



## ORIGINAL ARTICLE / ОРИГИНАЛНИ РАД

# Anxiety and depression in individuals with and without cancer during the early COVID-19 pandemic period

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**Introduction/Objective** The COVID-19 disease, which has turned into an important public health problem, has negatively affected individuals not only physically but also psychologically.

The aim of this study is to examine the anxiety and depression status of cancer patients, comparing to individuals with non-cancer chronic diseases and healthy individuals during the COVID-19 pandemic period.

**Methods** This cross-sectional study was conducted during the COVID-19 pandemic period between May 8 and June 25 2020 with 1107 people in Turkey. The mean age of the participants in the study was  $36.41 \pm 12.80$ . The sample comprised three groups: cancer group ( $n = 262$ ), chronic disease control group ( $n = 250$ ), and healthy control group ( $n = 595$ ). The data were collected with the Descriptive Characteristics Form and Hospital Anxiety and Depression Scale.

**Results** The anxiety and depression scores were found to be higher in patients with cancer comparing to the other two groups. Having cancer was predictive of higher anxiety and depression score explaining 13% of the anxiety scores variance and 17% of the depression scores variance. Patients with the non-cancer chronic diseases, and healthy participants had anxiety and depression mean scores in the range of the borderline level.

**Conclusion** These findings suggest that depression and anxiety rates among patients with cancer are specifically higher comparing to patients with other chronic diseases and healthy individuals. The levels of anxiety and depression in the latter two groups should also be paid attention to during the pandemic. This study may have important practical implications in terms of the need for psychological screening.

**Keywords:** COVID-19; anxiety; depression; cancer; chronic disease

**INTRODUCTION**

The COVID-19 disease, which is a significant health threat for the entire human population, is more severe in people with chronic diseases [1]. The COVID-19 pandemic has turned into an important public health problem due to considerable risks for physical health, but has also been negatively affecting individuals psychologically. Recent studies have demonstrated that anxiety and depression rates have increased in the society during the COVID-19 pandemic [2, 3]. Factors such as fear of illness and death, uncertainty of the pandemic process, and uncertain daily life, all cause psychological stress in individuals [4]. During the pandemic, stress and anxiety especially develop in individuals who have chronic diseases [5]. In literature, it has been stated that cancer patients have experienced high levels of depression and anxiety [6]. To our knowledge, no comparative studies investigating the anxiety and depression status of individuals with cancer, individuals with non-cancer chronic diseases, and healthy controls have been encountered.

Cancer patients are immunosuppressed due to malignancy itself or treatments such as

chemotherapy, radiotherapy and surgery, and this makes them vulnerable to infections [1]. The concerns of cancer patients about getting infected and sick, hospitalization and death are higher than the general population [7]. Factors such as social isolation, fear of sickness, and death of other patients increase the probability of depression in cancer patients. Reasons such as being in a high risk group, having to go to hospitals, which are the places with a high risk of infection, and thinking about the possible harms of their treatment may negatively affect the psychological functioning of cancer patients [4]. On the other hand, the focus of the entire society on the intense events of the pandemic, on disease, hospitalization and death, may be something that cancer patients and the rest of the individuals have in common now, distracting the cancer patients from their more personal perspective of problems, and possibly alleviating their negative feelings.

Individuals with chronic diseases are at higher risk of anxiety and depression compared to the healthy population [8]. This is very important as it may impair adherence to the treatment and directly worsen disease outcomes by adding psychological stress to physiological

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stress [9]. Cancer patients are a more vulnerable patient group among those with chronic diseases. Decreased adherence to the treatments and delayed follow-up screenings can lead to irreversible negative outcomes [10]. In extraordinary situations like pandemic, it is important to know the psychological status of high-risk individuals, as well as of the general population [11]. Since COVID-19 can affect individuals with chronic diseases in multiple ways, it has been reported in literature that providing adequate care and support is a matter that specifically needs attention [8]. COVID-19-related anxiety influenced the decision-making processes of the patients [12]. Cancer patients expressed that they were deprived of social support as they could not talk to healthcare providers during the COVID-19 period [13]. It is important to determine the distress status of the cancer patients. Online screening programs are gaining significance within the scope of isolation measures.

