IJRiCE
http://ppsfip.ppj.unp.ac.id

International Journal of Research in Counseling and Education
Volume 05 Number 02 2021
ISSN: Print 2620-5750 – Online 2620-5769
DOI: https://doi.org/10.24036/00435za0002

Received September 22th, 2021; Revised September 29th, 2021; Accepted November 14th, 2021

Somatic distress, mental health and psychological resilience among cancer patients during the pandemic

Eser Sağaltıcı[1], Özcan Sönmez[2], Ebru Karcı[3], Şengül Kocamer Şahin[4*], Arzu Erturk[5]
[1]Department of Psychiatry, Bagcilar Research and Training Hospital, University of Health Sciences, Turkey
[2]Department of Internal Medicine, Bagcilar Research and Training Hospital, University of Health Sciences, Turkey
[3]Department of Medical Oncology, Bagcilar Research and Training Hospital, University of Health Sciences, Turkey
[4]Department of Psychiatry, Faculty of Medicine, Gaziantep University, Turkey
[5]Department of Social Work, School of Health, Düzce University, Turkey
*Corresponding author, e-mail: snglkcmr@hotmail.com

Abstract
This study aimed to investigate the somatic distress and levels of psychological symptoms of cancer patients and analyze the factors influencing somatic distress during the COVID-19 pandemic. This cross-sectional study included 216 cancer patients. The Patient Health Questionnaire-15, Post-traumatic Stress Disorder (PTSD) Checklist for DSM-5, the Depression, Anxiety, and Stress Scale-21, the Brief Resilience Scale, and the Stressful Life Events List due to pandemic were conducted with the participants. The moderate to severe somatic distress rate was 38% and the probable PTSD rate was 20.4%. Depression, anxiety, and stress symptoms were 36.1%, 49.1%, and 45.4%, respectively, ranging from mild to extremely severe. There were substantial associations between the somatic symptoms' severity and high levels of PTSD, anxiety, depression, and stress symptoms. Low educational attainment, high anxiety levels, considerable experience of stressful life events, and low psychological resilience predicted high somatic distress. This study demonstrates the high risk of somatic distress, PTSD, depression, anxiety, and stress in patients with cancer during the pandemic. In addition, somatic distress may indicate high levels of psychological symptoms, considerable experience of stressful life events, and low psychological resilience. It underscores the need to assess psychological status during the recent pandemic, especially those with high-level somatic symptoms.

Keywords: COVID-19, Cancer, Somatic Distress, Post-traumatic Stress, Depression.

How to Cite: Sağaltıcı, E., Sönmez, Ö., Karcı, E. Şahin, Ş. K., Erturk, A. (2021). Somatic distress, mental health and psychological resilience among cancer patients during the pandemic. *International Research in Counseling and Education*, 5 (2): pp. 116-127, DOI: https://doi.org/10.24036/00435za0002

Introduction

Coronavirus disease 2019 (COVID-19) was detected for the first time in December 2019 in Wuhan, China and identified as a novel pneumonia causing respiratory tract infection (Y. Wang et al., 2020). COVID-19, indicating person-to-person transmission and an asymptomatic course, spread rapidly worldwide (Chan et al., 2020). Most people infected with the COVID-19 virus have experienced mild to moderate respiratory syndrome and have recovered without special treatment. Developing serious consequences is a greater risk for older adults, and those with underlying medical conditions such as cardiovascular disease, diabetes, chronic respiratory issues, and cancer (Wu & McGoogan, 2020; Yang et al., 2020). The COVID-19 pandemic caused an unprecedented change in the lives of people worldwide, especially in patients with chronic diseases, and those with cancer may be particularly vulnerable to more severe illness due to their immunocompromised status from the underlying malignancy itself, as well as decreased immunity from cancer-directed treatments, additional medical comorbidities, and poor nutritional status (González-Montero et al., 2020).

A few recent studies evaluated psychological symptoms in oncology patients during the COVID-19 pandemic (Juanjuan et al., 2020; Miaskowski et al., 2020; Romito et al., 2020; Y. Wang et al., 2020). Occurrence rates for depression and anxiety ranged from 9.3% to 31.0% and from 8.9% to 36.0%, respectively (Juanjuan et

al., 2020; Romito et al., 2020; Y. Wang et al., 2020). In a study conducted on 187 oncology patients, the rate of those with probable post-traumatic stress disorder (PTSD) was 31.6% (Miaskowski et al., 2020). However, somatic distress has not been investigated in cancer patients during the pandemic. Somatic distress presentation in cancer is a complex area because of the overlapping of physical disease and treatment-related mechanisms and possible psycho-social mechanisms, and that needs to be investigated (Grassi et al., 2013). Previous studies have shown that heightened distress levels can lead to adverse outcomes in cancer patients including decreased satisfaction with care and noncompliance with treatment, low survival rates, a desire to accelerate death, and a poor quality of life for both patients and their relatives (Anuk et al., 2019; Breitbart, 2000).

Looking at the new, unrecognized, and early unpredictable and uncontrollable pandemic process, it may be much more intense than the usual stress factors in daily life. It creates a common threat perception, there is a lack of information about the process, it includes social isolation and quarantine processes, there is uncertainty about the future, social and economic effects are evident, and it is distinguished by the fact that it creates a massive amount of stress all over the world (Eser, 2020). It could be said that a special population such as cancer patients will be affected more by this mass stress and its effect on them may have more severe consequences. Therefore, it will be of great importance to address the psychological symptoms that may occur in cancer patients during the pandemic. For these reasons, this study aimed to a) estimate the levels of somatic, PTSD, depression, anxiety, and stress symptoms and b) investigate the relationship between somatic distress and demographic characteristics, psychological symptoms, stressful life events, and psychological resilience among cancer patients during the pandemic. In this way, we aimed to shed light on the measures to be taken to prevent somatic distress and worse mental problems of cancer patients during a pandemic.

