

Perceived stress levels in patients in novel corona virus infection pandemic: Prospective single-center study

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Abstract

Aim: In the progression of the diseases, the psychological and stress levels of the patients affect the course of the disease. This situation is also important and should be analyzed in the follow-up of COVID-19 patients. In this study, it was aimed to investigate the stress levels of COVID-19 patients in our hospital isolation services.

Materials and Methods: A prospective cross-sectional study is conducted in our isolation services where possible/definite COVID-19 patients older than 18 years old are followed. According to the patients' swap test results, patients are divided into two groups; group 1: COVID-19 possible, and the group 2: COVID-19 definitive groups. The demographic properties of the patients investigated, and the "Perceived Stress Scale", was applied to all groups the day after the swap test results were completed, and the outputs were analyzed.

Results: A total of 157 patients with voluntary participation (94 possible and 63 definite COVID-19 patients) were included. The mean age of the patients was 39.34 ±12.87 years and 54.1% were women. In the analysis of the stress levels of the patients, while both groups have increased scores, but the Perceived Stress Scale (PSS) score was higher in COVID-19 definite group and statistically significant ($p<0.001$). The patients with high stress levels (PSS score ≥ 36) were found to be 7.4% ($n=7$) in group 1; 77.8% ($n=49$) in group 2; and 35.7% ($n=56$) in total, and statistically significant ($p<0.001$). When we investigate the source of the information about COVID-19 of the patients, television was the leading (91.7%) source. The most frequent preventive measure was hand washing in both groups and were not statistically significant ($p>0.05$).

Conclusion: Stress levels of patients increase in COVID-19 pandemic. It should be kept in mind that the stress levels may be higher particularly in positive cases, and psychiatric support and preventive measures should be occupied accordingly.

Keywords: Information networks; isolation; novel corona virus disease; perceived stress scale; real time polimeraz chain reaction

INTRODUCTION

The novel corona virus disease (COVID-19) was first described by the World Health Organization on December 31st, 2019; and soon became a pandemic on March 11th, 2020. In Turkey, the first positive case was detected on March 10th, 2020 (1). As of July 1st, 2020, the COVID-19 positive cases have been detected in more than 10 million people worldwide, and 200 thousand in our country. The mortality rate of this infection is more than 13% in countries such as England, Spain and France and 6% worldwide (1,2). The influences and consequences of COVID-19 pandemics are emerging all over the world in many ways (3,4).

It is well known that healthcare professionals work with heart in the treatment of COVID-19 positive patients. However, one thing that should be considered in the COVID-19 pandemic and not to be skipped is the mood

changes that patients experience due to the pandemic. The easily and globally spread of this pandemic and its high mortality can lead to the emergence of psychological effects, fear, stress, and depression in patients admitted to hospitals with the suspicion of COVID-19 (4-6). It can be predicted that psychologically affected patients may have a worse prognosis in the fight against COVID-19 infection.

A successful combat is being carried out with the COVID-19 pandemic in our country. It is witnessed that all necessary precautions were taken as a preventive measure in the spread and treatment of the pandemic and more importantly in a fast, early and conclusive manner (7,8). This is followed with appreciation all over the world and leads to successful outcomes and low mortality rates. To ensure the continuity of this success, investigating the psychological changes of patients admitted to hospitals due to COVID-19 should be initiated immediately by

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analyzing the mood changes of the patients. In scope of this, the stress levels of the patients in the isolation services of our hospital are aimed and investigated in this study in the possible/definite cases of COVID-19.

MATERIALS and METHODS

Study design and adjustment

This study was a prospective single-center cross-sectional study, conducted in isolation services prepared for the COVID-19 pandemic of a third level university hospital. For the study, the necessary permission was obtained from the Scientific Research Platform of the Ministry of Health, and the ethics committee approval was received from the local Ethics Committee of the university (reference number: B.30.2.ATA.0.01.00/287, date: 07.05.2020). Our study was engaged in accordance with the Helsinki Declaration and informed consent was obtained from the participants.

