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## Observational Study

# Relationship between perceived social support and post-traumatic growth in coronavirus disease 2019 patients discharged from the hospital

Meltem Şirin Gök, Bahar Çiftçi

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## Abstract

### BACKGROUND

The coronavirus disease 2019 (COVID-19) pandemic has affected mental health and physical health negatively in some individuals. Examining perceived social support and post-traumatic growth (PTG) in COVID-19 patients could facilitate our understanding of how patients maintain their mental health.

### AIM

To examine the relationship between the level of perceived social support and PTG in COVID-19 patients discharged from the hospital.

### METHODS

This descriptive study was carried out between August and September 2022 with patients who were hospitalized due to COVID-19 in a university hospital in Erzurum and who were discharged at least 3 mo prior to the beginning of the study. The study was completed by 196 patients. Study data were collected face-to-face using a personal information form, multidimensional scale of perceived social support and PTG inventory.

### RESULTS

The total mean score of the multidimensional scale of perceived social support was  $63.82 \pm 15.72$ . The PTG inventory total mean score was  $47.77 \pm 19.85$ . In addition, a direct significant correlation was found between perceived social support in COVID-19 patients and PTG.

### CONCLUSION

The study results showed that perceived social support variables affected PTG

significantly. Therefore, it is recommended for healthcare professionals to implement interventions to promote social support from healthcare professionals and the patient's family and friends. Considering the negative effects of the ongoing COVID-19 pandemic, it is very important and necessary to implement effective public health interventions to promote PTG to reduce mental health problems.

**Key Words:** COVID-19 patients; Perceived social support; Post-traumatic growth; COVID-19

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**Core tip:** Since post-traumatic growth (PTG) includes development at the level of psychosocial functionality, it can contribute to personal development by positively affecting psychological and social factors after traumatic events. Social support positively affects an individual's mental health and PTG. The results of this study remarkably showed that there is a significant relationship between perceived social support and PTG. More studies are needed to confirm this observation.

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## INTRODUCTION

The symptoms are variable in individuals diagnosed with coronavirus disease 2019 (COVID-19). Some individuals were asymptomatic, while the disease may progress from mild pneumonia to severe and fatal acute respiratory failure[1]. This disease affects the physical, psychological and social well-being of individuals[2]. Fear of death, hospitalization in the intensive care unit, endotracheal intubation, pain, limited communication, environmental stress, insomnia, impaired comfort, quarantine measures, feeling of loneliness, loss of control and stigmatization are among the different stressors of the COVID-19 pandemic[3]. A diagnosis of COVID-19 and hospitalization are considered the greatest of these stressors and accepted as a traumatic life experience[4]. While traumatic events cause serious mental problems such as anxiety, depression and post-traumatic stress disorder in some individuals[5], they may result in post-traumatic growth (PTG) in some[6]. PTG is defined as positive psychological changes as a result of a major life crisis or struggle with a traumatic event[7]. These changes occur in areas of improved interpersonal relationships, new opportunities, a greater sense of personal power, a greater appreciation of life and spiritual change[7].

The rapid increase in the number of COVID-19 cases and deaths has been reported to cause stress, fear, anxiety and depression in many people[8]. However, as individuals try to understand negative experiences and adapt to difficulties, positive reactions may also occur[9]. After the diagnosis of a severe disease, most survivors experience various positive changes that reflect useful psychological adaptation and positive personal development processes that enable them to better cope with the disease[7]. In a qualitative study, it was found that patients with severe COVID-19 showed negative emotional reactions in the early periods of the disease, while the disease resulted in psychological growth over time. The patients met the problems gratefully by cherishing their lives and their families[3]. Since PTG includes development at a psychosocial functionality level, it may contribute to personal development by positively affecting psychological and social factors after traumatic events[10]. In this context, social support is a source of resilience that positively affects individual mental health and facilitates PTG[11-13].

Measures taken during the COVID-19 pandemic, such as quarantine and social distancing, have led to differentiation in many areas of life. For this reason, individuals could not socialize at desired levels, and they faced problems such as social isolation and loneliness[14]. Similarly, in one study, social support was determined to be a psychological factor that made patients stronger[3]. Social support often refers to the care or support individuals receive from others or the feeling of belonging to a social network that provides mutual help[13]. To date social support has been broadly construed in two ways: perceived social support and received social support[15]. Perceived social support concerns the subjective evaluation of how individuals perceive friends and family members as available to provide material, psychological and overall support during times of need, whereas received support relates to the actual quantity of support received. This distinction between these two types of support is important for two reasons[15].