Method

Sample and Procedure

This cross-sectional study was conducted in Istanbul, Turkey, between June 15 and October 15, 2020. This study included 216 consecutively selected cancer patients, who were receiving treatment or visiting the oncology center for routine follow-up examinations. To be eligible for participation in the study, patients had to be (a) diagnosed with any cancer type, (b) aged between 18 and 75 years, (c) able to complete a questionnaire in Turkish, and (d) able to provide informed consent. Reasons for exclusion were pregnancy, illiteracy, substance abuse, a declared inability to complete questionnaires, serious psychiatric disorders that hindered judgment, and patients with any issues interfering with giving informed consent. The aim of the study was explained to the participants who were invited to participate voluntarily, and informed consent forms were obtained before they were included in the study. This research was approved by the ethics committee (reference 2020.06.1.11.082) and was conducted in accordance with the Declaration of Helsinki. The study protocol was also approved by the Turkish Ministry of Health, General Directorate of Health Services (reference ES-2020-05-07T13_40_22). The Patient Health Questionnaire-15 (PHQ-15), Post-traumatic Stress Disorder Checklist for DSM-5 (PCL-5), the Depression, Anxiety, and Stress Scale-21(DASS-21), the Brief Resilience Scale (BRS), the Stressful Life Events List due to pandemic and demographic and clinical characteristics were used with the participants combined with face-to-face interviews by author AE, a senior social worker trained for the study

Measures

Demographic and clinical characteristics form.

Age, gender, marital status, education, employment status, economic wellbeing, comorbidities (hypertension, diabetes, coronary heart disease, chronic obstructive lung disease, chronic kidney disease, and others), and any history of psychiatric disorders were assessed via self-reporting. Clinical characteristics included the type of cancer, time since diagnosis, types of treatment currently or previously received, present treatment, and metastasis; this information was obtained from participants' medical charts.

Stressful Events List due to Pandemic.

The scale was prepared using the Stressful Life Events Screening Questionnaire (Wolfe et al., 1996) and a review of the literature, and used to measure the stressful life events burden during the pandemic. The scale consisted of 18 questions (the answers were 0 = no, 1 = yes) and total scores ranged from 0 to 18. Higher scores on the scale were associated with a stressful event burden. Cronbach's alpha internal consistency coefficient was determined as 0.73. A positive and significant relationship was found between the total score of the scale and depression (r = .35), anxiety (r = .32), stress (r = .32), PCL-5 total score (r = .41), and PHQ-15 total score (r = .38) (see Supplementary Table 1).

Patient Health Questionnaire (PHQ-15)

Somatic symptoms were measured using the PHQ-15 scale, which includes the 15 most common somatic symptoms. This scale assesses how much participants were bothered by health symptoms such as abdominal pain and back pain on a scale of, 0 = not bothered at all, to 2 = bothered a lot. A total somatic symptom score was calculated, with possible scores ranging from 0 to 30, and scores scaled to account for the additional item asked only of female participants relating to menstrual pain and problems. Higher scores on the PHQ-15 are strongly associated with somatic symptoms. Somatic symptom severity was calculated in four categories based on the PHQ-15 score "minimal" (0–4), "mild" (5–9), "moderate" (10–14), or "severe" (≥15) (Kroenke et al., 2002). A Turkish validity–reliability study was previously conducted by Yazıcı Güleç et al. (2012). In this study, Cronbach's alpha of the PHQ-15 was 0.86.

Post-traumatic stress disorder checklist for DSM–5 (PCL-5)

The PCL-5 is a 20-item measure that assesses PTSD symptomatology: intrusions, avoidance, negative alterations in cognitions and mood (NACM), and hyperarousal. Participants responded to the items on a 5-point Likert-type scale (0 = not at all to 4 = extremely) concerning their experience of the COVID-19 outbreak, with total scores ranging from 0 to 80 (Weathers et al., 1993). The Turkish version of PCL-5 was used, which is reliable and valid. This study used ≥47 as a cut-off point to diagnose possible PTSD (Boysan et al., 2017). Among the current samples, the PCL-5 and subscales generated a Cronbach's alpha of $\alpha = .96$ for PCL-5, $\alpha = .89$ for intrusions, $\alpha = .87$ for avoidance, $\alpha = .91$ for NACM, and $\alpha = .92$ for hyperarousal.

The Depression Anxiety Stress Scales-21 (DASS-21)

The DASS-21 is a 21-item, self-reporting questionnaire designed to measure the severity of a range of depression, anxiety, and stress symptoms. Each item of the DASS-21 corresponds to one of the three subscales (depression, anxiety, and stress) with seven items per subscale. The scale is a 4-point Likert-type scale from 0 (never) to 3 (almost always) and evaluates symptoms from the previous week (Lovibond & Lovibond, 1995). The DASS-21 raw scores were doubled for comparability to full-length (42 items) DASS scores. The depression score results were classified as normal (0–9), mild (10–12), moderate (13–20), severe (21–27), and extremely severe (28–42). The anxiety score results were classified as normal (0–6), mild (7–9), moderate (10–14), severe (15–19), and extremely severe (20–42). The stress score results were classified as normal (0–10), mild (11–18), moderate (19–26), severe (27–34), and extremely severe (35–42). Among the current samples, the DASS-21 and subscales generated a Cronbach's alpha of $\alpha = .93$ for DASS-21, $\alpha = .86$ for depression, $\alpha = .78$ for anxiety and $\alpha = .83$ for stress.