Studies have been carried out to determine the anxiety and depression level of the society during COVID-19; however, there are few studies comparing the cancer patients and the healthy population [14, 15]. There are contradictory data regarding whether the anxiety and depression rates of cancer patients are higher than the healthy population during the pandemic [16, 17]. In a study from China, 23.4% of the cancer patients had depression and 17.7% had anxiety during the pandemic, but only 1.6% of these patients received psychological support [18]. Determination of specific groups may help with developing intervention programs. In this sense, it is significant to identify the anxiety and depression status of individuals with cancer, individuals with non-cancer chronic diseases and healthy individuals. Cancer patients who avoid going to the hospital even because of their treatments can be screened in terms of depression and anxiety with an online questionnaire. In this context, we anticipate that our work will set an example.

The aim of the study described in this paper was to evaluate and compare the anxiety and depression status of cancer patients, individuals with non-cancer chronic diseases and healthy individuals during the early COVID-19 period with an online screening program.

## METHODS

### Study design

This cross-sectional study was conducted in Istanbul, Turkey during the COVID-19 pandemic period between May 8 and June 25, 2020.

### Participants

The study sample comprised three groups, the group of patients with cancer (C), the group of patients with other chronic diseases (CD), and the group of healthy subjects (H). A simple random sampling method performed by a computer was used in selecting the participants from 7,000 individuals whose information was available at the

University of Health Sciences Sultan 2. Abdülhamid Han Training and Research Hospital automation system. The computer program enumerates the items in the sampling frame, determines the automatically produced random numbers, and presents the selected items to the researcher in writing or digitally. The sample groups were randomly selected from the groups of cancer patients (records of the oncology department), of patients with non-cancer chronic diseases (records of the internal medicine clinic) and of those without any diseases (individuals with general health screening code, who were referred to the hospital for various reasons such as recruitment, or military service application).

To assess the eligibility for the study, the participants' diagnoses recorded in the electronic medical records were examined. Patients with chronic diseases were eligible if they had diabetes mellitus, hypertension, neurological diseases, asthma, chronic obstructive pulmonary disease, other pulmonary diseases, cardiovascular diseases, or hypothyroidism. Patients with conditions other than the aforementioned ones who had the long-term use of medication and/or were followed up for any chronic disease (rheumatic disease, endocrinal disorders, liver disease, kidney diseases) were also eligible (classified as other chronic diseases).

Existing diseases were determined according to the diagnoses written according to the ICD-10 classification. The patients with any diagnosed psychiatric disorder (anxiety and depressive disorders, bipolar disorder, psychosis, obsessive-compulsive disorder, etc.), intellectual disability, Alzheimer's disease or other forms of dementia were excluded from the study. The patients were also excluded from the study if they reported having these comorbidities within the descriptive characteristics form. Finally, the patients who had both cancer and other comorbid chronic disease were excluded from the study as well.

To determine the sample size, a power analysis was conducted in the G-Power 3.1 program (G-Power, Aichach, Germany) by taking into consideration the values of the data obtained from a similar study in the literature [19]. The t-test for independent groups, Cohen's *d* coefficient used. The sample size was calculated to achieve a power of 95% at a significance level of 0.05. The power calculation indicated that the required sample size was 1120 people. The initial sample comprised 1141 individuals, out of which 21 were excluded from the study due to having psychiatric disorders, and 13 individuals not completing the questionnaire. The final sample comprised 1107 participants: group C (*n* = 262), group CD (*n* = 250), and group H (*n* = 595). The mean age of the individuals who participated in the study was  $36.41 \pm 12.80$ , and 82.7% of the participants (*n* = 916) were female. Comorbidity data of the patients are shown in Table 1.

### Instruments

The participants completed a self-report questionnaire consisting of the Descriptive Characteristics Form and the Hospital Anxiety and Depression Scale (HADS).