Social support in the face of stress can act in two different ways. In the buffer effect model, it is reported that social support reduces or balances the damaging effects of stress on physical and mental health as a buffer, especially in protecting physical and psychological health of people who are exposed to stressful experiences. In the basic impact model, social support has an effect independent of the level of stress, and there is a direct relationship between social support and health[16]. According to this approach, social support can increase life satisfaction and prevent or reduce stressful life events by providing a sense of belonging. Thus, with this effect of social support, the person experiences fewer physical and psychological problems[17]. Looking at the models that explain the relationship between psychological problems and social support, it is emphasized in the social causality model that lack of social support causes psychological symptoms. According to the social choice model, the individual's psychological symptoms cause the sources of social support to change. Finally, in the mutual effect model, while social support is effective on psychological well-being, the psychological state of the individual is also effective on accessing adequate social support. In other words, there is a bidirectional relationship between social support and psychological symptoms[18].

During COVID-19 treatment, the importance of psychosocial intervention is emphasized in both recovery and reducing psychological problems[13]. Studies conducted have reported that social support has an effect on improving psychological problems[12]. Psychological effects of contagious diseases may continue or develop over time. It has been found that individuals with high social support perception have fewer negative psychological consequences[11]. Social support is thought to be important for mental health in the post-discharge follow-up of COVID-19 survivors. Nurses, who are continuously interacting with patients, have important responsibilities in identifying traumatized individuals, increasing the support they need and empowering them in this process. Since the COVID-19 pandemic has negatively affected mental health and physical health, examining PTG and social support in COVID-19 patients will facilitate our understanding of how patients protect their mental health[19].

On the other hand, it is widely believed that high perceived social support predicts high PTG[15,20,21]. Given that several studies have reported that people often feel isolated and alienated and have difficulty accessing social support when diagnosed with COVID-19[22], there is a need to further clarify the role of perceived social support within PTG during COVID-19. In light of all this information, the aim of this study was to examine the relationship between the level of perceived social support and PTG in COVID-19 patients discharged from the hospital.

### **Research questions**

What are the perceived social support levels of COVID-19 patients discharged from the hospital?

What are the PTG levels of COVID-19 patients discharged from the hospital?

Is there a relationship between perceived social support and PTG in COVID-19 patients discharged from the hospital?

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## **MATERIALS AND METHODS**

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### **Study design**

This study was conducted with a descriptive and a cross-sectional design.

### **Place and time of the study**

The study was conducted at Atatürk University Research Hospital between August 2022 and September 2022.

### **Population and sample of the study**

The population of the study consisted of patients who were discharged after receiving COVID-19 treatment at Atatürk University Research Hospital. Before starting the study, a sufficient number of sample was calculated for correlation analysis with the G Power 3.1.9.7. Package program. Since no similar study was found in the literature, priori power analysis was performed based on a moderate effect size (0.3). In the power analysis based on alpha of 0.05 and power of 0.99, it was determined that the sample size should be 195. For this reason, the study was completed with 196 patients.

### **Inclusion criteria**

(1) Patients who were treated in the hospital with a diagnosis of COVID-19 and who had been discharged at least 3 mo prior to study enrollment; (2) Patients older than 18 years of age; and (3) Patients who did not have cognitive disabilities.

### **Data collection tools**

Study data were collected by using a personal information form, multidimensional scale of perceived social support and PTG inventory.

**Personal information form:** This form was prepared by the researchers to find out the demographic characteristics of discharged COVID-19 patients and COVID-19-related characteristics. This form consisted of questions such as age, sex, educational status, marital status, number of children and level of income.

**Multidimensional scale of perceived social support:** The scale was developed by Zimet *et al*[23]. A Turkish validity and reliability study of the scale was conducted by Eker *et al*[24]. The scale is a 7-point Likert type self-report consisting of 12 items and 3 subscales. The subscales are family support, friend support and significant other support. Each item is evaluated between 1 and 7. The minimum possible score from the scale is 12, while the maximum possible score is 84. A higher score means higher perceived social support. Internal consistency of the scale is between 0.80 and 0.95 for the total scale and the subscales[24]. Cronbach's alpha value was 0.93 for the present study.

**PTG inventory:** The inventory was developed by Tedeschi *et al*[5]. The scale consists of a total of 21 items and 5 factors. The scale factors are improved relationships, new possibilities, personal strength, spiritual growth and appreciation for life. Internal consistency coefficient of the original scale is 0.90, while internal consistency coefficients of the factors vary between 0.67 and 0.85[5]. PTG inventory was adapted into Turkish by Dürü *et al*[25]. The scale is a 6-point Likert type scale. Scoring system is between 0 (I did not experience this change) and 5 (I experienced this change to a very great degree). It was stated in the Turkish adaptation that the 5-factor structure was preserved, and this structure explained 67.84% of the total variance. Score range of the scale is between 0 and 105. Higher scores from the scale mean higher PTG. Cronbach's alpha was 0.93 in the Turkish adaptation study[25]. Cronbach's alpha was 0.94 in the present study.