Brief Resilience Scale (BRS)

The BRS includes six items. The respondents were asked to indicate how well each statement described their behavior and actions on a 5-point Likert-type scale, ranging from 1 = does not describe me at all to 5 = describes me very well. As Item 2 (I have a hard time making it through stressful events), Item 4 (It is hard for me to bounce back when something bad happens) and Item 6 (I tend to take a long time to get over setbacks in my life) were reverse-coded, the data collected were recoded before analysis. High scores obtained from the scale after the items coded in reverse order are translated into the scale to indicate high psychological resilience (Smith et al., 2008). The factor loads for the items were found between 0.68 and 0.91 in the Turkish sample (Dogan, 2015), and in this study, Cronbach's alpha of the BRS was 0.69.

Statistical Analysis

Descriptive statistics were presented in median values and interquartile ranges (IQR) (25% to 75%) for the quantitative variables and as frequencies and percentages for the categorical variables. Normality tests were carried out by using one-sample Kolmogorov–Smirnov and Shapiro–Wilk tests and through histogram graphs. The Mann–Whitney U test was used to compare the continuous variables between the two groups. The Kruskal–Wallis test was used to evaluate possible differences between more than two groups and the level of significance was determined after the Dunn multiple comparison tests with the Bonferroni correction test. A multiple linear regression model was used with a backward elimination technique to investigate potentially predictive factors for somatic distress. The variables evaluated were determined as significant variables derived from our results and the literature review, following clinical experience. The variables used for the models are as follows: age (years), gender, educational attainment level (years), additional chronic disease, history of psychiatric disorders, present treatment (any treatment, follow-up), metastasis anxiety, stressful life events, BRS, and intrusions. The tests for assumptions-linearity, homoscedasticity, and multicollinearity were carried out by the authors (assumptions met). All the analyses were 2-sided with an alpha of 0.05 and performed with SPSS statistical software (IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp.).

Results and Discussion

Sociodemographic and Clinic Characteristics

The demographic–clinical characteristics of participants are summarized in Table 1. Among the 216 participants, 125 (57.9%) were female and 168 (77.8%) were married. The median age was 52 years (IQR = 45 to 61 years), the median education level was 5 years (IQR = 5 to 8 years), and the time since the current diagnosis was 18 months (IQR = 7 to 36 months).

Table 1. Demographic and clinical characteristics

Variables	n (%)/*Median (IQR)*	[95% CI]
Age, years,	52 (45-61)	[49.5-54.0]
Gender		
Female	125 (57.9)	[51.4-64.3]
Male	91 (42.1)	[35.7-48.6]
Marital status		
Married	168 (77.8)	[72.7-83.3]
Single	24 (11.1)	[6.9-15.3]
Widowed/Divorced	24 (11.1)	[7.0-15.3]
Education, years	5 (5-8)	[5.0-5.0]
Literate	40 (18.5)	[13.4-24.1]
Primary education	125 (57.9)	[51.9-64.4]
High school and above	51 (23.6)	[18.1-29.6]
Employment Status		
Employed	23 (10.6)	[6.9-14.8]
Not Employed	193 (89.4)	[85.2-93.1]
Household economic situation		
Bad	124 (57.4)	[50.9-64.4]
Average	90 (41.7)	[34.7-47.7]
Good or very good	2 (0.9)	[0.0-2.3]
Additional Chronic Disease		
No	128 (59.3)	[52.3-65.7]
Yes	88 (40.7)	[34.3-47.7]
History of Psychiatric Disorders		
No	168 (77.8)	[72.2-82.9]
Yes	48 (22.2)	[17.1-27.8]
Cancer type		
Breast	79 (36.6)	[30.1-43.1]
Esophageal/gastrointestinal	59 (27.3)	[21.3-32.9]
Lung	17 (7.9)	[4.2-11.6]
Gynecologic	15 (6.9)	[3.7-10.6]
Head and neck	9 (4.2)	[1.9-6.9]
Sarcoma	7 (3.2)	[0.9-6.0]
Others	30 (13.9)	[9.7-18.5]
Current or completed treatment		
Chemotherapy	62 (28.7)	[27.2-35-2]
Surgery	3 (1.4)	[0.0-3.2]
Radiation	1 (0.5)	[0.0-1.4]
Hormone therapy	1 (0.5)	[0.0-1.4]
Surgery + Chemotherapy	76 (35.2)	[28.7-41.7]
Chemotherapy + Radiation	15 (6.9)	[3.7-10.6]
Surgery + Chemotherapy + Radiation	53 (24.5)	[19.0-30.1]
No treatment	5 (2.3)	[0.5-4.6]
Present treatment		
Any treatment	147 (68.1)	[61.6-74.5]
Follow-up	69 (31.9)	[25.5-38.4]
Metastasis		
No	169 (78.2)	[72.7-83.8]
Yes	47 (21.8)	[16.2-27.3]

Variables	n (%)/*Median (IQR)*	[95% CI]
Time since current diagnosis, months	18 (7-36)	[12-24]
Fear of catching COVID-19		
No	130 (60.2)	[53.7-66.2]
Yes	86 (39.8)	[33.8-46.3]
Fear of cancer recurrence during pandemic		
No	148 (68.5)	[62.5-75.0]
Yes	68 (31.5)	[25.0-37.5]
Fear of not getting appropriate and timely treatment during pandemic		
No	134 (62.0)	[55.1-69.0]
Yes	82 (38.0)	[31.0-44.9]

*CI: Confidence Interval; IQR: Interquartile range 25%-75%

The cancer types of the 216 patients were 79 (36.6%) breast, 59 (27.3%) esophageal/gastrointestinal, 17 (7.9%) lung, 15 (6.9%) gynecologic, 9 (4.2%) head and neck, 7 (3.2%) sarcoma, and 30 (13.9%) others. Those with current or completed treatments were 76 (35.2%) surgery + chemotherapy, 62 (28.7%) chemotherapy, and 53 (24.5%) surgery + chemotherapy + radiation. Among the 216 participants, 147 (68.1%) were currently undergoing treatment, and 47 (21.8%) had metastasis.

