite worried about their oncological treatment or follow-up. In this study, it was found that there was a statistically significant difference between the depression, stress and anxiety levels of all patients and their concerns about the progression of the disease ($p<0.05$). These findings suggest that existing guidelines on treating oncology patients and/or delaying or deferring treatment should be discussed in detail and customized according to disease condition, stage and treatment goal. They also suggested that patients should benefit from enhanced psycho-oncological support during a prolonged outbreak.

Limitations and Recommendation

The study's potential limitation is that it did not include detailed questions about patients' clinical data and cancer histories. Data were collected based on patient self-report. One of the most important limitations of the study is the lack of a healthy control group. Additionally, the fact that the study was conducted only in one hospital and the relatively small sample size are other limitations.

Future research should identify additional factors that contribute to heightened stress, anxiety, and depression levels among cancer patients and how these factors may vary with vaccination status, social media and other important determinants of health.

Ethics Committee Approval

Gülhane Training and Research Hospital of the University of Health Sciences Clinical Research Ethics Committee (26.05.2021) approved the conduct of the study with protocol decision 2021/31. After the necessary information about the study was provided, informed consent was obtained from the patients participating in the study.

Conflict of Interest

No conflict of interest was declared by the authors.

Author Contributions

Concept – NYŞ, AD; Supervision – AD; Materials – NYŞ; Data Collection and/or Processing – NYŞ; Analysis and/ or Interpretation – AD; Writing –NYŞ.

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