### **Data collection**

Study data were collected with the face-to-face interview technique. After the purpose of the study was explained, the questions in the data collection tools were asked one by one, and the answers of the patients were recorded. Data collection lasted approximately 15 min for 1 patient. Consent was given by the patient prior to data collection.

### **Data assessment**

Data analysis was performed using SPSS version 22.0. Frequency, percentage, mean and standard deviation measurement were used for descriptive statistics. Normality distribution of the data was analyzed with skewness and kurtosis coefficients. Pearson's correlation analysis was used for the examination of the comparison between the two scales. Cronbach's alpha was evaluated to test the reliability of the scales. A *P* value of 0.05 was considered statistically significant. Post-traumatic effect of perceived social support was analyzed with a simple linear regression analysis.

### **Ethical considerations**

Ethical approval was obtained from the Ethics Committee of Atatürk University Faculty of Medicine to conduct the study. Written institutional permission was also obtained from Atatürk University Research Hospital for data collection. Oral and written informed consent was obtained from the patients.

### **Limitations of the study**

The first limitation of the study was the collection of data with self-report scales. Another limitation was that PTG symptoms were not evaluated by a mental health professional but by the self-reports of the patient. Since the results depended on data collected from COVID-19 patients discharged in the Eastern Anatolia region of Turkey, it is not suitable for the results to be generalized to COVID-19 patients from other regions.

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## **RESULTS**

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Mean age of the patients was  $50.05 \pm 19.19$ . It was found that 57.1% of the patients were male, 73.0% were married, 75.0% had children, 66.8% had nuclear family, 60.7% lived in a city center, and 59.2% were primary education graduates. It was found that 45.9% of the patients were unemployed and 57.7% had income equal to expenditure. It was found that 70.4% of the patients were treated in the COVID-19 clinic, treatment lasted for an average of  $13.22 \pm 10.46$  d, 52.6% received oxygen therapy, and an average of  $12.67 \pm 5.93$  mo passed after being discharged. We observed that 63.3% of the patients did not have a chronic disease, and 78.1% were not hospitalized for any other reason after discharge from COVID-19. In addition, it was found that 55.6% of the patients lost a close friend due to COVID-19, 93.3% did not receive psychological help from any expert due to COVID-19, and 87.2% had been vaccinated for COVID-19 (Table 1).

**Table 1 Sociodemographic characteristics of the patients, n (%)**

<b>Characteristics</b>	
Sex	
Female	112 (57.1)
Male	84 (42.9)
Marital status	
Single	53 (73.0)
Married	143 (27.0)
Children	
Yes	147 (75.0)
No	49 (25.0)
Family type	
Nuclear family	131 (66.8)
Extended family	65 (33.2)
Living place	
Village	45 (23.0)
District	32 (16.3)
Province	119 (60.7)
Education status	
Primary education	116 (59.2)
High school	39 (19.9)
University or graduate	41 (20.9)
Income status	
Less than income	40 (20.4)
Income is equivalent to expenses	113 (57.7)
More than income	43 (21.9)
Working status	
Yes <sup>1</sup>	90 (45.9)
No <sup>2</sup>	106 (54.1)
Chronic disease	
Yes	72 (36.7)
No	125 (63.3)
Treatment place	
Intensive care unit	46 (23.5)
Clinic	138 (70.4)
Both	12 (6.1)
Form of treatment	
No support	89 (45.4)
Oxygen therapy	103 (52.6)
Noninvasive-invasive ventilation	4 (2.0)
Lost a loved one due to COVID-19	
Family	31 (15.8)
Relative	56 (28.6)



Close friend	109 (55.6)
Hospitalization for another reason	
Yes	43 (21.9)
No	153 (78.1)
Received psychological support from a specialist due to COVID-19	
Yes	12 (6.1)
No	184 (93.9)
Availability of COVID-19 vaccine	
Yes	171 (87.2)
No	25 (12.8)
Age, mean ± SD	50.05 ± 19.19
Treatment duration (d), mean ± SD	13.22 ± 10.46
Time elapsed after COVID-19 treatment (mo), mean ± SD	12.67 ± 5.93
Stress level related to COVID-19, mean ± SD	7.14 ± 2.58

<sup>1</sup>Officer, self-employed, student.

<sup>2</sup>Housewife and those who do not work in another job.

COVID-19: Coronavirus disease 2019.