Participants

The study universe of this research was accepted as all the COVID-19 patients being followed up in the entire isolation services, prospectively included over a month period. The possible and definitive COVID-19 patients followed in the isolation services of our hospital were included in the study. Patients older than 18 years of age who voluntarily gave informed consent through face-to-face interviews with the physicians were included in the study. The selection and the inclusion of the patients are presented in the flow chart and given in Figure 1.

Pregnant, breastfeeding, patients requiring urgent intervention, intubated patients, unconscious patients, patients with psychiatric disorders, those who could not express themselves, patients with dementia and Alzheimer's disease and patients under 18 were excluded from the study.

The participants were divided into two groups:

Group 1: COVID-19 possible group: Consist of low-risk patients admitted to the COVID-19 outpatient clinic, by considering the Ministry of Health COVID-19 guideline (1). The patients, who had negative real-time-polymerase chain reaction (RT-PCR) results were administered a questionnaire one day after the result was announced.

Group 2: COVID-19 definitive group: Consist of high-risk patients admitted to the COVID-19 outpatient clinic, by considering the Ministry of Health COVID-19 guideline (1). The patients, who had positive RT-PCR results, were administered a questionnaire one day after the result was announced.

Preparation of the survey

In this study, a questionnaire was introduced to all patients in order to examine the sociodemographic characteristics of the patients along with the "Perceived Stress Scale" (PSS) questions. The inquiries questioning the age, gender, educational and marital status, family

structure, occupation, income level, chronic diseases, measures taken during the COVID-19 pandemic, and where they learned the information about the pandemic, were asked and answered. This questionnaire was applied to all patients who met the study criteria, and who gave the informed consent.

In order to minimize the risk of infection and the contact with healthcare personnel from patients in isolation rooms, the questionnaire paper was left for patients to fill out by themselves. When the questionnaire forms filled out, in order to prevent contamination, forms were photographed without being removed from patient rooms. The data on the digitalized survey forms were analyzed.

Perceived Stress Scale (PSS)

The 14-item PSS questionnaire is widely used to evaluate perceived stress (9). It is a scale to evaluate how people rate the events they experience in their lives as stressful. Frequency of the answers to the questions in the scale as; 0 points (never), 1 point (almost never), 2 points (sometimes), 3 points (fairly often) and 4 points (very often). In the questionnaire, the 4, 5, 6, 7, 9, 10 and the 13th questions were scored in the reverse direction. This scale is scored between 0-56 points in total. The higher scores indicate that the perceived stress level is high. While the total score is 0-35, it is considered as a normal stress level, while the score between 36 and 56 indicates that the person is under stress.

Statistical analysis

In our study, statistical analyzes were done by using IBM SPSS 25.0 (IBM Corporation, New York, NY, USA) package program. Kolmogorov-Smirnov test was used for normal distribution assessment. Categorical data were presented as numbers and percentages, numerical data were presented as mean and standard deviations if it was normally distributed, or as median and interquartile ranges (IQR) if was not normally distributed. With the normal distribution, the Student t-test was used if two groups were compared, whereas, the Mann Whitney U test was used if it is not normally distributed. Statistical significance was taken as $p < 0.05$ in the study.

RESULTS

Participant characteristics

Of the 199 patients enrolled in the study, 161 patients who were eligible for the study criteria were included the study and four of them excluded since they answered the questionnaire incompletely, and a total of 157 patients were finally analyzed (Figure 1). The mean age of the patients in the study was 39.34 ± 12.87 years. Women were 54.1% ($n = 85$) of the patients. From all patients, 79.6% ($n = 125$) were married, 29.9% ($n = 47$) were undergraduates, and 75.2% ($n = 118$) did not have any previously known diseases. The RT-PCR result of the patients was positive in 40.1% ($n = 63$), and the total PSS value was 33.23 ± 8.12 . Other characteristics of the patients are given in Table 1.