Analyses of the association between demographic–clinical characteristics and stressful life events, BRS, somatic distress, PTSD, depression, anxiety, and stress symptoms are shown in Tables 2 and 3.

Stressful life events list due to the pandemic

The median of stressful life events due to the pandemic that the participants experienced was 3 (IQR = 1 to 5) (Table 3). Among the 216 patients, 9 (4.2%) had been diagnosed with COVID-19, 7 (3.2%) had been hospitalized, and 14 (%6.5) underwent mandatory quarantine. The stressful life events due to the pandemic that participants reported are summarized in Table 2.

Psychometric Properties for Scales and Subscales

The median of the PHQ-15 total score was 8 (IQR = 4 to 12). Somatic distress severity levels were 27.8% minimal, 34.3% mild, 19.9% moderate, and 18.1% severe. The medians of PCL-5 total score, intrusions, avoidance, NACM and hyperarousal were 25 (IQR = 8 to 43), 6 (IQR = 2 to 11), 2 (IQR = 0 to 4), 9 (IQR = 2 to 15) and 7 (IQR = 2 to 13), respectively. The median of the BRS was 19 (IQR = 17 to 23). Among the participants, the moderate to severe somatic distress rate was 38% and the probable PTSD rate was 20.4%. Depression, anxiety, and stress symptoms were 36.1%, 49.1%, and 45.4%, respectively, from mild to extremely severe at any level. The psychometric properties of self-rating questionnaires and cancer patients' severity levels in accordance with questionnaires' cut-off points are shown in Table 4.

Comparisons of the somatic distress groups in terms of self-rating inventories

The Kruskal–Wallis test results were evaluated to compare differences between the somatic symptom severity groups [Minimal (1), Mild (2), Moderate (3), and Severe (4)] in terms of the PCL-5 total score, intrusions, avoidance, NACM, hyperarousal, the DASS-21-total score, depression, anxiety, stress, the BRS, and stressful life events (Table 4). There were statistically significant differences between somatic symptom severity groups in the PCL-5 total score [$H(3) = 32.77$, $p < 0.001$], intrusions [$H(3) = 24.60$, $p < 0.001$], avoidance [$H(3) = 34.47$, $p < 0.001$], NACM [$H(3) = 22.38$, $p < 0.001$], and hyperarousal [$H(3) = 19.58$, $p < 0.001$]. There were statistically significant differences between somatic symptom severity groups in the DASS-21-total score [$H(3) = 56.40$, $p < 0.001$], depression [$H(3) = 50.47$, $p < 0.001$], anxiety [$H(3) = 60.73$, $p < 0.001$], and stress [$H(3) = 34.36$, $p < 0.001$]. There were statistically significant differences between somatic symptom severity groups in the BRS [$H(3) = 21.20$, $p < 0.001$], and stressful life events [$H(3) = 14.46$, $p = 0.002$].

Multiple linear regression analyses for somatic distress

Multiple linear regression was carried out to predict somatic distress (Table 5). Low educational attainment levels, high anxiety levels, considerable experience of stressful life events, and low psychological resilience predicted high somatic distress levels ($N = 216$, $R2 = 0.375$, $F(4, 211) = 31.65$, $p < 0.001$).

Table 2. Stressful life events list due to the pandemic

n=216	n (%)	[95% CI]
Diagnosed with COVID-19	9 (4.2)	[1.9-7.4]
Hospitalized due to COVID-19	7 (3.2)	[0.9-5.6]
Mandatory quarantined due to COVID-19	14 (6.5)	[3.7-10.2]
A family member or a close friend diagnosed with COVID-19	42 (19.4)	[14.4-25.9]
A family member or a close friend hospitalized due to COVID-19	28 (13.0)	[8.8-17.6]
Experienced the death of a spouse/child due to COVID-19	7 (3.2)	[0.9-6.0]
Experienced the death of a close friend or a family member (except spouse/child) due to COVID-19	24 (11.1)	[6.9-15.7]
Felt the covid-19 disease is threatening his/her life	114 (52.8)	[45.8-59.7]
Felt the covid-19 disease is threatening life of spouse/child	116 (53.7)	[47.2-60.2]
Felt the covid-19 disease is threatening life of a close friend or my a family member (except spouse/child)	94 (43.5)	[37.0-50.0]
Witnessed deaths in an occupation (doctor, nurse, police, etc.) due to COVID-19	8 (3.7)	[1.4-6.0]
Forced to work during the pandemic	9 (4.2)	[1.9-6.9]
Lost job due to the pandemic	16 (7.4)	[4.2-11.1]
Experienced serious economic difficulties due to the pandemic	84 (38.9)	[32.4-45.4]
Trouble meeting food needs due to the pandemic	45 (20.8)	[15.7-26.4]
Trouble meeting shelter needs due to the pandemic	21 (9.7)	[6.0-13.4]
Trouble meeting health needs due to the pandemic	44 (20.4)	[15.3-25.9]
Experienced/witnessed an extremely stressful event due to the pandemic that have not yet mentioned to anyone	18 (8.3)	[4.6-12.0]