The total mean score of the multidimensional scale of perceived social support was  $63.82 \pm 15.72$ . The mean subscale scores of the multidimensional scale of perceived social support were  $20.22 \pm 6.27$  for family support,  $20.85 \pm 5.80$  for friend support and  $22.74 \pm 4.71$  for significant other support.

PTG growth inventory total mean score was  $47.77 \pm 19.85$ . When the factors were examined, the mean scores were  $13.87 \pm 5.57$  for improved relationships,  $8.52 \pm 3.82$  for new possibilities,  $8.81 \pm 4.71$  for personal strength,  $9.20 \pm 4.35$  for spiritual growth and  $7.34 \pm 3.43$  for appreciation for life (Table 2).

A weak, yet significant, positive correlation was found between family support and improved relationships, new possibilities, personal strength and total PTG scale ( $P < 0.05$ ). In the significant other subscale of perceived social support, no significant correlation was found between total PTG scale and subscales ( $P > 0.05$ ). A weak, yet significant, positive correlation was found between perceived social support total score of the patients and improved relationships, new possibilities, personal strength and total PTG scale ( $P < 0.05$ ) (Table 3). According to the results of the simple linear regression analysis, it was found that perceived social support significantly and positively predicted the PTG levels of the discharged COVID-19 patients ( $\beta = 0.159$ ,  $P < 0.05$ ). According to the model, perceived social support explained 2.5% of the total variance in PTG ( $R^2 = 0.025$  F = 5.026,  $P < 0.05$ ) (Table 4).

## DISCUSSION

In this study, which examined the relationship between the perceived social support level of COVID-19 patients discharged from the hospital and PTG, it can be seen that the patients had a good level ( $63.82 \pm 15.72$ ) of perceived social support (between 12 and 84) (Table 2). Social support was defined as the support available to the individual through social relationships with others. Social support from health professionals and health institutions is an effective factor in this regard[26]. A study by Moodi *et al*[27] showed that patients' perceived social support scores were high. Zhang *et al*[28] found increased support from friends and family during the COVID-19 outbreak. Thompson *et al*[29] found that social support increased in discharged COVID-19 patients. In the study of Kandeğer *et al*[30], COVID-19 patients were found to have high perceived social support. Alnazly *et al*[31] concluded that patients had high social support levels.

Health personnel became an important source of support for patients due to lack of direct communication between the patient and family members during their hospitalization. In addition to the support of family members, patients also receive support, such as education and counselling, from the health system. All these services may have played an important role in the formation of perceived social support. Increased perceived social support may subsequently positively influence PTG. Positive developments during the pandemic, such as the development and dissemination of the vaccine, may have helped to eliminate the negative emotions of COVID-19 patients and to create positive coping styles of the patients.

**Table 2** Multidimensional scale of perceived social support and post-traumatic growth scale sub-scale and mean, minimum and maximum values of total score averages

Scales	Minimum and maximum scores that can be obtained from the scale	Minimum and maximum scores taken from the scale	mean $\pm$ SD
MSPSS			
Family support	4-28	4-28	20.22 $\pm$ 6.27
Friend support	4-28	7-28	20.85 $\pm$ 5.80
Significant other support	4-28	4-28	22.74 $\pm$ 4.71
Total MSPSS	12-84	24-84	63.82 $\pm$ 15.72
PTGS			
Relationships with others	0-30	0-30	13.87 $\pm$ 5.57
New possibilities	0-20	0-18	8.52 $\pm$ 3.82
Personal strength	0-20	0-20	8.81 $\pm$ 4.71
Spiritual change	0-20	0-20	9.20 $\pm$ 4.35
Appreciate life	0-15	0-15	7.34 $\pm$ 3.43
Total PTGS	0-105	0-100	47.77 $\pm$ 19.85

MSPSS: Multidimensional scale of perceived social support; PTGS: Post-traumatic growth scale.

**Table 3** Relationship between post-traumatic growth scale and multidimensional scale of perceived social support

Relationship	Family support		Friend support		Significant other support		Total MSPSS	
	R	P value	R	P value	R	P value	R	P value
Relationships with others	0.177	0.177	0.151	0.035 <sup>a</sup>	0.132	0.064	0.166	0.020 <sup>a</sup>
New possibilities	0.163	0.023 <sup>a</sup>	0.155	0.030 <sup>a</sup>	0.125	0.08	0.16	0.025 <sup>a</sup>
Personal strength	0.142	0.048 <sup>a</sup>	0.135	0.059	0.126	0.078	0.144	0.044 <sup>a</sup>
Spiritual change	0.135	0.06	0.085	0.239	0.069	0.335	0.106	0.141
Appreciating life	0.127	0.077	0.141	0.048 <sup>a</sup>	0.123	0.085	0.14	0.051
Total PTGS	0.166	0.020 <sup>a</sup>	0.147	0.039 <sup>a</sup>	0.128	0.074	0.159	0.026 <sup>a</sup>

<sup>a</sup>Correlation was significant at the 0.05 level (two-tailed).

