



Original Article

Factors affecting psychological symptoms and hope level in COVID-19 patients

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Abstract

Objectives: The aim of this study was to investigate the factors affecting psychological symptoms and hope level in patients diagnosed with coronavirus 2019 (COVID-19).

Methods: This descriptive study was conducted with 156 patients diagnosed with COVID-19 who were treated in the pandemic ward of a training and research hospital between January and March 2021. Patient data were collected using a patient information form, the Brief Symptom Inventory (BSI), and the Dispositional Hope Scale (DHS).

Results: The mean Global Severity Index score of the BSI was 0.45 ± 0.36 , the mean Positive Symptom Total (PST) score was 12.98 ± 9.23 , the mean Positive Symptom Distress Index score was 1.78 ± 0.5 , and the mean DHS total score was 46.42 ± 9.41 . Regression analysis yielded a significant cause and effect relationship between education status and anxiety disorder ($F=7.953$; $p=0.005$) as well as a relationship between age, gender, education level, income, and the presence of chronic disease and the total hope score ($F=3.158$; $p=0.010$). There was a statistically significant negative correlation between the mean DHS score and the mean PST score ($r=-0.262$; $p=0.001$).

Conclusion: The findings of this study revealed that overall, the patients displayed minimal psychological symptoms and a high level of hope. Age, gender, education, income, and the presence of chronic disease affected the hope level, while education had an effect on the level of anxiety. The hope level of the COVID-19 patients studied decreased as psychological symptoms increased. The development and implementation of psychological interventions to increase the hope level of these patients and the general public is recommended as a preventive and strengthening measure.

Keywords: COVID-19; hope; nursing; pandemics; psychology.

Infectious epidemics have significant psychosocial effects on society.^[1] The outbreak of coronavirus disease 2019 (COVID-19) quickly became a global health problem that had varied and severe economic, social, and psychological consequences.^[2,3] The psychological effects of a positive COVID-19 diagnosis represent an important health concern. After receiving the diagnosis, numerous psychosocial stress factors, which could include required isolation, perceived danger, uncertainty, a prolonged hospital stay, physical discomfort, fear of infecting others, stigma, discrimination, and lack of social support, can have a negative effect on mental health.^[4-6] Individuals may experience hopelessness, anger, anxiety, de-

pression, stress, and loneliness, particularly during isolation. An increase in negative emotions frequently leads to a simultaneous decrease in positive emotions and life satisfaction.^[6,7] These negative moods can also lead to suicidal thoughts.

The definition of hope includes an individual's belief in the possibility of a better future, their ability to achieve goals, and the impetus to develop strategies to accomplish those goals. An individual with a high level of hope tends to be dynamic and ambitious and have a strong sense of life purpose. Hope provides resilience and the stimulus to seek out alternative solutions in the face of difficulty.^[8] Hope affects adherence to therapy, mental health, and quality of life.^[9] It helps an individ-

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What is presently known on this subject?

- The coronavirus 2019 (COVID-19) pandemic created a global health problem that had a variety of negative effects, including physical, social, and psychological consequences. It has been established that many patients diagnosed with COVID-19 experienced psychological distress, but our research revealed no study that examined the relationship between psychological problems and the hope level of patients with COVID-19.

What does this article add to the existing knowledge?

- The results of this study indicated that overall, the psychological symptoms of the COVID-19 patients studied were low and their hope level was high. Notably, however, the hope level decreased as psychological symptoms increased. Various sociodemographic factors influenced the level of hope.

What are the implications for practice?

- This study draws attention to the importance of hope. Efforts such as psychological counseling services to reduce mental health symptoms and preventive mental health care that will increase the hope level of COVID-19 patients and healthy individuals will be broadly beneficial.

ual cope with challenges, achieve healthy goals, and promotes good health and quality of life.^[10,11] It can also reduce negative emotions that patients may feel in acute crisis situations and help them to adapt and engage in a positive fashion.^[12] It is important to recognize the value and importance of such factors. The COVID-19 pandemic had a significant effect on the levels of anxiety and hope among the public. The risk of death and uncertainties regarding the exact course, severity, and duration of the disease, treatment methods, and vaccinations were reported as contributing factors to anxiety and hopelessness about the future.^[13] Therefore, maintaining or improving hope can be an important factor in sustaining mental well-being in difficult circumstances, such as the COVID-19 pandemic.^[2]

There have been many studies that investigated the psychological effects of the COVID-19 epidemic on healthcare workers and other healthy members of society,^[1,3,6,13-15] however, the research on the psychological problems experienced by patients with COVID-19 remains limited.^[4,5,16] A review of the literature revealed no study that examined the relationship between these psychological problems among patients and their hope level. The aim of the current study was to examine factors affecting psychological symptoms and hope level in COVID-19 patients.

