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Determining the perceived stress levels of nurses during COVID 19 infection in Turkey

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Abstract

This study was conducted to determine the stress levels of nurses working during COVID-19 infection. This descriptive study was conducted with 233 nurses. "Nurse Information Form" and "Perceived Stress Scale" were used to collect the data. Percentage, frequency, independent samples t-test, analysis of variance, and Shapiro-Wilk test were used to evaluate the data. It was determined that PSS total score of the participants was 26.22±6.14 (high level). PSS total mean scores of the female nurses working during COVID-19 infection were significantly higher than the scores of the male nurses ($p<0.05$). The nurses, who believed that they had enough knowledge about COVID-19 infection, had significantly a lower PSS total mean score when compared to the others ($p<0.05$). It was determined that the stress levels of the nurses working during COVID-19 infection were high.

Keywords: Coronavirus, nurses, pandemic, stress

Introduction

Coronavirus (CoV) are enveloped, single- stranded zoonotic RNA viruses with a 40-60 nm diameter from the family Coronaviridae [1]. CoV emerged with outbreak of severe acute respiratory syndrome coronavirus (SARS-CoV) type transmitted from bats in China in 2002 and Middle East respiratory syndrome coronavirus (MERS-CoV) type transmitted from camels to human beings in Saudi Arabia in 2012 [2]. Today, the COVID-19 infection which was first reported in Wuhan city, Hubei province in China on December 31, 2019 and is caused by the SARS-CoV-2 virus, has quickly spread to 6 continents and hundreds of countries and has gone down in history as the first pandemic induced by coronavirus [3]. While SARS-CoV and SARS-CoV-2 are similar to each other at the rate of 79%, MERS-CoV is similar to SARS-CoV-2 at the rate of 59% and less associated with it [4]. According to WHO data, confirmed cases of 3.090.445 and deaths of 217.769 were detected worldwide on 30.04.2020 [5].

Healthcare professionals work on the frontline of pandemics [6]. Healthcare professionals are exposed to psychological problems related to the pandemic both during the pandemic period and in the long term period [7,8]. Some studies, investigating the mental health, stress, anxiety, and coping styles of healthcare professionals providing treatment and care services in infectious diseases such as "Middle East Respiratory Syndrome" (MERS) and "Severe Acute Respiratory Syndrome" (SARS) seen in the past period, reported that healthcare professionals had high levels of stress, anxiety, and concern [9–12]. In the study conducted by Khee et al., to examine the psychological effect of SARS on healthcare professionals, they stated that the professionals had the fear, anxiety, fear of death, and sense of worthlessness [13].

The aim of this study is to determine the perceived stress levels of the nurses, working during COVID-19 infection which has similar characteristics with SARS and MERS, as well as their views on COVID-19.

The hypotheses of the study were below.

H0. COVID-19 infection is effective in reducing the perceived stress level of nurses.

H1. The nurses' views on COVID-19 affect their level of stress.

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Materials and Methods

Design

This study was conducted to find out the stress levels of nurses working during COVID-19 infection and determine their views on COVID-19 infection.

Sample and setting

The population of this study was composed of 550 nurses working in a pandemic hospital in Turkey. The sample of the study consisted of 233 nurses who agreed to participate in the study. Sample selection method was not used.

Inclusion criteria of the study were determined as follows; being during the pandemic, working in a pandemic hospital, being open to cooperation, and having no physical problems that would prevent participants from completing the data collection forms.

Exclusion criteria of the study were determined as follows; being on leave during the pandemic.

Measures

The data of the study were collected by applying Perceived Stress Scale [PSS] and Nurse Information Form, prepared by the researchers in line with the literature.

Nurse information form

The nurse information form, prepared by the researcher in accordance with the literature, consists of two parts. The first part consists of questions about the sociodemographic characteristics of nurses such as gender, age, marital status, education level, having children and having a chronic disease.