R: Pearson's correlation; MSPSS: Multidimensional scale of perceived social support; PTGS: Post-traumatic growth scale.

**Table 4** Perceived social support as predictors of post-traumatic growth

Parameter	B	Standard error	$\beta$	t	P value	R <sup>2</sup>	Adjusted R <sup>2</sup>
Total PTGS	34.969	5.880		5.947	0.000		
Total MSPSS	0.201	0.089	0.159	2.242	0.026	0.025	0.020

R = 0.159, R<sup>2</sup> = 0.025, F = 5.026, P < 0.05, Durbin Watson: 2.100. MSPSS: Multidimensional scale of perceived social support; PTGS: Post-traumatic growth scale.

In this study, it was found that the individuals had moderate (47.77  $\pm$  19.85) PTG (between 0 and 105) (Table 2). Although there are few studies on PTG in COVID-19 patients who have survived after admission to the intensive care unit, these results are in line with previous studies. Therefore, the present study showed that PTG may be important in patients treated in an intensive care unit for COVID-19. In another study, it was found that patients hospitalized in the intensive care unit with a

COVID-19 diagnosis experienced PTG close to a moderate level after treatment[32]. In a study conducted on discharged COVID-19 patients, Thompson *et al*[29] showed moderate PTG. The most important step for post-traumatic development is that individuals do not see themselves as trauma victims but as post-traumatic survivors. Tedeschi *et al*[5] suggested that initial stress is induced by traumatic events, which encourages individuals to challenge and rebuild (existing) schemas and assumptions, which then results in positive changes. However, one of the important points is that the evaluation of PTG symptoms by the patient's own reports, not by a mental health professional, may have affected this result. For this reason, the importance of the findings of this study will be emphasized, and the evaluation of the patient by both their own PTG and mental health experts will strengthen the results.

According to Tedeschi *et al*[5], social support plays an important role in the transition from trauma to growth since it activates the cognitive processes that support PTG. It can be especially valuable for COVID-19 patients to have the opportunity to express themselves in a supportive environment and to get help in any adversity they experience. Social support is associated with better physical and psychological health. The correlation between patients' perceived social support and PTG and the factors of improved relationships, new possibilities and personal strength was found to be positive but weak (Table 3). In the study by Gökahmetoğlu *et al*[33], no correlation was found between perceived social support and PTG. In a study conducted by Hill *et al*[34] on cancer patients, it was concluded that social support was not a predictive variable in PTG. In a study conducted on patients with different traumatic experiences, Dürü *et al*[25] found that social support did not have an effect on PTG.

On the other hand, perceived social support and PTG were found to be positively correlated in our study. In the study by Sun *et al*[3], it was stated that during quarantine periods individuals benefited from the emotional support they received from their families as well as the support provided by their colleagues and neighbors. Similarly, in a study conducted with individuals diagnosed with COVID-19 and discharged in China, it was determined that social support systems were positively related to PTG [29]. In a study examining the quarantine experiences of COVID-19 patients, it was stated that the social support patients received from their families and friends made a significant contribution to coping with negative emotions[35]. In a study by Lohiniva *et al*[36], some patients mentioned some positive developments such as feeling closer to their spouses and spending more time as a family during the quarantine period. A high level of perceived social support affects the individual's ability to provide a sense of having a safe environment, to emphasize their sense of belonging, to act as a buffer against stress, to provide new meanings and to create more positive perceptions that support growth. While perceived social support facilitates adaptation to cognitive processes, it also supports individuals to effectively manage coping strategies in identifying positive situations for their personal development.

Being diagnosed with COVID-19, physical symptoms caused by the disease and quarantine practices can cause many changes in individuals, especially spiritually. It is thought that the uncertainty about the disease and the treatment process, the fact that the disease can be fatal and the restrictions on daily life cause personal changes in individuals. Especially in this process, it has been observed that individuals experience many personal changes such as changes in life philosophy and perspective, changes in life priorities, strengthening in self-perception and appreciating and being grateful for what they have. It is thought that the differences between study results are due to the scales used, inclusion criteria and the way individuals perceive and evaluate social support. This positive change experienced by individuals may have led them to emerge stronger from the crisis created by the pandemic. Findings showed that increasing perceived social support can contribute to PTG.