Research Questions

- What factors affect psychological symptoms and the hope level of COVID-19 patients?
- What is the effect of psychological symptoms on the hope level of COVID-19 patients?
- What is the correlation between psychological symptoms and the hope level of COVID-19 patients?

Materials and Method**Ethical Considerations**

This research was approved by the University of Health Sciences Hamidiye Scientific Research Ethics Committee on December 25, 2020 (No: 20/532) and the Scientific Research

Platform established by the Ministry of Health (No: 2020-12-30T11_33_25). Before the data were collected, the patients were informed about the study, and written and verbal consent was obtained from those who agreed to participate. The principles of the Declaration of Helsinki were observed throughout. Permission was obtained from the respective authors to use the Dispositional Hope Scale and Brief Symptom Inventory.

Study Design

This descriptive study was carried out in the pandemic ward of a training and research hospital in Istanbul, Turkey, between January and March 2021.

G*Power 3.0.10 software (Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A.) was used to determine the appropriate sample size. The effect size was calculated to be 0.25, according to the study conducted by Diğrak et al.^[17] Power analysis indicated that a sample of 128 patients would provide 80% power, a 5% margin of error, and an effect size of 0.25. A total of 156 patients who were literate, older than 18 years of age, had a positive COVID-19 test, were treated in the pandemic ward of the study hospital, and consented to participate in the study were included in this study. Patients with a mental disability, communication difficulties, or who required mechanical ventilation or advanced life support were excluded.

Data Collection Tools

The patient data were collected using a patient information form, the Brief Symptom Inventory (BSI), and the Dispositional Hope Scale (DHS).

Patient Information Form: This form was prepared by the researchers based on the literature and consisted of a total of 8 questions. The patients were asked to provide details related to age, gender, marital status, education level, income, chronic disease status, smoking, and alcohol use.^[1,6,13]

Brief Symptom Inventory: The BSI was developed by Derogatis in 1992 as a brief psychological self-report scale of recent symptoms.^[18] A validity and reliability study of a Turkish version of the scale was conducted by Şahin and Durak in 1994. The inventory consists of a total of 53 items and uses 9 subdimensions, 3 global indices, and additional items. The subdimensions are: Somatization, Obsession-Compulsion, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism. The global indices incorporated are the Global Severity Index (GSI), the Positive Symptom Total (PST), and the Positive Symptom Distress Index (PSDI). The score for each subdimension is obtained by dividing the total score by the number of items in that scale. The scoring system used for the 9 subdimensions, the GSI, and the PSDI is a Likert-type scale of 0-4 points (not at all-extremely) and the total score range of the PST is 0-53 points. A higher score suggests greater psychological distress. A Cronbach alpha coefficient for the overall total score of the

scale of 0.96 and 0.95 has been reported, and the subdimension values were 0.55-0.86.^[19] In this study, the Cronbach alpha coefficient of the total score was 0.914, and the subdimension coefficient were 0.448-0.811.

Dispositional Hope Scale: The DHS was developed by Snyder et al.^[20] in 1991 to determine the level of dispositional hope of individuals aged 15 or more. A validity and reliability study of a Turkish version of the scale was conducted by Tarhan and Bacanlı in 2015. The scale uses a 4-point, Likert-type rating for 12 items. Two subdimensions, Pathways (Alternative Ways Thinking) and Agency (Actuating Thinking), are each scored based on 4 items. The remaining 4 items are fillers unrelated to hope and are not scored. The sum of the 2 subdimension scores (8 items) is the total scale score. The lowest possible score is 8 points and the highest possible score is 64 points. A higher score indicates a high level of dispositional hope. The validity and reliability study reported a Cronbach alpha coefficient of the scale of 0.78 for the Pathways subdimension, 0.81 for the Agency subdimension, and 0.86 for the total score.^[21] In this study, the Cronbach alpha coefficients were 0.861 for the Pathways subdimension, 0.831 for the Agency subdimension, and 0.893 for the total score.