The second part consists of questions about the nurses' views on COVID-19 infection such as finding COVID-19 infection dangerous, finding their knowledge about COVID-19 infection adequate, and finding the individual and hospital measures against COVID-19 infection sufficient.

Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS) was developed by Cohen et al., (1983) [14]. Turkish adaptation and reliability and validity study of the scale were conducted by Eskin et al., (2013) in 2013 [15]. It has a total of 10 items. The participants rate each item on a 5-point Likert scale ranging from "Never (0)" to "Very often (4)". The lowest score of the scale is 0 point and its highest score is 40 points. High scores signify high stress perception. 4 of the items containing positive statements are scored reversely. In addition to this ten-item version, PSS has two other versions with 14 and 4 items. The internal consistency coefficients of PSS-14, PSS-10 and PSS-4 are calculated as 0.84, 0.82 and 0.66, respectively; on the other hand, test-retest reliability coefficients are calculated as 0.87, 0.88 and 0.72, respectively. In this study, Cronbach's alpha coefficient of PSS was determined as 0.82.

Measurements

The data were collected by the researchers using an online data collection system. The forms were sent to the nurses online and they were asked to send them back upon completion of the forms. The nurses were informed about the aim and benefits of the study. They (n=233) carefully read the questions and filled out all the questions in the data collection forms. The results were considered as statistically significant at $p < 0.05$.

Ethical Considerations

This study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval for this study was obtained from Fırat University Non-Interventional Research Ethics Committee (Date: 28.05.2020, Issue: 393456). The researchers informed the participants about the design of the study, its benefits, roles of participants, and their right to withdraw at any time.

Data Analysis

The data of the study were analyzed using SPSS for Windows 25.0 software. The compatibility of the data for normal distribution was analyzed with the Shapiro-Wilk test and the distribution was determined to comply the normality assumptions. Frequency and percentage were used as descriptive analysis. Independent samples t-test was used to compare two groups and the analysis of variance was used to compare three groups. The data were analyzed at confidence interval of 95% and significance level of $p<0.05$.

Results

Table 1 shows the sociodemographic characteristics of the participants and their views on COVID-19 infection. Their mean age was 34.73±8.69 years. It was determined that 78.5% of the nurses were female, 69.1% were married, 64.4% had children, and 80.7% had a bachelor's degree.

It was determined that 10.3% of the nurses had a patient diagnosed with COVID-19 in their environment and 59.3% were friends of the nurses. 96.6% of the nurses perceived COVID-19 infection as dangerous and 63.5% of them found the measures of the hospital management against the COVID-19 infection as insufficient. 44.6% of the nurses reported that they had insufficient knowledge about COVID-19 infection. In addition, 92.3% of the nurses believed that they may be infected even though all the measures [individual, social, and public] were taken.

Table 2 shows PSS mean scores of the nurses. In the study, their PSS total mean score was determined to be 26.22±6.14 (high level).

Table 3 shows the comparison of PSS total mean scores in terms of the descriptive characteristics of the nurses and their views on COVID-19 infection. When PSS total mean scores were compared in terms of the nurses' descriptive characteristics, it was determined that while no statistically significant difference was found between the scale total mean score and marital status, status of having a child, education level, and having a chronic disease ($p>0.05$), the difference found between gender and the scale total mean score was statistically significant ($p<0.05$). PSS total mean scores of the female nurses were significantly higher than the scores of the male nurses ($p<0.05$).

When the nurses' views on COVID-19 infection were compared with PSS total mean score, no statistically significant difference was found between the scale total mean score and the presence of a patient diagnosed with COVID-19 in their environment ($p>0.05$).