**Table 1.** Distribution of descriptive characteristics

Age (years)	Min–Max (Median)	18–80 (36)
	Mean $\pm$ SD	36.41 $\pm$ 12.80 N (%)
Gender	Female	916 (82.7)
	Male	191 (17.3)
Marital Status	Married	734 (66.3)
	Single	373 (33.7)
Non-Cancer Chronic Disease	Diabetes mellitus	53 (4.8)
	Hypertension	77 (7)
	Neurological disease	21 (1.9)
	Asthma, COPD or other lung diseases	82 (7.4)
	Cardiovascular disease	13 (1.2)
	Hypothyroidism	37 (3.3)
	Other*	163 (14.7)
Cancer	No	845 (76.3)
	Active	53 (4.8)
	Cured, still receiving treatment	93 (8.4)
	Cured, not receiving treatment	116 (10.5)
Group	H	595 (53.7)
	CD	250 (22.6)
	C	262 (24.7)

\*More than one disease was noted

COPD – chronic obstructive pulmonary disease; H – healthy control group; CD – non-cancer chronic disease group; C – cancer group

### Descriptive characteristics form

In the form developed by the researchers, there is a total of six questions, which investigate the participants' age, gender, marital status, number of children, comorbidity, and additionally, state of the condition for cancer patients (active disease, in remission and still receiving treatment, in remission and having completed the treatment). Patients who received various preventive treatments (such as long-term hormone therapy for some cancers, trastuzumab treatment for breast cancer etc.) were classified in remission and still receiving treatment group despite their cancer disease being in remission.

### Hospital Anxiety and Depression Scale

HADS is a self-report questionnaire designed to screen the symptoms of anxiety and depression in individuals with medical diseases other than psychiatric illnesses [20]. It was created by Zigmond and Snaith [20], and its Turkish version validity and reliability study was carried out by Aydemir et al [21]. The four-point Likert type scale, which consists of 14 items, has two subscales (anxiety scale, and depression scale). Higher scores on each scale indicate a higher level of anxiety or depression (more severe symptoms). The scores of 0–7 refer to the normal levels, 8–10 to the borderline levels, and the score of 11 or above to the high, abnormal levels of anxiety or depression. Cronbach  $\alpha$  value was found to be 0.85 for the anxiety subscale, and 0.78 for the depression subscale by Aydemir et al [21]. In the current study, the Cronbach  $\alpha$  value of the anxiety, and depression subscale were 0.86 and 0.78, respectively.

### Procedure

The study was approved by the University of Health Sciences Hamidiye Ethics Committee (approval number 20/133, on May 5, 2020) before the study commenced. The patients were called by phone and they confirmed their initial willingness to participate in the study. Individuals who initially agreed to participate, were then informed about the purpose of the study, the procedure, data privacy, and the voluntary nature of participation. Individuals read and signed the informed consent forms online. The study was conducted in compliance with the "Ethical principles for medical research involving human subjects" of the Helsinki Declaration. The online questionnaire was completed by participants through the Survey Monkey platform. Confidentiality was secured by completely deactivating electronic records and IP address records. This study was registered at the Protocol Registration and Results System (Clinicaltrials.gov PRS) with the registration number NCT04698044.

### Statistical Analysis

For statistical analyses, Number Cruncher Statistical System (NCSS) 2007 (Kaysville, UT, USA) was used. The data of the study were analyzed with descriptive statistical methods (mean, standard deviation, median, frequency, rate, minimum, maximum). In the comparison of quantitative data, the student's t-test was used for the two-group comparisons of normally distributed continual variables. One-way ANOVA test was used for the comparison of three and more groups with normal distribution of continuous variables. Bonferroni post-hoc analysis was used to determine the difference between groups. Pearson's  $\chi^2$  test was used for the comparison of the categorical data. The predictive effects of having cancer (1), noncancer chronic disease (2) or being healthy (3) on anxiety and depression scores were evaluated using the multiple linear regression analysis. Significance was evaluated at  $p < 0.05$ .