Data Collection

The data were collected in face-to-face meetings with participants who met the inclusion criteria that required only 10-15 minutes. Droplet and contact isolation precautions were observed during the collection: a disposable apron, N95 mask, goggles, face shield, and gloves were worn. After leaving each patient's room, the protective items were removed and hands were washed. There was very little contact with the patient and the data documents were retained in a sealed box. Personal protective equipment was also used to perform the data entry.

Statistical Analysis

R version 2.15.3 software (R Development Core Team, Vienna, Austria) was used to conduct the statistical analysis. Minimum, maximum, mean, SD, median, first and third quartiles, frequency, and percentage were calculated to report the data. The conformity of quantitative data to normal distribution was evaluated with the Shapiro-Wilk test and graph plotting. Age, gender, and chronic disease status demonstrated normal distribution. Linear regression analysis was performed to determine the effect of descriptive characteristics (age, marital status, education level, income, chronic disease status, alcohol use, smoking) on psychological symptoms and hope. Pairwise analysis (Pearson correlation test, t-test, Mann-Whitney U test, Kruskal-Wallis test) of the descriptive characteristics and the psychological symptoms and hope scores yielded related characteristics to be included in the regression model. Categorical variables were taken as dummy variables in the regression model. These dummy variables were gender (male), marital status (married), and chronic disease (none). Stepwise

regression analysis was performed to identify the effect of the independent variables (BSI). Pearson correlation analysis was used to determine the level of correlation between quantitative variables. The Cronbach alpha coefficient was calculated to assess the internal consistency level of the scales. Statistical significance was accepted at $p < 0.05$.

Results

The mean age of the patients participating in the study was 55.45 ± 18.03 years, 58.3% ($n=91$) were male, 82.7% ($n=129$) were married, 39.1% ($n=61$) were primary school graduates, and the income of 53.2% ($n=83$) was described as equal to their expenses. In the group, 56.4% ($n=88$) had ≥ 1 chronic disease, 85.2% ($n=133$) did not consume alcohol and 67.9% ($n=106$) did not smoke (Table 1).

The BSI subdimension and global index values revealed a mean Somatization score of 0.96 ± 0.7 , a mean Obsession-Compul-

Table 1. Distribution of descriptive characteristics of the participants (n=156)

Characteristics	Min-Max	Mean \pm SD
Age (years)	19-92	55.45 \pm 18.03
	n	%
Gender		
Female	65	41.7
Male	91	58.3
Marital status		
Married	129	82.7
Single	27	17.3
Education level		
Literate	21	13.5
Primary school	61	39.1
Secondary school	12	7.7
High school	13	8.3
University or higher	49	31.4
Income		
Less than expenses	52	33.3
Equal to expenses	83	53.2
More than expenses	21	13.5
Chronic disease		
Yes	88	56.4
No	68	43.6
Alcohol use		
Yes	7	4.5
No	133	85.2
Quit	16	10.3
Smoking		
Yes	14	9.0
No	106	67.9
Quit	36	23.1

sion score of 0.42±0.53, a mean Interpersonal Sensitivity score of 0.31±0.49, a mean Depression score of 0.49±0.65, a mean Anxiety score of 0.4±0.45, a mean Hostility score of 0.21±0.37, a mean Phobic Anxiety score of 0.33±0.49, a mean Paranoid Ideation score of 0.23±0.42, a mean Psychoticism score of 0.15±0.32, a mean Additional Items score of 0.83±0.67, a mean GSI score of 0.45±0.36, a mean PST score of 12.98±9.23, and a mean PSDI score of 1.78±0.50.

The mean total DHS score was 46.42±9.41, with a mean Pathways subdimension score of 23.23±5.10 and a mean Agency subdimension score of 23.19±5.18. The findings indicated that

the participants displayed a low level of psychological symptoms and a good level of hope.