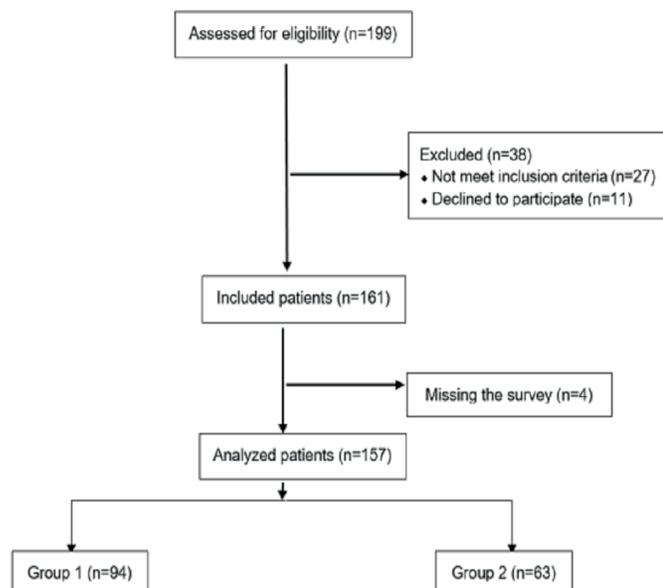


Figure 1. Flow-chart of patients in the study

Participants' opinions

When the information sources and preventive measures taken by the patients about COVID-19 are examined, the majority of the patients (91.7%) stated that they gained information from television; 93% of patients stated that they frequently washed their hands in order to protect them from COVID-19. Other information sources and precautions taken by patients are shown in Table 2.

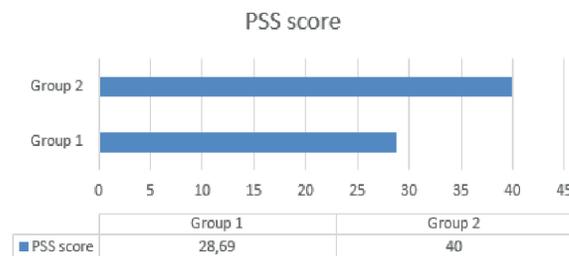


Figure 2. Perceived Stress Scale (PSS) scores of COVID-19 negative (Group 1) and positive (Group 2). (Low stress <35 points; Greater Stress: 36-56 points)

Table 1. General features and the comparison of the groups

	All Group (n, %)	Group 1 (n, %)	Group 2 (n, %)	p value
Age (mean±SD) years	39.34±12.87	37.14±11.71	42.6±13.88	0.018
Sex, Female	85 (%54.1)	47 (%50)	38 (%60.3)	0.205
Family structure, nuclear family	134 (%85.4)	80 (%85.1)	54 (%85.7)	0.916
Marriage, married	125 (%79.6)	72 (%76.6)	53 (%84.1)	0.252
Working status, working	81 (%51.6)	52 (%55.3)	29 (%46)	0.255
Education level				
None	6 (%3.8)	3 (%3.2)	3 (%4.8)	
Primary school	42 (%26.8)	16 (%17)	26 (%41.3)	
High school	40 (%25.5)	29 (%30.9)	11 (%17.5)	
Undergraduate	18 (%11.5)	15 (%16)	3 (%4.8)	0.319
License	47 (%29.9)	29 (%30.9)	18 (%28.6)	
Postgraduate	4 (%2.5)	2 (%2.1)	2 (%3.2)	
Monthly Income (TL)				
0-1800	66 (%42)	36 (%38.3)	30 (%47.6)	
1801-2500	8 (%5.1)	5 (%5.3)	3 (%4.8)	
2501-4000	41 (%26.1)	27 (%28.7)	14 (%22.2)	0.386
4001-8000	39 (%24.8)	25 (%26.6)	14 (%22.2)	
>8001	3 (%1.9)	1 (%1.1)	2 (%3.2)	
Comorbidities				
None	118 (%75.2)	78 (%83)	40 (%63.5)	
Chronic Diseases	39 (%24.8)	16 (%17)	23 (%36.5)	0.051