## RESULTS

### Anxiety and depression scores and level categories in groups of participants

The descriptive parameters of HADS scores in the total sample are presented in Table 2. Table 3 presents the

**Table 2.** Hospital Anxiety and Depression Scale subscale and total score distribution

Disorders	Min–Max (Median)	Mean $\pm$ SD
Anxiety	0–21 (9)	8.88 $\pm$ 4.38
Depression	0–21 (8)	8.56 $\pm$ 4.07
Total	0–40 (17)	17.44 $\pm$ 7.80

comparison of scale for anxiety (HADS-A) and depression (HADS-D) scores according to the cancer disease status of the individuals. HADS-A and HADS-D scores of

**Table 3.** Mean Hospital Anxiety and Depression Scale (HADS) scores according to cancer disease status

Parameters			HADS	
			Anxiety	Depression
Cancer	No (n = 845)	Min-Max (Median)	0-21 (9)	0-20 (8)
		Mean ± SD	8.75 ± 4.48	7.63 ± 4.06
	Yes (n = 262)	Min-Max (Median)	1-21 (9)	0-19 (7)
		Mean ± SD	14.4 ± 4.21	12.45 ± 4.12
	Test value		t: -1.831	t: 0.135
p		<sup>a</sup> 0.035	<sup>b</sup> 0.008	
Cancer	Active (n = 53)	Min-Max (Median)	1-17 (10)	0-21 (8)
		Mean ± SD	14.92 ± 4.02	12.12 ± 4.27
	In remission, still receiving treatment (n = 93)	Min-Max (Median)	1-21 (9)	0-18 (8)
		Mean ± SD	14.85 ± 4.14	11.45 ± 4
	Cured, having completed treatment (n = 116)	Min-Max (Median)	2-18 (9)	0-19 (7)
		Mean ± SD	13.48 ± 3.87	12.98 ± 4.1
Test value		F:0.683	F:1.522	
p		<sup>a</sup> 0.506	<sup>a</sup> 0.220	
Participant groups	H (n = 595)	Min-Max (Median)	0-21 (8)	0-20 (7)
		Mean ± SD	8.28 ± 4.46	8.34 ± 4.18
	CD (n = 250)	Min-Max (Median)	0-20 (9)	0-20 (8)
		Mean ± SD	9.87 ± 4.35	8.41 ± 4.09
	C (n = 262)	Min-Max (Median)	1-21 (9)	0-19 (7)
		Mean ± SD	14.4 ± 4.2	12.45 ± 4.12
	Test value		F:8.969	F:4.495
	p		<sup>a</sup> 0.001 C > CD > H*	<sup>a</sup> 0.004 C > CD* C > H*

aOne-way ANOVA

bStudent's t-test

\*Bonferroni Correction was used.

H – healthy control group; CD – non-cancer chronic disease group; C – cancer group

**Table 4.** Mean Hospital Anxiety and Depression Scale (HADS) scores according to non-cancer chronic diseases

Chronic diseases		HADS	
		Anxiety	Depression
Diabetes mellitus (n = 53)	Min-Max (Median)	2-20 (10)	1-20 (9)
	Mean ± SD	10.52 ± 4.47	9.19 ± 4.55
Hypertension (n = 77)	Min-Max (Median)	0-20 (9)	0-21 (8)
	Mean ± SD	9.3 ± 4.86	8.29 ± 4.44
Neurological diseases (n = 21)	Min-Max (Median)	1-17 (9)	1-21 (8)
	Mean ± SD	8.83 ± 4.39	8.62 ± 4.91
Asthma/COPD/other lung diseases (n = 82)	Min-Max (Median)	2-20 (10)	1-21 (9.5)
	Mean ± SD	10.39 ± 4	9.34 ± 4.38
Cardiovascular diseases (n = 13)	Min-Max (Median)	5-17 (8)	2-12 (8)
	Mean ± SD	8.92 ± 3.73	8.08 ± 3.2
Hypothyroidism (n = 37)	Min-Max (Median)	0-19 (9)	0-15 (8)
	Mean ± SD	7 ± 4.2	7.6 ± 4.08
Other chronic diseases (n = 163)	Min-Max (Median)	1-20 (9)	0-20 (8)
	Mean ± SD	9.93 ± 4.42	8.26 ± 4.14

COPD – chronic obstructive pulmonary disease

group C were found to be statistically significantly higher compared to those without cancer. The anxiety and depression scores of group C were found to be significantly higher than anxiety and depression scores in the groups CD and H. While the mean anxiety score of group CD was significantly higher than that of group H ( $p = 0.032$ ), no significant difference was observed in terms of mean depression scores ( $p = 0.61$ ). The mean values of HADS-A and HADS-D scores for the groups CD and H were higher than the normal cut-off value (borderline level).