Table 2 shows the results of regression analysis used to examine factors affecting psychological symptoms and hope. Following pairwise analysis (Pearson correlation test, t-test, Mann-Whitney U test, Kruskal-Wallis test) of descriptive characteristics and the psychological symptoms and hope scores, related characteristics were included in the regression model. Categorical variables were used as dummy variables: gender (male), marital status (married), and chronic disease (none). Regression analysis performed to determine the cause-and-

Table 2. Regression analysis of factors affecting psychological symptoms and hope level (n=156)

Dependent variables	Independent variables	β	t	p	F	Model (p)	R ²
Somatization	b0	2.739	6.562	0.000	5.077	0.001*	0.095
	Age	0.000	0.111	0.912			
	Gender - Male	-0.212	-1.854	0.066			
	Education level	-0.119	-2.628	0.009			
	Chronic disease - None	-0.073	-0.557	0.578			
Obsession-Compulsion	b0	1.482	15.276	0.000	0.586	0.445	0.003
	Education level	-0.022	-0.765	0.445			
Depression	b0	1.908	11.113	0.000	6.384	0.013*	0.034
	Gender	-0.262	-2.527	0.013			
Anxiety	b0	1.607	19.896	0.000	7.953	0.005*	0.043
	Education level	-0.066	-2.820	0.005			
Hostility	b0	1.236	7.507	0.000	5.051	0.008*	0.050
	Age	-0.003	-1.895	0.006			
	Marital status - Married	0.134	1.611	0.109			
Phobic Anxiety	b0	1.598	14.224	0.000	6.652	0.011*	0.035
	Income	-0.151	-2.579	0.011			
Paranoid Ideation	b0	1.480	13.761	0.000	6.111	0.015*	0.032
	Age	-0.005	-2.472	0.015			
Pathways	b0	21.090	7.235	0.000	9.379	0.000*	0.213
	Age	-0.075	-2.543	0.012			
	Gender - Male	1.826	2.336	0.021			
	Education level	0.732	2.321	0.022			
	Income	1.372	2.408	0.017			
	Chronic disease - None	-0.934	-1.040	0.300			
Agency	b0	17.487	7.075	0.000	7.765	0.000*	0.149
	Age	-0.038	-1.374	0.171			
	Gender - Male	1.931	2.406	0.017			
	Education level	0.444	1.332	0.185			
	Income	1.857	3.086	0.002			
	Chronic disease - None	-0.934	-1.040	0.300			
Dispositional Hope Scale total	b0	68.930	12.573	0.000	3.158	0.010*	0.065
	Age	-0.137	-2.471	0.015			
	Gender - Male	0.873	0.594	0.553			
	Education level	-0.007	-0.011	0.991			
	Income	2.620	2.444	0.016			
	Chronic disease - None	-2.707	-1.603	0.111			

*p<0.05. β: Amount of increase; F: Significance value; Model (p): Regression significance value; R²: Explanatory rate; t: Significance value. Note: The dummy variables were gender (male), marital status (married), and chronic disease (none).

effect relationship between age, gender, educational status, chronic disease status and Somatization was significant ($F=5.077$; $p=0.001$). The total variance in Somatization was 9.5% ($R^2=0.095$). A higher level of education was associated with a lower Somatization score ($\beta=-0.119$). Regression analysis to determine the cause-and-effect relationship between gender and the Depression score was also significant ($F=6.384$; $p=0.013$). The total variance in Depression was determined to be 3.4% ($R^2=0.034$). Depression was less prevalent in men ($\beta=-0.262$). Regression analysis also revealed that the cause-and-effect relationship between education status and the Anxiety score was significant ($F=7.953$; $p=0.005$). The total change in the Anxiety score was 4.3% ($R^2=0.043$). A higher level of education was associated with a decreased Anxiety score ($\beta=-0.066$). Furthermore, regression analysis determined a significant relationship between age, marital status, and Hostility ($F=5.051$; $p=0.008$). The total variance in the Hostility score was 5% ($R^2=0.050$). Greater age was correlated with a lower Hostility score ($\beta=-0.003$). The relationship between income status and Phobic Anxiety was also found to be significant ($F=6.652$; $p=0.011$). The total variance in the Phobic Anxiety score was 3.5% ($R^2=0.035$). Higher income status was associated with a lower Phobic Anxiety score ($\beta=-0.151$). Age and Paranoid Ideation were also found to have a significant cause-and-effect relationship ($F=6.111$; $p=0.015$). The total variance in the Paranoid Ideation score was 3.2% ($R^2=0.032$). Greater age decreased the Paranoid Ideation score ($\beta=-0.005$). Regression analysis determined that the relationship between age, gender, education level, income status, chronic disease status, and the Pathways score was significant ($F=9.379$; $p=0.000$). The total variance in the Pathways score was 21.3% ($R^2=0.213$). Greater age decreased the Pathways score ($\beta=-0.075$), while male gender and higher levels of education and income increased the Pathways score ($\beta=1.826$, $\beta=0.732$, $\beta=1.372$, respectively). The relationship between age, gender, education level, income status, and Agency was also significant ($F=7.765$; $p=0.000$). The total variance in the Agency score was 14.9% ($R^2=0.149$). Male gender and a higher income increased the level of Agency ($\beta=1.931$, $\beta=1.857$). The regression analysis of the relationship between age, gender, education level, in-