Table 1. Nurse Information Form

Variables	n	%
Mean age	34.73±8.69	
Gender		
Female	183	78.5
Male	50	21.5
Marital status		
Married	161	69.1
Single	72	30.9
Status of having a child		
Yes	150	64.4
No	83	35.6
Education status		
High school	21	9.0
Undergraduate	188	80.7
Graduate	21	9.0
Doctorate	3	1.3
Status of having a chronic disease		
Yes	40	17.2
No	193	82.8
The status of having a patient diagnosed with COVID-19 in their environment		
Yes	24	10.3
No	209	89.7
Affinity of the patient diagnosed with COVID-19		
Family	6	22.2
Neighbor	5	18.5
Friend	16	59.3
Do you think COVID-19 is dangerous		
Yes	225	96.6
No	8	3.4
Is your knowledge about COVID-19 sufficient?		
Yes	129	55.4
No	104	44.6
Are your individual measures against COVID-19 sufficient?		
Yes	125	53.6
No	108	46.4
Are hospital measures sufficient against COVID-19?		
Yes	85	36.5
No	148	63.5
Do you think that you can be infected despite all the measures?		
Yes	215	92.3
No	18	7.7

Table 2. Minimum, Maximum and Mean Scores from PSS-10 Scale

Scale	Minimum	Maximum	Mean±S.D.
PSS -10	14	38	26.22±6.14

Table 3. Comparison of PSS-10 Total Scores According to Nurse Information Form

Variables	PSS-10 X±S.D t/F p
Gender *	
Female	27.03±6.01
Male	23.28±5.75
	3.946
	<0.001
Marital Status*	
Married	25.97±6.43
Single	26.79±5.43
	-.937
	0.35
Status of having children*	25.76±6.34
Yes	27.07±5.70
No	-1.566
	0.11
Education Status**	
High School	26.71±6.56
Undergraduate	26.15±6.01
Graduate (MS+PhD)	26.33±7.00
	0.08
	0.92
Status of having a chronic disease*	
Yes	26.25±6.33
No	26.22±6.12
	0.025
	0.98
Status of having a patient diagnosed with COVID-19 in their environment*	
Yes	27.00±6.11
No	26.13±6.15
	0.650
	0.51
Is your knowledge about COVID-19 sufficient*	
Yes	25.14±5.85
No	27.56±6.25
	-3.041
	0.03
Are your individual measures against COVID-19 sufficient? *	
Yes	24.48±5.34
No	28.25±6.40
	-4.896
	<0.001
Are hospital measures sufficient against COVID-19? *	
Yes	24.54±5.84
No	27.19±6.12
	-3.239
	<0.001
Do you think that you can be infected despite all the measures?*	
Yes	26.35±6.24
No	24.66±4.58
	1.123
	0.26

* Independent samples t test ** One Way ANOVA test ($p<0.05$).

The difference between PSS total mean score and the nurses' status of believing that they had adequate knowledge about COVID-19 was determined to be statistically significant ($p<0.05$). PSS total mean score of the nurses who believed that they had sufficient knowledge about COVID-19 infection was significantly lower compared to the others ($p<0.05$).

The difference between PSS total mean score of the nurses and their status of believing that the individual measures they took against the COVID-19 infection were sufficient was determined to be statistically significant ($p<0.05$). PSS total mean scores of the nurses, who believed that the individual measures they took against COVID-19 infection were sufficient, were significantly lower than the scores of the nurses, who believed that the individual measures they took against COVID-19 infection were insufficient ($p<0.05$).

The difference between the PSS total mean score of the nurses and their status of finding the hospital measures taken against COVID-19 infection insufficient was statistically significant ($p<0.05$). The nurses who believed that the hospital measures against COVID-19 infection were sufficient had significantly lower PSS total mean score compared to the others ($p<0.05$).

Discussion

TThe results of the study conducted to determine the nurses' stress levels during COVID-19 infection were discussed in accordance with the relevant literature. COVID-19 infection is an infectious disease that had been previously unknown in Turkey. Hospitals having at least two specialists in Infectious Diseases and Clinical Microbiology, Thoracic Diseases, Internal Medicine and Hospitals having level 3 adult intensive care unit under the body of the Ministry of Health are accepted as Pandemic Hospitals [16]. Nurses working in these hospitals provide care to patients with COVID-19 infection.