SD; Standard Deviation, TL; Turkish lira, PSS; Perceived stress Scale

Comparison of groups

Comparison of groups is given in Table 1 and 2. The average age of patients in Group 2, who had a positive diagnosis, was found to be higher than the first group and was found to be statistically significant ($p=0.018$). It was found that there was no statistically significant difference between the education and monthly income levels and comorbidities

of the patients ($p>0.05$). It was observed that patients mostly gathered the information about COVID-19 from television (Group 1: 90.4%; Group 2: 93.7%). Considering the measures taken to protect against COVID-19, it was found that the most frequent preventive measure in both groups was washing of hands (92.6%; 93.7%, respectively) and it was not statistically significant ($p>0.05$).

Table 2. The answers of the participants

	All Group (n, %)	Group 1 (n, %)	Group 2 (n, %)	p value
Information Source*				
Television	144 (%91.7)	85 (%90.4)	59 (%93.7)	0.474
Newspaper	13 (%8.3)	4 (%4.3)	9 (%14.3)	0.026
Internet	58 (%36.9)	32 (%34)	26 (%41.3)	0.359
Social media	51 (%32.5)	28 (%29.8)	23 (%36.5)	0.380
Circle of friends	23 (%14.6)	15 (%16)	8 (%12.7)	0.600
Not interested	0 (%0)	94 (%100)	63 (%100)	1.000
Preventive measures*				
Using a mask	143 (%91.1)	84 (%89.4)	59 (%93.7)	0.357
Using gloves	82 (%52.2)	51 (%54.3)	31 (%49.2)	0.536
Frequent hand washing	146 (%93)	87 (%92.6)	59 (%93.7)	0.792
Not going out	116 (%73.9)	62 (%66)	54 (%85.7)	0.006
Not accepting guests	118 (%75.2)	67 (%71.3)	51 (%81)	0.170
Not handshake	134 (%85.4)	76 (%80.9)	58 (%92.1)	0.052
PSS Questionnaire				
PSS score, mean±SD	33.23±8.12	28.69±6.14	40±5.6	<0.001
High Stress levels	56 (%35.7)	7 (%7.4)	49 (%77.8)	<0.001

* Multiple answers can be selected

As shown in Figure 2, when PSS was compared between groups, it was found that PSS score was higher in Group 2 and was statistically significant ($p < 0.001$). When the PSS scores of the patients were considered into two groups as the normal stress levels (score ≤ 35) and high stress levels (score ≥ 36), the patients with high stress levels were found to be 7.4% ($n=7$) in group 1; 77.8% ($n=49$) in group 2, and 35.7% ($n=56$) in total. This difference in groups was statistically significant ($p < 0.001$) (Table 2).

DISCUSSION

This study is investigated and compared stress levels of possible and definitive novel corona virus cases, according to COVID-19 guides of Ministry of Health, by using PSS questionnaire, one day after the RT-PCR results in isolation services. The perceived stress levels in both groups are found to be higher. However, the patients with positive RT-PCR results were found to have a higher PSS score than the negative group and were found to be statistically significant. Also, the proportion of the high stress levels (PSS score ≥ 36) in definitive COVID-19 patients was statistically significant in comparison with the possible COVID-19 patients.

In the literature, an online study investigating the perceived stress levels in COVID-19 patients in Columbia had lower proportions (14.3%) (10) than the results of our study (77.8%). This difference is interestingly higher in our population.

In a study, Bicer I et al found that epidemic diseases lead to disruption in the psychological well-being of the society. (11). In isolated individuals during the Middle East

Respiratory Syndrome (MERS) disease in 2003, the anxiety symptoms and anger prevalence were increased both in the isolation period and four to six months after exiting isolation (12). In a study in which the Chinese people examined for the psychological responses to the disease in the first period of the COVID-19 pandemic, 53.8% of the participants had moderate to severe depression, 16.5% had moderate to severe depressive symptoms, and 28.8% had moderate to severe anxiety symptoms (5). Also, in the studies in the literature, it has been determined that the COVID-19 pandemic increases the level of stress and anxiety in humans and increases the concern of contamination and health anxiety, and as a result, people tend to suffer post-traumatic stress and suicide (13-15). In our study, it was found that COVID-19 patients had increased perceived stress levels. While the stress levels of patients with negative RT-PCR results were found to be at lower levels, the patients with positive RT-PCR results had higher stress levels and more anxious.