come, chronic disease status, and total hope score was also significant ($F=3.158$; $p=0.010$). The total variance in hope level was 6.5% ($R^2=0.065$). Greater age was associated with a decreased level of hope ($\beta=-0.137$), while a higher income increased the level of hope ($\beta=2.620$).

The effect of the BSI on the DHS is shown in Table 3. Stepwise regression analysis was performed to reduce the effect of independent variables (BSI inventory). The cause-and-effect relationship between Phobic Anxiety and Somatization and hope was significant ($F=5.133$; $p=0.007$). In all, 5.1% of the total variance in hope level was explained by the Phobic Anxiety and Somatization scores ($R^2=0.051$). While Phobic Anxiety decreased the level of hope ($\beta=-4.156$), Somatization increased the level of hope ($\beta=2.417$). The stepwise regression analysis of the relationship between the Pathways subdimension score and Phobic Anxiety and Obsession-Compulsion was also found to be significant ($F=9.651$; $p=0.000$). The results indicated that 10% of the total variance in the Pathways score was explained by Phobic Anxiety and Obsession-Compulsion 10% ($R^2=0.100$). Phobic Anxiety ($\beta=-2.159$) and Obsession-Compulsion ($\beta=-1.851$) decreased the Pathways score. In addition, stepwise regression analysis revealed a significant relationship between Agency and Obsession-Compulsion and Phobic Anxiety ($F=15.275$; $p=0.000$). Obsession-Compulsion and Phobic Anxiety explained 15.6% of the total variation in the level of Agency ($R^2=0.156$). Phobic Anxiety ($\beta=-1.873$) and Obsession-Compulsion ($\beta=-2.954$) decreased the level of Agency.

Table 4 describes the relationship between the BSI and DHS scores of the participants. There was a statistically significant negative correlation between the mean total DHS score and the mean Obsession-Compulsion, Interpersonal Sensitivity, Depression, Anxiety, Phobic Anxiety, Paranoid Ideation, Psychoticism, Additional Items, GSI, and PST scores.

Discussion

The lengthy COVID-19 pandemic has had a significant effect worldwide on both physical and mental health.^[13,22] Many of

Table 3. The effect of the Brief Symptom Inventory on the Dispositional Hope Scale (n=156)

Dependent variables	Independent variables	β	t	p	F	Model (p)	R ²
Dispositional Hope Scale total	b0	64.287	26.193	0.000	5.133	0.007*	0.051
	Phobic Anxiety	-4.156	-2.802	0.006			
	Somatization	2.417	2.333	0.021			
Pathways	b0	28.687	21.956	0.000	9.651	0.000*	0.100
	Phobic Anxiety	-2.159	-2.481	0.014			
	Obsession-Compulsion	-1.851	-2.326	0.021			
Agency	b0	29.826	23.192	0.000	15.275	0.000*	0.156
	Obsession-Compulsion	-2.954	-3.773	0.000			
	Phobic Anxiety	-1.873	-2.187	0.030			

* $p<0.05$. β : Amount of increase; F: Significance value; Model (p): Regression significance value; R²: Explanatory rate; t: Significance value.