The HADS-A and HADS-D scores of patients with different non-cancer chronic diseases are presented in Table 4. Anxiety and depression scores of the individuals were found to be higher than the normal cut-off values in all chronic diseases except for hypothyroidism.

When we analyzed the HADS scores as categorical variables, according to the proposed cut-offs, about a half of the group C had high levels of anxiety (50.76%) and depression (50%). The distribution of anxiety and depression categorical levels of the participants was shown in Table 5. In cancer patients, the rates of those with high anxiety and high depression scores were higher than in the CD and H groups. In addition, the rates of those with high anxiety and high depression scores in the CD group were higher than in the H group.

### Predictive models of anxiety and depression scores

To determine the predictive factor of anxiety and depression factor in having cancer, having chronic disease and being healthy, a multiple linear regression models were applied, with the disease conditions (study group) as the predictors, and anxiety and depression scores as the outcome variables. Having cancer was a significant predictor of higher anxiety and depression, with the participants' status of having cancer explaining the anxiety score variance by 13% and the depression score variance by 17% (Table 6).

### DISCUSSION

Beyond medical risks, the pandemic has led to enormous psychological and social effects in the whole population [11]. In this study conducted during the pandemic, the mean anxiety and depression scores of the individuals were found to be borderline or above (depending on the study group) and

these rates raise attention. Anxiety and depression seem to be commonly observed during the COVID-19 period. In a study conducted in Wuhan, it was revealed that depression was observed in 48.3% and anxiety in 22.6% of participants in the general population during the COVID-19 pandemic [22]. The stress levels of the individuals were found to be high in the studies conducted in the United States and Turkey, and our study results are in line with these findings [23, 24].

In Turkey, the first case was observed on March 11, 2020, schools were closed, work programs were changed,

**Table 5.** Anxiety and depression levels (based on cut-offs) in the cancer group, chronic disease control group and healthy control group

Levels		Healthy control group	Chronic disease control group	Cancer group	Test value
		n (%)	n (%)	n (%)	p
Anxiety	Normal	263 (44.2) <sub>a</sub>	72 (28.8) <sub>b</sub>	68 (25.9) <sub>b</sub>	$\chi^2$ : 5.453 <b>0.001*</b>
	Borderline	150 (25.2) <sub>a</sub>	68 (27.2) <sub>a</sub>	61 (23.28) <sub>a</sub>	
	High	182 (30.6) <sub>a</sub>	110 (44.0) <sub>b</sub>	133 (50.76) <sub>c</sub>	
Depression	Normal	318 (53.4) <sub>a</sub>	73 (29.2) <sub>b</sub>	71 (27) <sub>b</sub>	$\chi^2$ : 8.125 <b>0.003*</b>
	Borderline	157 (26.4) <sub>a</sub>	73 (29.2) <sub>a</sub>	60 (22.9) <sub>a</sub>	
	High	120 (20.2) <sub>a</sub>	104 (41.6) <sub>b</sub>	131 (50) <sub>c</sub>	

$\chi^2$  test; Bonferroni correction was used, different letters next to the frequencies indicate columns that differ significantly

**Table 6.** Multiple linear regression analysis of participants anxiety and depression scores

Anxiety score					CI	
Parameters	$\beta$	SE	t	p	lower	upper
Constant	2.896	0.052				
C' versus CD <sup>2</sup>	0.365	0.132	2.263	0.036	0.095	0.456
C versus H <sup>3</sup>	0.269	0.116	2.362	0.023	0.063	0.598
Model r = 0.365 R <sup>2</sup> = 0.145 Adjusted R <sup>2</sup> = 0.136 F = 8.65 p = 0.003						
Depression score						
Constant	3.012	0.143				
C' versus CD <sup>2</sup>	0.313	0.112	0.123	0.006	0.023	0.456
C versus H <sup>3</sup>	0.462	0.102	0.236	< 0.001	0.102	0.456
Model r = 0.445 R <sup>2</sup> = 0.195 Adjusted R <sup>2</sup> = 0.173 F = 8.96 p = 0.001						

CI – confidence interval; C – cancer group (1); CD – non-cancer chronic disease group; (2); H – healthy control group (3)

cafes/restaurants were closed, lockdowns were implemented, and people were advised to stay at home within the scope of the measures taken for the purpose of protection [25]. Launching the quarantine implementation caused many changes in people's social lives, which affected people psychologically [2]. Unlike previous pandemics, the intense use of social media today has caused the news of illness and death, the photos and videos of diseased persons, to be constantly present in lives of individuals. All of these factors have a great potential to provoke additional anxiety and depression [26].