COVID-19: Corona Virus Disease 2019

Table 3. Psychometric Properties for Self-Rating Scales and Subscales

Scales		n (%)/ Median (IQR)	[95% CI]	Cronbach α
PHQ-15 total score		8 (4-12)	[7-9]	0.867
	Minimal (0–4)	60 (27.8)	[21.8-33.8]	
	Mild (5–9)	74 (34.3)	[28.2-40.3]	
	Moderate (10–14)	43 (19.9)	[14.8-25.5]	
	Severe (≥15)	39 (18.1)	[13.0-23.6]	
PCL-5 total score		25 (8-43)	[20-29]	0.965
	Intrusions	6 (2-11)	[5-7]	0.899
	Avoidance	2 (0-4)	[0-3]	0.875
	NACM	9 (2-15)	[7-10.5]	0.910
	Hyperarousal	7 (2-13)	[6-9]	0.926
PCL-5 cut off score				
	≥47	44 (20.4)	[14.8-25.9]	
	47 below	172 (79.6)	[74.1-85.2]	
DASS-21total score		23 (10-39.5)	[18-28]	0.930
Depression-total		6 (2-12)	[4-8]	0.867
	Normal (0-9)	138 (63.9)	[57.9-70.4]	
	Mild (10-12)	25 (11.6)	[7.4-15.7]	
	Moderate (13-20)	28 (13.0)	[8.8-18.1]	
	Severe (21-27)	14 (6.5)	[3.2-10.2]	
	Extremely Severe (28-42)	11 (5.1)	[2.3-8.3]	
Anxiety-total		6 (2-12)	[6-8]	0.788
	Normal (0-6)	110 (50.9)	[44.4-57.9]	
	Mild (7-9)	27 (12.5)	[8.3-17.1]	
	Moderate (10-14)	40 (18.5)	[13.4-23.6]	
	Severe (15-19)	23 (10.6)	[6.9-14.8]	
	Extremely Severe (20-42)	16 (7.4)	[4.2-11.1]	
Stress-total		10 (4-16)	[8-12]	0.830
	Normal (0-10)	118 (54.6)	[48.1-60.6]	
	Mild (11-18)	63 (29.2)	[27.7-35.2]	
	Moderate (19-26)	23 (10.6)	[6.5-14.8]	
	Severe (27-34)	9 (4.2)	[1.9-6.9]	
	Extremely Severe (35-42)	3 (1.4)	[0-3.2]	
BRS total score		19 (17-23)	[18-20]	0.693
Stressful life events score		3 (1-5)	[3-3]	0.738

CI: Confidence Interval; IQR: Interquartile range 25%-75%; PHQ-15: Patient health questionnaire-15; PCL-5: Posttraumatic stress disorder checklist for DSM-5; NACM: Negative alterations in cognitions and mood; DASS-21: Depression, anxiety and stress scale-21; BRS: Brief resilience scale.

Table 4. Comparisons of self-ratingscales in somatic distress groups

N=216	Groups						Differences Between Groups
	Minimal (1) n=60 median (IQR)	Mild (2) n=74 median (IQR)	Moderate (3) n=43 median (IQR)	Severe (4) n=39 median (IQR)	H†	p	
PCL-5 total	17 (3.25-27)	25 (3-42)	28 (14-39)	47 (29-57)	32.77	<0.001	1=2, 1<3, 1<4, 2=3, 2<4, 3<4
Intrusions	3.50 (0.25-6)	6 (1.75-10)	6 (3-10)	13 (6-16)	24.60	<0.001	1=2, 1<3, 1<4, 2=3, 2<4, 3<4
Avoidance	1 (0-3)	2 (0-4)	2 (1-4)	5 (3-6)	34.47	<0.001	1=2, 1=3, 1<4, 2=3, 2<4, 3<4
NACM	5 (0-10)	9.50 (1-16)	10 (4-14)	14 (9-21)	22.38	<0.001	1=2, 1=3, 1<4, 2=3, 2=4, 3=4
Hyperarousal	5 (0-10.75)	6 (0-12)	8 (4-13)	13 (6-19)	19.58	<0.001	1=2, 1=3, 1<4, 2=3, 2<4, 3=4
DASS-21-total	10 (2.50-22)	18 (10-36.50)	30 (20-42)	42 (30-62)	56.40	<0.001	1<2, 1<3, 1<4, 2=3, 2<4, 3=4
Depression	2 (0-4)	4 (2-10)	8 (6-14)	14 (8-22)	50.47	<0.001	1=2, 1<3, 1<4, 2<3, 2<4, 3=4
Anxiety	2 (0-4)	6 (2-12)	8 (6-12)	14 (10-18)	60.73	<0.001	1<2, 1<3, 1<4, 2=3, 2<4, 3=4
Stress	5 (0-12)	8(3.50-14.50)	12 (6-18)	16 (12-22)	34.36	<0.001	1=2, 1<3, 1<4, 2=3, 2<4, 3=4
BRS total	22 (18-25)	20 (17-23)	18 (16-22)	17 (13-19)	21.20	<0.001	1=2, 1<3, 1<4, 2=3, 2=4, 3=4
Stressful life events	2 (0-4)	3 (1-4)	4 (2-6)	4 (2-7)	14.46	0.002	1=2, 1<3, 1<4, 2=3, 2=4, 3=4