Based on Table 2, PSS mean scores of the nurses were determined to be at high level. According to WHO data, the total case-death rate of COVID-19 infection was 7% on 30.04.2020 [5]. The same data showed that the SARS epidemic affected 29 countries. 8096 people were diagnosed and 774 people died. The total case-death rate of SARS was 9.6%. Also MERS infected 2494 people in 27 countries and caused 858 deaths. The case-death rate of MERS was 34.4%. Although SARS and MERS have a very high case-death rate, COVID-19 has infected a greater number of people and has caused their deaths [17]. Besides, COVID-19 pandemic is more infectious compared to the SARS epidemic and MERS pandemic [17].

Some studies, investigating the mental health, stress, anxiety, coping styles of healthcare professionals providing treatment and care services during MERS and SARS seen in the past, reported that their stress, anxiety, and anxiety levels were high [9–12]. In this study, stress levels of the nurses working during COVID-19 infection were also found to be high, which is compatible with the previous studies on SARS epidemic and MERS pandemic. Zhang et al. In the study in which they examined the stress and burnout levels of nurses working during the COVID-19 infection in China, it was reported that nurses experienced high levels of stress and burnout [18]. In a multinational and multicenter study conducted during the COVID-19 infection, 906 healthcare workers were included in the study and high levels of stress, depression, and anxiety were found in healthcare workers [19]. Que et al. In the study where they examined the effect of the COVID-19 infection on the mental state of healthcare workers, they found that healthcare workers experienced anxiety at a rate of 46.04% (high) and that among healthcare workers, nurses experienced the highest anxiety rate with a rate of 51.44% [20]. Chekole et al. In their study in Ethiopia, they reported that more than half of the healthcare workers working during the COVID-19 infection experienced high levels of stress [21]. Our study result is in line with the results of other studies in the literature. The increase in nurses' working hours, intense workload, dealing with serious cases, lack of information about the COVID-19 infection, stigma and feelings of uncertainty about the COVID-19 infection are thought to be effective in increasing the stress levels of nurses. Considering the scale score, it was observed that the hypothesis that "COVID-19 infection is effective in reducing the perceived stress level of nurses" was confirmed.

When Table 3 was examined, it was found that PSS total mean scores of the female nurses were significantly higher than the scores of the male nurses. In their study conducted to investigate the psychosocial effects of SARS on hospital staff, Nickell et al., determined that gender did not have any effect on increasing anxiety [12]. The present study is not compatible with their study. Again, based on Table 3, no significant difference was observed between the status of having a child and stress. Nickell et al., found that the anxiety level of healthcare professionals living with their children during the SARS was higher [12].

No statistically significant difference was found between the nurses' status of having a patient diagnosed with COVID-19 in their environment and their scale total mean score. Stress levels of the nurses who believed that they had sufficient knowledge about COVID-19 infection and the nurses who found the hospital measures taken against COVID-19 sufficient were significantly lower the levels of the other nurses. Considering the data obtained from the study, the hypothesis "Nurses' views on COVID-19 affect their level of stress " was confirmed. It is believed that future studies should investigate these results not included in the literature.

Conclusion

Consequently, COVID-19 infection has caused mental distress on nurses. COVID-19 is a pandemic caused by coronaviruses and similar epidemics or pandemics are likely to outbreak in the future. It is recommended to develop comprehensive intervention plans for future pandemics. These plans should also include training nurses, who are one of the occupational groups working on the frontline during pandemics, about coronavirus infections and all other epidemics or pandemics and supporting them psychologically.

Implications for Further Research

While all healthcare professionals are involved in the treatment of the patient with COVID-19 infection, this study covers only nurses. Future studies on COVID-19 may include all health professionals. This study is a descriptive and cross-sectional study. It is recommended to conduct longitudinal prospective studies in the future.

Conflict of interests
The authors declare that they have no competing interests.

Financial Disclosure
All authors declare no financial support.

Ethical approval
Ethical approval for this study was obtained from Fırat University Non-Interventional Research Ethics Committee (Date: 28.05.2020, Issue: 393456

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