Moreover, HADS-A and HADS-D levels of the individuals with various chronic diseases were examined, and these scores were found higher than the normal cut-off values in all diseases except for hypothyroidism. In China Center for Disease Control and Prevention's report, cardiovascular disease, diabetes mellitus, chronic respiratory diseases, hypertension and cancer were found to be associated with the increase in death risk [27]. Therefore, having these diseases may give more precaution and fear about COVID-19 than healthy individuals in this period, which can lead to more overall anxiety and depression in this group. Anxiety and depression levels of individuals were found high in chronic diseases in several studies, and it has been emphasized that these people need to be supported psychologically during this period [8]. In our study, the anxiety scores of the individuals with non-cancer chronic diseases were higher than those of the healthy individuals, whereas there was no significant difference in terms of the mean depression scores. Given that our study was a

cross-sectional exploration in the early period of pandemic, this may have been related to anxiety occurring earlier as a response to acute events, whereas depression would be expected in a longer follow-up period [28].

When it comes to group C, our study showed significantly higher anxiety and depression scores in this group comparing to individuals without cancer. Furthermore, with multiple regression analysis, we showed that the status of having cancer explained the variance of anxiety scores by 13% and depression scores by 17%. These findings are in line with pre-pandemic studies showing anxiety and depression considerably associated with this disease. Depression was found to be four times higher in cancer patients than in non-cancer patients [29] and anxiety was found to be common in cancer patients as well [6]. However, during the pandemic, the study results are heterogeneous. In the study where Ng et al. [16] compared cancer survivors and healthy controls, less distress was observed in cancer survivors during the pandemic. In the study conducted by Gallagher et al. [17], an increased depression risk was identified in those with breast and prostate cancers and leukemia, but there was no increased risk in other cancers. In

the study conducted by Qian et al. [14], HADS-A and HADS-D scores were stated to be borderline or high in half of cancer patients during the COVID-19 pandemic. Approximately 70% of these patients needed mental support [14]. In addition to the assessment of earlier studies, our study further explored the anxiety and depression in subgroups of group C – those with active disease, those in remission and were still receiving treatment, and those in remission who have completed their treatment. Anxiety and depression scores were high in all three groups, potentially implying the need of carefully assessing distress in both cancer survivors and those with an active disease.

Management of cancer patients with COVID-19 is difficult during the outbreak. Stress, anxiety and depression worsen the clinical outcomes of cancer [24–27]. In the management of cancer patients, psychological evaluation is quite important, and there is a need for emergency screening and intervention programs.

During the social isolation period, people have begun to spend more time on the Internet and use social media more often as a way of communication. The World Health Organization published short suggestions on the website under the heading “hashtagHealthyAtHome-Mental Health,” consisting of daily routine, time to be informed and social contact. The Beijing University has prepared a handbook to cope with stress and other psychological problems to protect public mental health [30]. Each country should develop psychological screening and intervention programs in compliance with their socioeconomic status, culture and beliefs during and after the pandemic period. Screenings

and interventions may have importance for the entire population, and cancer patients and those with chronic diseases may be perceived as a specific at-risk group.

Reaching people, informing them accurately and providing support to them via psychological online support lines, handbooks and social media are just some of the interventions to be applied. It is recommended to create online patient support programs and to teach patients the methods of coping with anxiety and depression. Questionnaires can be first applied, and then diagnostic and interventional programs involving online interviews and detailed tests can be developed. The check up and treatment visits of the patients can be an opportunity to be screened for anxiety and depression with the HADS questionnaire. Medical staff should pay attention during the pandemic period in terms of psychological approach to the patients. They should provide calming, informative and motivating interventions.