Table 5. Multiple linear regression analyses for somatic distress†

	Unstandardized Coefficients					95% CI	
	B	SE	ß	t	p	Lower Bound	Upper Bound
Education, years	-0.21	0.07	-0.16	-3.06	0.002	-0.35	-0.07
Anxiety	0.30	0.04	0.38	6.54	<0.001	0.21	0.40
Stressful life events	0.44	0.13	0.20	3.40	0.001	0.18	0.70
BRS	-0.17	0.06	-0.16	-2.65	0.009	-0.31	-0.04

†:N = 216, R^2 = 0.375, F(4, 211) = 31.65, p <0.001. B: Unstandardized Coefficients; SE: Standard Error of the Estimate; β: Adjusted Coefficients; CI: Confidence Interval. BRS: Brief resilience scale

Current research during the COVID-19 pandemic has not yet addressed somatic distress among cancer patients. This study aimed to investigate the somatic distress, PTSD, depression, anxiety, and stress levels of cancer patients who make up an already vulnerable population, and analyze the factors influencing somatic distress during the pandemic. The main findings of this study; are that among cancer patients, the moderate to severe somatic distress rate was 38% and the probable PTSD rate was 20.4%. Depression, anxiety, and stress symptoms were 36.1%, 49.1%, and 45.4%, respectively, from mild to extremely severe at any level. There were substantial associations between the severity of somatic symptoms and high levels of PTSD, anxiety, depression, and stress symptoms. Low educational attainment levels, high anxiety levels, considerable experience of stressful life events, and low psychological resilience predicted high somatic distress levels.

While the evidence of the psychological effects of the COVID-19 pandemic on the general population continues to increase, studies investigating the effects on special and sensitive populations such as cancer patients are now gaining momentum. One of the first studies from China, Wang et al. (2020) showed that among 6213 cancer patients, 17.7% had anxiety, 23.4% had depression and 9.3% had PTSD symptoms. Chen et al. (2020) reported that fear of disease progression, anxiety (16.5%) and depression (28.8%) were much higher in cancer patients during the COVID-19 outbreak than in the general population, and higher than in cancer patients in times without an outbreak. Juanjuan et al. (2020) found that patients with breast cancer had high rates of anxiety, depression, distress, and insomnia at the peak of the COVID-19 pandemic. Musche et al. (2020) found that 150 cancer patients under treatment had similar levels of distress and anxiety to healthy controls during the first days of the pandemic, but cancer patients evidenced more adherent safety behaviors. Similar to the majority of those studies, it is seen in our study that patients had high levels of anxiety and stress since they were more afraid of catching COVID-19 (39%) or not being able to access treatment on time (38%) because of pandemic than they were of the recurrence of cancer (31.5%) in our study. Schellekens et al. (2020) also showed that patients were most afraid of being infected with COVID-19 (50.5%) and then requiring treatment in the intensive care unit (58.0%).

To the best of our knowledge, the current study is the first to address COVID-19-related PTSD, depression, anxiety, and stress, as well as somatic symptoms (using PHQ) in cancer patients. We found only one study that has closely examined somatic symptoms' association with depression, anxiety, and PTSD, focusing solely on pain and fatigue as somatic symptoms. However, anxiety and stress cause aggravation of somatic symptoms such as pain and fatigue, which are well-studied areas (Brown & Kroenke, 2009; Grassi et al., 2013). Somatic symptoms have already been reported in past pandemics even in the general population and psychosomatic responses to these psychological effects should be considered (Chew et al., 2020). Based on this phenomenon, Chaturvedi reported his assessment that the prevalence of chronic pain and the severity of the pain experience may have increased during the COVID-19 pandemic process (Chaturvedi, 2020). Wang et al. evaluated only physical fatigue and pain intensity as somatic distress in cancer patients using the Visual Analogue Scale in their study (Z. H. Wang et al., 2020). They found that pain intensity was a risk factor for anxiety, depression, and PTSD. We also found a significant relationship between the severity of somatic symptoms and levels of anxiety, depression, PTSD, and stress symptoms. The fact that patients with high anxiety levels, considerable experience of stressful life events, and low psychological resilience seem most vulnerable to somatic distress among cancer patients is another significant result of this study.

Anxiety, depression, and PTSD are associated with somatic symptoms (Bartel et al., 2019; Haug et al., 2004). It is thought that the somatic sensory processing mechanism extends to cognitive symptoms and reveals a potential generalization of the impairment in the cognitive and somatic domains in PTSD (Boysan et al., 2017).In line with this, it is seen that NACM are high in severe somatic distress in PTSD symptomology as with other symptomatologies in this study. The COVID-19 outbreak, like other pandemics, was associated with a wide range of psychiatric comorbidities including anxiety, panic, depression, and trauma-related disorders. As a result, cancer patients may have been experiencing more somatic distress after all these stressful life events, uncertainty, and anxiety during the COVID-19 pandemic.

Psychological resilience is the ability of an individual to adapt to and cope with adverse situations such as trauma, threat, and health issues (Connor & Davidson, 2003; Wingo et al., 2010). Resilience is protective against some mental disorders such as anxiety and PTSD while low psychological resilience is a risk factor for mental disorders (Pietrzak et al., 2009). Ran et al. showed that psychological distress was high at the height of the COVID-19 outbreak in China, and was negatively correlated with resilience in the general population (Ran et al., 2020). Kimhi et al. showed that individual resilience and wellbeing were the first and most important predictors of COVID-19-related anxiety (Kimhi et al., 2020). Sayar et al suggested that resilience is of great importance as a factor that promoted good psychological functioning during the COVID-19 outbreak (Sayar et al., 2003). When these studies are considered together, it is an expected result that high anxiety and low psychological resilience also predict somatic distress in cancer patients during the pandemic.