In a study, Wang C et al emphasized that the internet (93.5%) was used as the primary health information network for the public in the early stages of the COVID-19 pandemic in China (6). As a result of that study, it was stated that television and the internet should be used in order to reach and broadcast important health information to the population. Thus, it was mentioned that the information pollution about the knowledge, attitudes and practices about the pandemic of the society will be prevented and it can be tackled more effectively (6). In our study, it was observed that the vast majority of the participants learned and followed the information about COVID-19 from television (91.7%), but on the contrary, the

use of the internet (36.9%) was not preferred by patients who participated in our study.

On the other, it was observed that this perceived stress level did not statistically differ with the marital status, working status, education and income levels, and comorbidities of the patients. In addition, it was observed that patients in both groups mostly complied with personal protective measures and hygiene rules in order to protect them from COVID-19. Among these, frequent washing of hands in both groups was found at the highest proportions. In line with the "stay home" and "life fits home" campaigns conducted by the Ministry of Health, it was determined that patients in group 2 stayed at homes at a higher rate (85.7%).

In a study in the literature investigating the preventive measures in Indian population was found that the 37% of participants admitted were using a mask, more than 75 % felt the need to use gloves, and almost 85 % agreed that they frequently washed their hands (16). These preventive measures were found to be higher in our populations as wearing a mask in 91.1%, using gloves in 52.2%, and frequent hand washing in 93%. These higher proportions should reflect and point the higher awareness and higher adaptations in our population against the pandemic.

In a COVID-19 fear study conducted by Satici B et al throughout Turkey, it was determined that COVID-19 fear increases depression, stress and anxiety and reduces life satisfaction in people (17). High levels of psychological distress and poor mental health were highlighted in participants as fear of COVID-19. Furthermore, studies in literature have shown that people have increased levels of depression, anxiety and stress due to COVID-19 events of any kind, such as an encounter with COVID-19 or relatives' disease, exposure to related news, etc. (18-22). Our study, unlike other studies in the literature, investigated the perceived stress levels of possible and definite cases of COVID-19. The difference in perceived stress levels between both groups was investigated and found to be higher in the positive cases of COVID-19.

In a study, although it is found that there was no statistically significant difference between the gender and the psychological states of the Chinese people, but their marital status, education levels and professions are found to be statistically significant in their stress levels (23). Conversely, in our study, it was found that there was no statistically significant difference in determining the relationship stress level with these factors. This gives us the conclusion that, in our study, the perceived stress level was compared more objectively in the possible and definitive cases of COVID-19 patients, without affected by confounding factors.

LIMITATIONS

Our study has some limitations. Although the informed consents were obtained by face-to-face interview, then after, the questionnaire was not conducted with face-to-face method due to COVID-19 contamination risks. This may have limit the self-report of the questionnaires.

Secondly, the study was single-centered. Although patients with a history of psychiatric illness were excluded from the study, previous perceived stress levels of patients were not measured and not considered in the study.

CONCLUSION

It is claimed that the stress levels of the people increased in the COVID-19 pandemic. In our study, it was found that the perceived stress levels of the patients who were followed in the isolation services were higher in the positive RT-PCR test group. Healthcare providers are required to provide psychological support to patients, taking into account these perceived stress levels.

Conflict of interest : The authors declare that they have no competing interest.

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Ethical approval: For the study, the necessary permission was obtained from the Scientific Research Platform of the Ministry of Health, and the ethics committee approval was received from the local Ethics Committee of the university (Reference number: B.30.2.ATA.0.01.00/287, Date: 07.05.2020).

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