Table 4. The relationship between the Brief Symptom Inventory and Dispositional Hope Scale scores (n=156)

Brief Symptom Inventory		Pathways	Agency	Dispositional Hope Scale total
Somatization	r	-0.137	-0.004	-0.076
	p	0.088	0.962	0.344
Obsession-Compulsion	r	-0.271	-0.370	-0.350
	p	0.001*	<0.001*	<0.001*
Interpersonal Sensitivity	r	-0.207	-0.327	-0.292
	p	0.010*	<0.001*	<0.001*
Depression	r	-0.198	-0.345	-0.297
	p	0.013*	<0.001*	<0.001*
Anxiety	r	-0.152	-0.206	-0.196
	p	0.059	0.010*	0.014*
Hostility	r	-0.055	-0.073	-0.070
	p	0.495	0.362	0.384
Phobic Anxiety	r	-0.284	-0.298	-0.318
	p	<0.001*	<0.001*	<0.001*
Paranoid Ideation	r	-0.076	-0.218	-0.161
	p	0.348	0.006*	0.045*
Psychoticism	r	-0.097	-0.221	-0.174
	p	0.228	0.006*	0.030*
Additional Items	r	-0.137	-0.195	-0.181
	p	0.088	0.015*	0.023*
Global Severity Index	r	-0.242	-0.313	-0.303
	p	0.002*	<0.001*	<0.001*
Positive Symptom Total	r	-0.211	-0.268	-0.262
	p	0.008*	0.001*	0.001*
Positive Symptom Distress Index	r	-0.145	-0.117	-0.143
	p	0.078	0.154	0.081

*p<0.05. r: Pearson correlation coefficient.

those affected by COVID-19 have been reported to experience problems such as anxiety, depression, stress, anger, somatization, emotional distress, and poor sleep quality.^[6,7,23] We found that symptoms of somatization, obsession-compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism were low in the COVID-19 patients studied. However, Guo et al.^[5] reported that among patients hospitalized with mild symptoms, those diagnosed with COVID-19 experienced higher levels of depression, anxiety, and post-traumatic stress symptoms than those who were COVID-19-negative. Similarly, other research conducted in China early in the pandemic revealed that most of the COVID-19 patients displayed significant post-traumatic stress symptoms prior to discharge.^[4] Another study also reported that anxiety, depression, and post-traumatic stress symptoms were common in COVID-19 patients.^[16] Sun et al.^[24] found that the negative emotions seen in COVID-19 patients early in the disease gradually subsided and that patients changed their attitude, displaying mixed positive and negative emotions. COVID-19 patients experienced more negative emotions in the first phase, but over time, both positive and negative emotions could develop. These findings and those of many other

researchers indicate that the pandemic has affected the mental health of those infected.

The COVID-19 pandemic led to fear, anxiety, hopelessness, and psychological distress among patients and the general public.^[25,26] Increased anxiety can affect an individual's level of hope. Therefore, it is important to determine the factors that affect the hope level. During the COVID-19 pandemic, factors such as a low income, female gender, and an intense work pace were seen to have an effect on anxiety and a sense of hopelessness.^[13] In this study, the rate of depression was lower among male patients. Male gender and a higher income were associated with a higher level of agency, less phobic anxiety, and a higher level of hope. Depression has been reported to be more common among women during the COVID-19 pandemic.^[27] Mousoulidou et al.^[26] found that women in Cyprus experienced higher levels of anxiety and despair than men and were more likely to use protective measures during the pandemic. Other researchers investigating the prevalence of depression and anxiety in COVID-19 patients observed that there was no significant difference between genders in terms of depression and anxiety.^[28] Mathias et al.^[29] found that those with a lower

income who were trying to cope with the pandemic, which often had a severe impact on the livelihood of low-income workers, experienced more symptoms of hopelessness, helplessness, and mental health distress. Fu et al.^[30] noted that university students with a low family income experienced more anxiety during the COVID-19 pandemic. Rudenstine et al.^[31] also found that the prevalence and severity of anxiety and depression during the pandemic was greater in individuals with a low income. In this study, it was observed that greater age was associated with a decreased Pathways score and a lower level of hope. The study conducted by Mousoulidou et al.^[26] demonstrated that the elderly experienced more emotional distress and highlighted the important role of social support during the COVID-19 pandemic. In a similar study, it was seen that a high income had a positive effect on the level of hope in older individuals.^[32] In our study, a higher level of education correlated with a decreased level of anxiety and somatization. Liang et al.^[33] found that those with less education were more likely to experience psychological distress. Another study had results indicating that the elderly, males, and individuals with a lower level of education experienced more psychologically negative effects during the COVID-19 pandemic.^[34] Yıldırım et al.^[23] observed that a greater level of education and age, the presence of a chronic disease, and female gender were associated with more psychological distress. The literature suggests that sociodemographic characteristics had significant effects on the mental health of COVID-19 patients.

