

# Measures Taken by Nurses to Protect Themselves from the Covid-19 Virus and Methods They Use to Cope with Stress

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## ABSTRACT

**Objective:** In the present study, the aim was to determine the measures taken by nurses to protect themselves from the COVID-19, and methods they use to cope with stress.

**Methods:** This descriptive and cross-sectional study was carried out with 237 nurses working in Manisa City Hospital, located in Manisa, between August 2020 and March 2021. Data were collected with the Nurse Information Form, the Perceived Stress Scale, and the Ways of Coping with Stress Questionnaire. In the analysis of the data, numbers, percentage distribution, Mann Whitney u test, Kruskal Wallis test and Spearman correlation analysis were used.

**Results:** Protective equipment used most by the nurses while they gave care to patients with COVID-19 were gloves (96.6%), masks (95.3%) and N95 masks (90.7%). Among the issues that caused the nurses to have stress most were the fear of transmitting viruses to their families or immediate circles, and experiencing physical or psychological disorders. The mean score the nurses obtained from the overall Perceived Stress Scale was  $30.36 \pm 5.63$ . The mean scores the nurses obtained from the sub-dimensions of the Ways of Coping with Stress Questionnaire were as follows: Self-confident approach sub-dimension:  $19.83 \pm 3.44$ , optimistic approach sub-dimension:  $13.99 \pm 2.37$ , desperate approach sub-dimension:  $18.23 \pm 4.15$ , submissive approach sub-dimension:  $12.89 \pm 2.98$  and seeking social support sub-dimension:  $10.83 \pm 1.97$ .

**Conclusion:** In our study, the majority of the nurses felt stressed during the COVID-19 pandemic. They were not competent enough to use the methods of coping with stress. Health institutions should reduce the stress on nurses and provide support to motivate them to work keenly.

**Keywords:** Nurse, preventive measure, COVID-19, stress, coping with stress, prevention.

## 1. INTRODUCTION

The COVID-19 pandemic has led to not only a nationwide both also a global crisis. Health professionals can work earnestly if their physical and mental health is good, and it should be kept in mind that success in crisis management depends on people's being healthy and working efficiently (1-3). Pandemic is a cause of physical illnesses, mental trauma and risk of death for citizens, administrators and healthcare professionals across the country. Therefore, the main goal of crisis management during the Covid-19 pandemic should be not only to protect public health and to treat patients, but also to protect the physical and mental health of health personnel fighting the disease on the front line (3-7). Healthcare personnel responsible for admitting patients with COVID-19 to hospital and caring for them have been exposed to various personal and organizational stresses that negatively affect their health and job satisfaction (8,9). Therefore, recognizing stress factors and providing periodic training will be an effective step towards prevention, treatment and stress reduction (10-12). Given the fact that

nearly half of the health personnel experienced burnout, emotional fatigue or work-related stress before the Covid-19 pandemic, it is not surprising that most of them experienced depression, severe anxiety, sleep problems, psychological stress and burnout during the pandemic (5,7,13,14).

It is important to focus on the problems experienced by healthcare professionals in order to protect and control their mental health. In line with the identified problems, the support provided by taking into account the needs of healthcare professionals will protect their mental health and providing appropriate support in the light of these findings will protect their mental and physical health. Thus, the quality of health care will improve. Protecting the mental health of healthcare professionals is important for controlling the long-term health of both society and healthcare professionals.

The present study was conducted to determine the measures taken by nurses to protect themselves from the Corona virus, and methods they used to cope with stress.

## 2. METHODS

Before the study was conducted ethical approval from the Manisa Celal Bayar University, Faculty of Medicine, Health Sciences Ethics Committee (date: July 22, 2020, number: 20.478.486/470) and the institutional permission from the chief of the hospital where the study was to be conducted were obtained. The participants gave their written consent after they were informed about the content and purpose of the study by the researcher. Then, the participants volunteering to participate in the study responded the online survey form.

This descriptive and cross-sectional study was carried out with nurses working in Manisa City Hospital between August 2020 and March 2021. Nurses working in the Manisa City Hospital affiliated to the Manisa Provincial Health Directorate (N: 520) comprised the study population. The sample size of the study was calculated as 221 nurses using the Epi Info statistical package program (margin of error: 5%, design effect: 1.0, confidence interval: 95%). However, considering the possibility of losses during the study, it was decided to include 237 nurses.