Another remarkable finding is that the most significant growth in PTG was in the spiritual subdimension (Table 2). A sample of parents in Portugal during the pandemic found high rates of PTG, particularly in the areas of appreciation for life and improved relationships[37]. In the study by Liu *et al* [38], some patients stated that COVID-19 supported their personal development and motivation for a better life in the future. It is thought that this difference is due to Turkish culture, religious differences and customs. In this context, COVID-19 diagnosis may cause an individual change and empowerment in patients. In the present study, it was suggested that patients' life priorities and philosophies have changed and that they will prioritize their health.

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## CONCLUSION

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In the present study, which examined the relationship between perceived social support level of COVID-19 patients discharged from the hospital and PTG, it was found that patients had a good level of perceived social support and a moderate level of PTG. A significant correlation was also shown between perceived social support of the patients and PTG. Since there are few studies examining the relationship between these variables in the literature, it is important to conduct more studies to confirm these findings. It may be useful to repeat the research with larger samples. Prospective and longitudinal studies are recommended to further confirm the versatility of the findings and to elucidate the factors influencing PTG. Since these findings include subjective evaluations of patients, it is recommended to plan new studies in which the results are also evaluated objectively by mental health professionals.

**Relevance for clinical practice**

It is known that a large number of people have been affected by the COVID-19 pandemic, especially patients in the intensive care unit. The high impact of the traumatic event, although at least 3 mo have passed after being discharged from the intensive care unit due to COVID-19, may be associated with the continuation of the pandemic process and the increase in the number of patients. Therefore, considering the adverse mental health impacts of the ongoing COVID-19 pandemic, it is crucial to implement effective public health interventions to promote PTG and reduce mental health issues.

**ARTICLE HIGHLIGHTS****Research background**

The coronavirus disease 2019 (COVID-19) pandemic has affected the mental health of individuals. There is a controversial relationship between perceived social support and post-traumatic growth (PTG).

**Research motivation**

There are few studies that show the relationship between perceived social support and PTG in COVID-19 patients.

**Research objectives**

To examine the relationship between the level of social support perceived and PTG.

**Research methods**

This descriptive study was carried out between August and September 2022 with patients who were hospitalized due to COVID-19 and who were discharged at least 3 mo prior to the beginning of the study. The study was completed by 196 patients. Study data were collected face-to-face using a personal information form, multidimensional scale of perceived social support and PTG inventory.

**Research results**

It was found that patients had a good level of perceived social support and a moderate level of PTG.

**Research conclusions**

Perceived social support positively affects PTG.

**Research perspectives**

Further research is needed to confirm these results. In the future, mental health specialists should evaluate individuals for PTG.

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**FOOTNOTES**

**Author contributions:** Şirin Gök M contributed to the data analysis; Şirin Gök M and Çiftçi B contributed to the study design, data collection, study supervision, manuscript writing and critical revisions for important intellectual content.