Hope and the ability to use good coping strategies have been reported to be protective factors in terms of psychological symptoms seen during the pandemic.^[16] In this study, the hope level of COVID-19 patients was found to be high. Zhong et al.^[12] found that the hope level of severe COVID-19 patients was moderate. Mirhosseini et al.^[35] reported that a high hope score was directly associated with less anxiety during the COVID-19 pandemic. Other studies have also noted the benefit of a high level of hope.^[9,11,36] These results show that hope is an important source of motivation to overcome problems, including those associated with COVID-19.

In this study, age, gender, education level, income, and chronic disease status explained 6.5% of the total variance in hope level. Greater age decreased the level of hope, while a greater income increased the level of hope. Hacımusalar et al.^[13] reported that the level of hopelessness in women was significantly higher than that of men during the COVID-19 pandemic. Conversely, it has also been noted that there was no significant difference according to gender in terms of hope.^[37] In the study conducted by Zhong et al.,^[12] while there was no significant difference in the hope level of COVID-19 patients according to age, gender, or income level, a significant difference was found according to marital status and education level. Patients who were married and had a higher education level were found to have higher hope levels. Rambod et al.^[38] reported that there was no significant relationship between hope and age, gender, marital status, education level, or the presence of chronic disease (hypertension, diabetes). In another study, it

was determined that the hope level of the patients was negatively affected as age increased and general health declined.^[9] These results suggest that sociodemographic characteristics may have positive or negative effects on the level of hope.

The COVID-19 pandemic has been associated with an increase in various psychological effects, especially anxiety. Hope has a motivational effect and adds to the ability to cope with anxiety.^[35] In this study, 5.1% of the total variance in hope level was explained by the Phobic Anxiety and Somatization scores. While Phobic Anxiety decreased the level of hope, Somatization increased the level of hope. We found that 10% of the total variance in the Pathways score and 15.6% of the total variance in the Agency score was explained by Phobic Anxiety and Obsession-Compulsion. Phobic Anxiety and Obsession-Compulsion symptoms reduced the Pathways and Agency scores. Similarly, Mirhosseini et al.^[35] showed that for each unit increase in the average hope score, the participants' average anxiety score decreased by 0.343 units. Hope would appear to have a positive effect on anxiety.

The psychological problems experienced by individuals during the pandemic may be an important indicator of hopelessness.^[13] It has been reported that as the hope level of patients increased, their depression, anxiety, and stress levels decreased significantly.^[38] In this study, it was observed that as the obsession-compulsion, interpersonal sensitivity, depression, anxiety, phobic anxiety, paranoid ideation, and psychoticism symptoms of patients with COVID-19 increased, their hope level decreased. Mirhosseini et al.^[35] found that a high hope level among members of the public was directly related to a lower anxiety level during the COVID-19 pandemic. It has been reported that hope appeared to be a protective factor against anxiety during the COVID-19 pandemic.^[14] Similarly, an increase in anxiety during the pandemic was associated with an increase in hopelessness.^[13] Satici et al.^[2] also determined that people with a high hope level experienced less fear of COVID-19 and displayed a greater subjective level of happiness. In general, it is likely that individuals with a high level of hope experienced less psychological distress during the pandemic.

Limitations

This study was conducted with patients hospitalized in the pandemic ward of a training and research hospital in Istanbul. Therefore, the findings cannot be generalized to other patients diagnosed with COVID-19 during the pandemic in Turkey or elsewhere. The research data are limited to the date of execution of the study, the scales used in data collection, and the self-report responses provided by the patients.

Conclusion

The findings of this study indicated that the psychological symptoms of the COVID-19 patients studied were low and their hope level was high. As the psychological symptoms of

COVID-19 patients increased, their hope level decreased. The development and implementation of psychological support and interventions to increase hope among COVID-19 patients and long-term follow-up studies would be valuable. It would also be a constructive preventive measure to provide support and mental health services to those who have not received a positive COVID-19 diagnosis/are psychologically healthy to foster resilience and hope in the community. Finally, qualitative studies on this topic conducted with COVID-19 patients would also be useful.

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