Some studies have reported that less education is associated with greater somatic symptoms (Sayar et al., 2003; Zeleke & Minaye, 2015). However, (Sayar et al., 2003) reported that a low educational attainment level predicted somatic symptoms due to comorbidity with depressive symptomology. (Zeleke & Minaye, 2015) on the other hand, showed that low education was associated with somatic symptoms in traumatized individuals. Therefore, somatic symptoms may be more apparent in people with low education due to the overlap of COVID-9 stress in cancer patients who are already under stress.

There are several limitations to this study. First, because of its cross-sectional design, a cause–effect relationship in variables cannot be established, and knowing the prepandemic situation could enable us to address the results more clearly. It is a limitation that self-assessment scales were used and additional psychopathologies were not able to screen with a structured interview such as that for severe combined immunodeficiency. To better understand the impact of COVID-19 on cancer patients as well as somatic distress, large-scale studies within the framework of longitudinal and prospective designs are needed.

Conclusions

This study focused on the psychological outcomes of the COVID-19 outbreak for cancer patients and their relation to somatic distress, which is already a study gap in the extant literature. The results showed that the symptoms of depression, anxiety, stress, and PTSD increased, as well as somatic distress. Moreover, indicators predicting somatic distress were determined as low education levels, high anxiety levels, considerable experience of stressful life events and low psychological resilience, for which preventive measures should be planned in future studies.

Conflict of interest

The authors declare that there are no conflicts of interest.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The data that support the findings of this study are openly available with reference number [2020.06.1.11.082].

Informed consent

Informed consent was obtained from all individual participants included in the study.

References

Anuk, D., Özkan, M., Kizir, A., & Özkan, S. (2019). The characteristics and risk factors for common psychiatric disorders in patients with cancer seeking help for mental health. *BMC Psychiatry, 19*(1), 269-269. https://doi.org/10.1186/s12888-019-2251-z

Bartel, A., Jordan, J., Correll, D., Devane, A., & Samuelson, K. W. (2019, 2019/09/03). Somatic burden and perceived cognitive problems in trauma-exposed adults with posttraumatic stress symptoms or pain. *Journal of Clinical Psychology, 76*(1), 146-160. https://doi.org/10.1002/jclp.22855

Boysan, M., Guzel Ozdemir, P., Ozdemir, O., Selvi, Y., Yilmaz, E., & Kaya, N. (2017, 2017/07/03). Psychometric properties of the Turkish version of the PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (PCL-5). *Psychiatry and Clinical Psychopharmacology, 27*(3), 300-310. https://doi.org/10.1080/24750573.2017.1342769

Breitbart, W. (2000, 2000/12/13). Depression, Hopelessness, and Desire for Hastened Death in Terminally Ill Patients With Cancer. *Jama, 284*(22), 2907. https://doi.org/10.1001/jama.284.22.2907

Brown, L. F., & Kroenke, K. (2009, 2009/09). Cancer-Related Fatigue and Its Associations With Depression and Anxiety: A Systematic Review. *Psychosomatics, 50*(5), 440-447. https://doi.org/10.1016/s0033-3182(09)70835-7

Chan, J. F.-W., Yuan, S., Kok, K.-H., To, K. K.-W., Chu, H., Yang, J., Xing, F., Liu, J., Yip, C. C.-Y., Poon, R. W.-S., Tsoi, H.-W., Lo, S. K.-F., Chan, K.-H., Poon, V. K.-M., Chan, W.-M., Ip, J. D., Cai, J.-P., Cheng, V. C.-C., Chen, H., Hui, C. K.-M., & Yuen, K.-Y. (2020). A familial cluster of pneumonia associated with the 2019 novel

coronavirus indicating person-to-person transmission: a study of a family cluster. *Lancet (London, England), 395*(10223), 514-523. https://doi.org/10.1016/S0140-6736(20)30154-9

Chaturvedi, S. K. (2020, 2020/11). Health anxiety, health-related life events, and somatization during COVID-19 pandemic can increase chronic pain. *Pain, 161*(11), 2652-2652. https://doi.org/10.1097/j.pain.0000000000002061

Chew, Q. H., Wei, K. C., Vasoo, S., Chua, H. C., & Sim, K. (2020). Narrative synthesis of psychological and coping responses towards emerging infectious disease outbreaks in the general population: practical considerations for the COVID-19 pandemic. *Singapore Medical Journal, 61*(7), 350-356. https://doi.org/10.11622/smedj.2020046

Connor, K. M., & Davidson, J. R. T. (2003, 2003/09). Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety, 18*(2), 76-82. https://doi.org/10.1002/da.10113

Eser, H. (2020). COVID-19 döneminde stres, adaptasyon ve psikiyatrik etkiler. *Türkiye Klin COVID-19, 1*(13), 18-22.

González-Montero, J., Valenzuela, G., Ahumada, M., Barajas, O., & Villanueva, L. (2020). Management of cancer patients during COVID-19 pandemic at developing countries. *World journal of clinical cases, 8*(16), 3390-3404. https://doi.org/10.12998/wjcc.v8.i16.3390

Grassi, L., Caruso, R., & Nanni, M. G. (2013, 2013/02). Somatization and somatic symptom presentation in cancer: A neglected area. *International Review of Psychiatry, 25*(1), 41-51. https://doi.org/10.3109/09540261.2012.731384

Haug, T. T., Mykletun, A., & Dahl, A. A. (2004, 2004/11). The Association Between Anxiety, Depression, and Somatic Symptoms in a Large Population: The HUNT-II Study. *Psychosomatic medicine, 66*(6), 845-851. https://doi.org/10.1097/01.psy.0000145823.85658.0c