### Limitations

This study contains several limitations. Firstly, this was a cross-sectional study, which restricts the possibility of analyzing the causality of effects. The fact that the pre-pandemic levels of anxiety and depression among participants were not measured, the interpretation of the effects of the pandemic on anxiety and depression is limited. Secondly, even though the scales with acceptable, validity and reliability were used to determine the anxiety and depression status of the individuals, these were self-report scales, whereas psychiatric assessment would provide more reliable evaluation (which was not done due to the quarantine). The participants with an underlying psychiatric disorder that has not yet been diagnosed could potentially have been present in the study, though, this factor was equally possible in all three groups. Thirdly, the socio-economic factors that affected anxiety and depression levels of the individuals could not be evaluated and controlled for. Furthermore, women's participation was higher than men, and the effects of gender were not adjusted for in this study, which limits the generalizability of the results. Similarly,

other potential confounding factors were not controlled for, such as family history of psychiatric disorders, history of adverse childhood experiences or traumatic events in the adulthood, social support (family, partner, friends, colleagues, community), as well as other known risk factors for anxiety and depression.

Despite all these limitations, our study results may speak for the importance of psychological screening in accordance with isolation measures during the pandemic, and point out to the potential at-risk groups of patients. The strengths of our study are the larger study sample compared to similar studies [6, 9, 14, 16], as well as the unique timing of lockdown that may have provided specific important information in relation to the COVID-19 pandemic. Furthermore, this is the first study evaluating the level of anxiety and depression in cancer patients in comparison to both healthy population, and patients with non-cancer chronic diseases. Finally, anxiety and depression were evaluated in cancer patients dependently on the current status of disease and treatment.

### CONCLUSION

In times of increasing use of telehealth programs due to the pandemic, our study speaks in favor of the importance of online psychological evaluation, especially among the patients with serious diseases such as cancer. These findings showed that the level of depression and anxiety is borderline or high in various groups of participants (healthy individuals, patients with non-cancer chronic diseases and cancer patients) during the COVID-19 pandemic, but specifically higher in patients with a serious risk of complications if infected, such as the cancer patients. To that end, it is important to pay attention to anxiety and depression levels of all individuals, and especially cancer patients, and to empower them with timely and necessary interventions to enhance their psychological welfare, primary disease outcomes and quality of life.

**Conflict of interest:** None declared.

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## Анксиозност и депресија код особа са онколошким обољењима и без њих током раног периода пандемије ковида 19

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### САЖЕТАК

**Увод/Циљ** Болест ковид 19, која се претворила у важан јавно-здравствени проблем, негативно је утицала на појединце не само физички већ и психички.

Циљ ове студије је да испита анксиозност и депресију болесника оболелих од рака у поређењу са особама са хроничним обољењима без рака и здравим особама током периода пандемије ковида 19.

**Метод** Ова студија пресека спроведена је током периода пандемије ковида 19 од 8. маја до 25. јуна 2020. године на 1107 испитаника у Турској. Просечна старост учесника у студији била је 36,41 ± 12,80 година. Узорак се састојао од три групе: група болесника са онколошким болестима ( $n = 262$ ), контролна група болесника са другим хроничним болестима ( $n = 250$ ) и здрава контролна група ( $n = 595$ ). Подаци су прикупљени помоћу Обрасца дескриптивних карактеристика и Болничке скале за процену анксиозности и депресије.

**Резултати** Утврђено је да су скорови анксиозности и депресије виши код болесника са онколошким болестима у

поређењу са друге две групе. Присуство онколошке болести је било значајан предиктор виших скорова анксиозности и депресије, и објашњавало је 13% варијансе скорова анксиозности и 17% варијансе скорова депресије. Болесници са другим хроничним болестима и здрави испитаници имали су средње вредности анксиозности и депресије на граничном нивоу.

**Закључак** Добијени налази указују на то да стопе симптома депресије и анксиозности код болесника са онколошким болестима могу бити веће у поређењу са болесницима са другим хроничним болестима и здравим особама. На стопе анксиозности и депресије у последње две групе такође треба обратити пажњу током пандемије. Ова студија може имати важне практичне импликације у смислу потребе за психолошким скринингом.

**Кључне речи:** ковид 19; анксиозност; депресија; рак; хронична болест