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## REFERENCES

- 1 **Wu Z**, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. *JAMA* 2020; **323**: 1239-1242 [PMID: 32091533 DOI: 10.1001/jama.2020.2648]
- 2 **Wang C**, Pan R, Wan X, Tan Y, Xu L, Ho CS, Ho RC. Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. *Int J Environ Res Public Health* 2020; **17** [PMID: 32155789 DOI: 10.3390/ijerph17051729]
- 3 **Sun N**, Wei L, Wang H, Wang X, Gao M, Hu X, Shi S. Qualitative study of the psychological experience of COVID-19 patients during hospitalization. *J Affect Disord* 2021; **278**: 15-22 [PMID: 32949869 DOI: 10.1016/j.jad.2020.08.040]
- 4 **Forté G**, Favieri F, Tambelli R, Casagrande M. COVID-19 Pandemic in the Italian Population: Validation of a Post-Traumatic Stress Disorder Questionnaire and Prevalence of PTSD Symptomatology. *Int J Environ Res Public Health* 2020; **17** [PMID: 32532077 DOI: 10.3390/ijerph17114151]
- 5 **Tedeschi RG**, Calhoun LG. The Posttraumatic Growth Inventory: measuring the positive legacy of trauma. *J Trauma Stress* 1996; **9**: 455-471 [PMID: 8827649 DOI: 10.1002/jts.2490090305]
- 6 **Sarıalioğlu A**, Çiftçi B, Yıldırım N. The transformative power of pain and posttraumatic growth in nurses with Covid-19 PCR positive. *Perspect Psychiatr Care* 2022; **58**: 2622-2630 [PMID: 35471727 DOI: 10.1111/ppc.13102]
- 7 **Calhoun LG**, Tedeschi RG. The Foundations of Posttraumatic Growth: An Expanded Framework. In: Calhoun LG, Tedeschi RG. *Handbook of Posttraumatic Growth*. Abingdon: Routledge, 2014: 3-23
- 8 **Lai J**, Ma S, Wang Y, Cai Z, Hu J, Wei N, Wu J, Du H, Chen T, Li R, Tan H, Kang L, Yao L, Huang M, Wang H, Wang G, Liu Z, Hu S. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. *JAMA Netw Open* 2020; **3**: e203976 [PMID: 32202646 DOI: 10.1001/jamanetworkopen.2020.3976]
- 9 **Fino E**, Mema D, Treska V. The Interpersonal Dimension of Pandemic Fear and the Dual-Factor Model of Mental Health: The Role of Coping Strategies. *Healthcare (Basel)* 2022; **10**: 247 [PMID: 35206862 DOI: 10.3390/healthcare10020247]
- 10 **Celdrán M**, Serrat R, Villar F. Post-Traumatic Growth among Older People after the Forced Lockdown for the COVID-19 Pandemic. *Span J Psychol* 2021; **24**: e43 [PMID: 34505560 DOI: 10.1017/SJP.2021.40]
- 11 **Cai H**, Tu B, Ma J, Chen L, Fu L, Jiang Y, Zhuang Q. Psychological Impact and Coping Strategies of Frontline Medical Staff in Hunan Between January and March 2020 During the Outbreak of Coronavirus Disease 2019 (COVID-19) in Hubei, China. *Med Sci Monit* 2020; **26**: e924171 [PMID: 32291383 DOI: 10.12659/MSM.924171]
- 12 **Xiao H**, Zhang Y, Kong D, Li S, Yang N. The Effects of Social Support on Sleep Quality of Medical Staff Treating Patients with Coronavirus Disease 2019 (COVID-19) in January and February 2020 in China. *Med Sci Monit* 2020; **26**: e923549 [PMID: 32132521 DOI: 10.12659/MSM.923549]
- 13 **Yang X**, Yang X, Kumar P, Cao B, Ma X, Li T. Social support and clinical improvement in COVID-19 positive patients in China. *Nurs Outlook* 2020; **68**: 830-837 [PMID: 32980152 DOI: 10.1016/j.outlook.2020.08.008]
- 14 **Smith BJ**, Lim MH. How the COVID-19 pandemic is focusing attention on loneliness and social isolation. *Public Health Res Pract* 2020; **30** [PMID: 32601651 DOI: 10.17061/phrp3022008]
- 15 **Eagle DE**, Hybels CF, Proeschold-Bell RJ. Perceived social support, received social support, and depression among clergy. *J Soc Pers Relat* 2019; **36**: 2055-2073 [DOI: 10.1177/0265407518776134]
- 16 **Cohen S**. Social relationships and health. *Am Psychol* 2004; **59**: 676-684 [PMID: 15554821 DOI: 10.1037/0003-066X.59.8.676]
- 17 **Cohen S**, Wills TA. Stress, social support, and the buffering hypothesis. *Psychol Bull* 1985; **98**: 310-357 [PMID: 3901065 DOI: 10.1037/0033-2909.98.2.310]
- 18 **Calsyn RJ**, Winter JP. Social Support, Psychiatric Symptoms, and Housing: A Casual Analysis. *J Community Psychol* 2002; **30**: 247-259 [DOI: 10.1002/jcop.10004]
- 19 **Luo C**, Santos-Malave G, Taku K, Katz C, Yanagisawa R. Post-traumatic Growth and Resilience among American Medical Students during the COVID-19 Pandemic. *Psychiatr Q* 2022; **93**: 599-612 [PMID: 35211827 DOI: 10.1007/s11126-022-09981-8]
- 20 **Kilmer RP**, Gil-Rivas V, Griese B, Hardy SJ, Hafstad GS, Alisic E. Posttraumatic growth in children and youth: clinical implications of an emerging research literature. *Am J Orthopsychiatry* 2014; **84**: 506-518 [PMID: 25110973 DOI: 10.1037/ort0000016]
- 21 **Panjikidze M**, Beelmann A, Martskvishvili K, Chitashvili M. Posttraumatic Growth, Personality Factors, and Social