Juanjuan, L., Santa-Maria, C. A., Hongfang, F., Lingcheng, W., Pengcheng, Z., Yuanbing, X., Yuyan, T., Zhongchun, L., Bo, D., Meng, L., Qingfeng, Y., Feng, Y., Yi, T., Shengrong, S., Xingrui, L., & Chuang, C. (2020). Patient-reported Outcomes of Patients With Breast Cancer During the COVID-19 Outbreak in the Epicenter of China: A Cross-sectional Survey Study. *Clinical breast cancer, 20*(5), e651-e662. https://doi.org/10.1016/j.clbc.2020.06.003

Kimhi, S., Marciano, H., Eshel, Y., & Adini, B. (2020). Resilience and demographic characteristics predicting distress during the COVID-19 crisis. *Social science & medicine (1982), 265*, 113389-113389. https://doi.org/10.1016/j.socscimed.2020.113389

Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2002, 2002/03). The PHQ-15: Validity of a New Measure for Evaluating the Severity of Somatic Symptoms. *Psychosomatic medicine, 64*(2), 258-266. https://doi.org/10.1097/00006842-200203000-00008

Lovibond, P. F., & Lovibond, S. H. (1995, 1995/03). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy, 33*(3), 335-343. https://doi.org/10.1016/0005-7967(94)00075-u

Miaskowski, C., Paul, S. M., Snowberg, K., Abbott, M., Borno, H., Chang, S., Chen, L. M., Cohen, B., Hammer, M. J., Kenfield, S. A., Kober, K. M., Levine, J. D., Pozzar, R., Rhoads, K. F., Van Blarigan, E. L., & Van Loon, K. (2020). Stress and Symptom Burden in Oncology Patients During the COVID-19 Pandemic. *Journal of pain and symptom management, 60*(5), e25-e34. https://doi.org/10.1016/j.jpainsymman.2020.08.037

Pietrzak, R. H., Johnson, D. C., Goldstein, M. B., Malley, J. C., & Southwick, S. M. (2009, 2009/08). Psychological resilience and postdeployment social support protect against traumatic stress and depressive symptoms in soldiers returning from Operations Enduring Freedom and Iraqi Freedom. *Depression and Anxiety, 26*(8), 745-751. https://doi.org/10.1002/da.20558

Ran, L., Wang, W., Ai, M., Kong, Y., Chen, J., & Kuang, L. (2020). Psychological resilience, depression, anxiety, and somatization symptoms in response to COVID-19: A study of the general population in China at the peak of its epidemic. *Social science & medicine (1982), 262*, 113261-113261. https://doi.org/10.1016/j.socscimed.2020.113261

Romito, F., Dellino, M., Loseto, G., Opinto, G., Silvestris, E., Cormio, C., Guarini, A., & Minoia, C. (2020). Psychological Distress in Outpatients With Lymphoma During the COVID-19 Pandemic. *Frontiers in oncology, 10*, 1270-1270. https://doi.org/10.3389/fonc.2020.01270

Sayar, K., Kirmayer, L. J., & Taillefer, S. S. (2003, 2003/03). Predictors of somatic symptoms in depressive disorder. *General hospital psychiatry, 25*(2), 108-114. https://doi.org/10.1016/s0163-8343(02)00277-3

Wang, Y., Duan, Z., Ma, Z., Mao, Y., Li, X., Wilson, A., Qin, H., Ou, J., Peng, K., Zhou, F., Li, C., Liu, Z., & Chen, R. (2020). Epidemiology of mental health problems among patients with cancer during COVID-19 pandemic. *Translational psychiatry, 10*(1), 263-263. https://doi.org/10.1038/s41398-020-00950-y

Wang, Z. H., Yang, H. L., Yang, Y. Q., Liu, D., Li, Z. H., Zhang, X. R., Zhang, Y. J., Shen, D., Chen, P. L., Song, W. Q., Wang, X. M., Wu, X. B., Yang, X. F., & Mao, C. (2020). Prevalence of anxiety and depression symptom, and the demands for psychological knowledge and interventions in college students during COVID-19 epidemic: A large cross-sectional study [Article]. *Journal of affective disorders, 275*, 188-193. https://doi.org/10.1016/j.jad.2020.06.034

Weathers, F. W., Litz, B., Herman, D., Juska, J., & Keane, T. (1993). *PTSD Checklist—Civilian Version* American Psychological Association (APA). https://doi.org/10.1037/t02622-000

Wingo, A. P., Fani, N., Bradley, B., & Ressler, K. J. (2010). Psychological resilience and neurocognitive performance in a traumatized community sample. *Depression and Anxiety, 27*(8), 768-774. https://doi.org/10.1002/da.20675

Wolfe, J., Kimerling, R., Brown, P. J., Chrestman, K. R., & Levin, K. (1996). *Life Stressor Checklist--Revised* American Psychological Association (APA). https://doi.org/10.1037/t04534-000

Wu, Z., & McGoogan, J. M. (2020, 2020/04/07). Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China. *Jama, 323*(13), 1239. https://doi.org/10.1001/jama.2020.2648

Yang, J., Zheng, Y., Gou, X., Pu, K., Chen, Z., Guo, Q., Ji, R., Wang, H., Wang, Y., & Zhou, Y. (2020). Prevalence of comorbidities and its effects in patients infected with SARS-CoV-2: a systematic review and meta-analysis. *International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases, 94*, 91-95. https://doi.org/10.1016/j.ijid.2020.03.017

Zeleke, W., & Minaye, A. (2015). Mental Health and Somatic Distress among Ethiopian Migrant Returnees from the Middle East. *International Journal of Mental Health & Psychiatry, 01*(02). https://doi.org/10.4172/2471-4372.1000106