The study data were collected using the Nurse Information Form, the Perceived Stress Scale, and the Ways of Coping with Stress Questionnaire.

### 2.1. Data Collection Tools

#### 2.1.1. Nurse Information Form

The researcher explained the content and purpose of the study to the participants, and collected the data from the volunteer participants online. The form is used to question nurses' demographic, occupational and Covid-19-related characteristics.

#### 2.1.2. Perceived Stress Scale

The scale was developed by Cohen et al. (15). Erci adapted the scale into Turkish in 2006 after conducting its validity and reliability study (16). The scale consists of 10 items. Responses given to the items are rated on a 5-point Likert type scale ranging from 1 to 5. The score for the overall Perceived Stress Scale is the sum of the scores of the 10 items. The lowest and highest possible scores to be obtained from the scale are 10 and 50 respectively. Participants who score  $\geq 30$  are considered to have stress (16).

#### 2.1.3. Ways of Coping with Stress Questionnaire

The scale developed by Folkman and Lazarus (1980) was adapted into Turkish by Hisli Şahin and Durak, after conducting its validity and reliability study (17). The 30-item scale has the following five sub-dimensions: 1 – Self-confident approach, 2 – Optimistic approach, 3 – Desperate approach, 4 – submissive approach and 5 – Searching for social support approach. The 1<sup>st</sup> and 9<sup>th</sup> items in the

searching for social support approach sub-dimension of the scale are reverse scored. Scores for each sub-dimension are calculated separately. The increase in the scores obtained from the self-confident approach, optimistic approach and seeking social support approach sub-dimensions indicate that the person copes with stress effectively whereas the increase in the scores obtained from the desperate approach and submissive approach sub-dimensions indicate that the person uses ineffective methods in coping with stress.

### 2.2. Statistical Analysis

The data were analyzed using the SPSS (Statistical Package for Social Science) 26.0 package program. In the analysis of the data, numbers, percentage distribution and descriptive statistics were used to define the demographic characteristics, the Kolmogorov Smirnov normality test was used to determine whether the data were normally distributed, and the Mann Whitney U test, Kruskal Wallis test and Spearman correlation analysis were used for the data that were not normally distributed. p values less than 0.05 were accepted as the level of statistical significance.

## 3. RESULTS

Of the nurses, 61.2% were under the age of 31, 78.9% were women, 58.2% were single, 89.5% had a bachelor's degree and above, 64.1% had an income equal to expenses, 57.8% worked in the profession for less than 8 years, 69.2% worked in the hospital for less than 3 years, and 39.2% worked in the intensive care unit (Table 1).

Of the participating nurses, 73.4% had to buy protective equipment with their own means during the COVID-19 process, 85.2% felt stressed due to COVID-19, 62.9% thought they were not competent enough to use the methods of coping with stress during the COVID-19 pandemic, 62.9% were perceived as a source of infection by their neighbors because they worked in the hospital during the COVID-19 pandemic, 95.8% felt stressed due to fear of being infected with corona virus in the working environment and transmitting it to family members or close friends, 58.6% did not consider leaving their job due to the COVID-19 pandemic, 54.4% experienced physical or psychological disorders due to stress during the COVID-19 pandemic, and 26.9% reported that the situation that caused anxiety and fear most was the possibility of transmitting the corona virus to their families (Table 2).

The protective equipment worn by the nurses giving care to patients with COVID-19 were mostly gloves (96.6%) and masks (95.3%). The analysis of the relationship between the nurses' sociodemographic characteristics and their perceived stress levels revealed that the only significant relationship was between their perceived stress levels and the sex variable. The mean score the female nurses obtained from the Perceived Stress Scale was higher than was that of the male nurses ( $p < 0.05$ ).