- Support Among War-Experienced Young Georgians. *Psychol Rep* 2020; **123**: 687-709 [PMID: 30704339 DOI: 10.1177/0033294118823177]
- 22 **Saltzman LY**, Hansel TC, Bordnick PS. Loneliness, isolation, and social support factors in post-COVID-19 mental health. *Psychol Trauma* 2020; **12**: S55-S57 [PMID: 32551762 DOI: 10.1037/tra0000703]
- 23 **Zimet GD**, Dahlem NW, Zimet SG, Farley GK. The Multidimensional Scale of Perceived Social Support. *J Pers Assess* 1988; **52**: 30-41 [DOI: 10.1207/s15327752jpa5201\_2]
- 24 **Eker D**, Arkar H, Yaldiz H. Factor Structure, Validity and Reliability of Multidimensional Perceived Social Support Scale Revised. *Turk J Psychiatr* 2001; **12**: 17-25
- 25 **Dürü C**. Studied post-traumatic stress symptoms and post-traumatic growth from the perspective of several variables, and proposed a model. PhD. Thesis, Institute of Social Sciences, University of Hacettepe. 2006.
- 26 **Li F**, Luo S, Mu W, Li Y, Ye L, Zheng X, Xu B, Ding Y, Ling P, Zhou M, Chen X. Effects of sources of social support and resilience on the mental health of different age groups during the COVID-19 pandemic. *BMC Psychiatry* 2021; **21**: 16 [PMID: 33413238 DOI: 10.1186/s12888-020-03012-1]
- 27 **Moodi M**, Sharifzadeh G, Baghernejad F. Evaluation of Perceived Social Support Status and Quality of Life in Improved COVID-19 Patients in Birjand, Iran. *Mod Care J* 2022; **19**: e120955 [DOI: 10.5812/modernc.120955]
- 28 **Zhang Y**, Ma ZF. Impact of the COVID-19 Pandemic on Mental Health and Quality of Life among Local Residents in Liaoning Province, China: A Cross-Sectional Study. *Int J Environ Res Public Health* 2020; **17** [PMID: 32244498 DOI: 10.3390/ijerph17072381]
- 29 **Thompson JE**. Tuberculosis and the acquired immunodeficiency syndrome. *Med J Aust* 1988; **149**: 286, 288 [PMID: 3412224 DOI: 10.3389/fpsyg.2021.658307]
- 30 **Kandeğer A**, Aydın M, Altınbaş K, Cansız A, Tan Ö, Tomar Bozkurt H, Eğilmez Ü, Tekdemir R, Şen B, Aktuğ Demir N, Sümer Ş, Ural O, Yormaz B, Ergün D, Tülek B, Kanat F. Evaluation of the relationship between perceived social support, coping strategies, anxiety, and depression symptoms among hospitalized COVID-19 patients. *Int J Psychiatry Med* 2021; **56**: 240-254 [PMID: 33356704 DOI: 10.1177/0091217420982085]
- 31 **Alnazly E**, Khraisat OM, Al-Bashaireh AM, Bryant CL. Anxiety, depression, stress, fear and social support during COVID-19 pandemic among Jordanian healthcare workers. *PLoS One* 2021; **16**: e0247679 [PMID: 33711026 DOI: 10.1371/journal.pone.0247679]
- 32 **Özgüç S**, Tanrıverdi D, Güner M, Kaplan SN. The examination of stress symptoms and posttraumatic growth in the patients diagnosed with Covid-19. *Intensive Crit Care Nurs* 2022; **73**: 103274 [PMID: 35729040 DOI: 10.1016/j.iccn.2022.103274]
- 33 **Gökahmetoğlu G**. A study on the relationship between perceived social support, life purpose and post-traumatic growth. M.Sc. Thesis, Graduate School of Kent University. 2021.
- 34 **Hill EM**, Watkins K. Women with Ovarian Cancer: Examining the Role of Social Support and Rumination in Posttraumatic Growth, Psychological Distress, and Psychological Well-being. *J Clin Psychol Med Settings* 2017; **24**: 47-58 [PMID: 28124180 DOI: 10.1007/s10880-016-9482-7]
- 35 **Chen D**, Song F, Tang L, Zhang H, Shao J, Qiu R, Wang X, Ye Z. Quarantine experience of close contacts of COVID-19 patients in China: A qualitative descriptive study. *Gen Hosp Psychiatry* 2020; **66**: 81-88 [PMID: 32736195 DOI: 10.1016/j.genhosppsych.2020.07.006]
- 36 **Lohiniva AL**, Dub T, Hagberg L, Nohynek H. Learning about COVID-19-related stigma, quarantine and isolation experiences in Finland. *PLoS One* 2021; **16**: e0247962 [PMID: 33852581 DOI: 10.1371/journal.pone.0247962]
- 37 **Hyun S**, Wong GTF, Levy-Carrick NC, Charmaraman L, Cozier Y, Yip T, Hahm HC, Liu CH. Psychosocial correlates of posttraumatic growth among U.S. young adults during the COVID-19 pandemic. *Psychiatry Res* 2021; **302**: 114035 [PMID: 34139592 DOI: 10.1016/j.psychres.2021.114035]
- 38 **Liu W**, Liu J. Living with COVID-19: a phenomenological study of hospitalised patients involved in family cluster transmission. *BMJ Open* 2021; **11**: e046128 [PMID: 33637551 DOI: 10.1136/bmjopen-2020-046128]



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