**Table 1.** Sociodemographic/professional characteristics of the nurses (n=237)

Variables	n	%
<b>Age</b> *31.38±7.96 (min-max: 22.00-59.00) years		
<31 years	145	61.2
≥31 years	92	38.8
<b>Sex</b>		
Women	187	78.9
Men	50	21.1
<b>Marital status</b>		
Single	138	58.2
Married	99	41.8
<b>Educational status</b>		
Vocational Health High School + Associate Degree	25	10.5
Bachelor's degree and above	212	89.5
<b>Income status</b>		
Income less than expenses	61	25.7
Income equal to expenses	152	64.1
Income more than expenses	24	10.1
<b>Length of service in the profession</b> *8.53±8.88 (min-max: 0.17-39.00) years		
<8 years	137	57.8
≥8 years	100	42.2
<b>Length of service in the hospital</b> *3.76±5.61 (min-max: 0.08-30.00) years		
<3 years	164	69.2
≥3 years	73	30.8
<b>Clinic worked in</b>		
Emergency	24	10.1
Intensive care unit	93	39.2
Surgical or internal services	50	21.1
Specialized units (operating rooms, dialysis unit etc.)	39	16.5
Other (outpatient clinic, electrocardiogram. blood collection etc.)	31	13.1

\* mean ± standard deviation

While the mean score the participating nurses obtained from the Perceived Stress Scale was 30.36±5.63, the mean scores they obtained from the sub-dimensions of the Ways of Coping with Stress Questionnaire were as follows: Self-confident approach sub-dimension: 19.83±3.44, optimistic approach sub-dimension: 13.99±2.37, desperate approach sub-dimension: 18.23±4.15, submissive approach sub-dimension: 12.89±2.98 and seeking social support sub-dimension: 10.83±1.97 (Tablo 3).

The analysis of the correlations between the mean scores the nurses obtained from the Perceived Stress Scale and the sub-dimensions of the Ways of Coping with Stress Questionnaire revealed that there was a very weak positive correlation between the Perceived Stress Scale and the Desperate Approach and Submissive Approach sub-dimensions ( $r_s$ : 0.194,  $p=0.003$ ;  $r_s$ : 0.134,  $p=0.039$  respectively) and that there was no significant correlation between the Perceived Stress Scale and the Self-Confident Approach, Optimistic Approach, and Searching for Social Support Approach sub-dimensions ( $p>0.05$ ) (Table 4).

**Table 2.** Stress sources of nurses in the covid-19 pandemic (n=237)

Variables	n	%
<b>The need to buy protective equipment with his or her own means during the Covid-19 pandemic</b>	174	73.4
Yes	63	26.6
No		
<b>Feeling stressed due to Covid-19</b>	202	85.2
Yes	202	85.2
No	35	14.8
<b>Feeling inadequate in using methods of coping with stress during the Covid-19 pandemic</b>	149	62.9
Yes	88	37.1
No		
<b>Being perceived as a source of infection by neighbors because of working in the hospital during the Covid-19 pandemic</b>	149	62.9
Yes	88	37.1
No		
<b>Feeling stressed due to fear of being infected with corona virus in the working environment and transmitting it to family members or close friends</b>	227	95.8
Yes	10	4.2
No		
<b>Considering quitting the job due to the Covid-19 pandemic</b>	139	58.6
Never	81	34.2
Sometimes	17	7.2
Often		
<b>Experiencing stress-induced physical or psychological disorders during the Covid-19 pandemic</b>	129	54.4
Yes	108	45.6
No		
<b>Variables</b>		
<b>Factors causing anxiety and fear due to the Covid-19 epidemic (n=791) *</b>	<b>n</b>	<b>%</b>
The risk of transmission of the Corona virus	179	22.6
Fear of death	63	8.0
The risk of transmission of the Corona virus	213	26.9
Fear of transmitting Corona virus to the family members	42	5.3
Not being able to help patients diagnosed with Covid-19 positive	126	15.9
Loss of a family member	162	20.5
Not being able to be with the family members when they need help Others	6	0.8

\*Multiple response number percentage distribution

**Table 3.** Distribution of the mean scores the participating nurses obtained from the perceived stress scale, and the ways of coping with stress questionnaire (n=237)

Scales	Mean±SD	Median (IQR*)	Min-Max
Perceived Stress Scale	30.36±5.63	31.00 (4.50)	12.00-50.00
<b>Sub-dimensions of the Ways of Coping with Stress Questionnaire</b>			
Self-Confident Approach	19.83±3.44	21.00 (3.00)	7.00-28.00
Optimistic Approach	13.99±2.37	15.00 (2.00)	5.00-20.00
Desperate Approach	18.23±4.15	18.00 (5.00)	8.00-31.00
Submissive Approach	12.89±2.98	13.00 (4.00)	6.00-22.00
Seeking Social Support	10.83±1.97	11.00 (2.00)	4.00-16.00

\*IQR: Interquartile Range

**Table 4.** Correlations between the mean scores the nurses obtained from the perceived stress scale and sub-dimensions of the ways of coping with stress questionnaire scores (n=237)

	Perceived Stress Scale
Self-confident approach	$r_s: 0.079$ $p=0.226$
Optimistic approach	$r_s: 0.021$ $p=0.752$
Desperate approach	$r_s: 0.194$ $p=0.003^{**}$
Submissive approach	$r_s: 0.134$ $p=0.039^*$
Searching for social support approach	$r_s: 0.110$ $p=0.091$

\* $p<0.05$ , \*\* $p<0.01$ ,  $r_s$ : Spearman Correlation Analysis

#### 4. DISCUSSION

The results of our study demonstrated that the majority of the participating nurses (85%) felt stressed during the COVID-19 pandemic. In several studies, causes of distress among health workers have been stated as follows: Vulnerability, loss of control about their own health, the spread of the virus, the health of their families and people in their immediate environment, changes in the working environment, concerns about isolation, contagiousness of the COVID-19 and relationship between the COVID-19 and high morbidity rate. Among other factors causing healthcare workers to experience pressure and anxiety are material shortages and the increase in the COVID-19 cases (18). In Lai et al.'s study, most of the participants worked in tertiary hospitals. In Jackson et al.'s study, nurses, women, and front-line workers in Wuhan were determined to have more severe symptoms during all the measurements. In the same study, it was concluded that women and those having a moderate-level task experienced depression, anxiety, and distress more severely (2). In some studies, a significant portion of the participants suffered from anxiety, depression, and insomnia symptoms, and more than 70% of them had psychological distress (18,19). A study conducted in Austria examined therapists' stress levels and fears of contracting COVID-19. In a study conducted in Austria, therapists' stress levels and fears of contracting COVID-19 were investigated. The findings of this study demonstrated that there was a positive relationship between their fear of contracting COVID-19 infection and stress levels (20). The results of aforementioned studies were consistent with our results. When an individual feels threatened, his or her nervous system activates the organism for an emergency and responds to the emergency by secreting some stress hormones, which prepares the individual to escape from danger.

In the present study, protective measures taken by nurses most while giving care to patients with COVID-19 were wearing gloves, masks and N95 masks. Of the participating nurses, 73.4% had to buy protective equipment with their own means during the COVID-19 process. In Tayyip and Alsolaminin's study, in which stress and fear experienced by nurses working in a state hospital during the COVID-19

pandemic in Saudi Arabia were investigated, the participants stated that they were at a high risk of being infected in their workplace, and therefore they experienced a lot of stress at work and were afraid of getting sick (21). They also had a high level of fear of transmitting COVID-19 to their family members, friends and colleagues (21). Rahman et al. emphasized that the nurses in their case study were worried about transmitting the disease to their families because its risk of person-to-person transmission was high, and they experienced mental stress because insufficient personal protective equipment increased the potential for transmission, and because they were isolated in the workplace and were assigned to high-risk positions. Nurses' working for hours and hours continuously pushed their limits (6). In El-Hage et al.'s study, health workers had problems such as lack of personal protective equipment, lack of communication, lack of care materials, disruption of daily family and social life during the COVID-19 pandemic. Other problems were lack of support, fear of infecting a loved one, isolation or social stigma, job stress and insecurity. Therefore, the risk of anxiety, depression, exhaustion, addiction and post-traumatic stress disorder was high among health workers (5). In Rolling et al.'s study conducted at Strasbourg University Hospital, among the risk factors stated by the health workers were unfamiliarity with the virus, infection risk, high morbidity and mortality rates, perception that protective equipment was inadequate, and unpredictability (22). In Arnetz et al.'s study, nurses' perceptions of COVID-19-related stress were investigated under the following six main themes: Fear of exposure to COVID-19 and getting sick; fear of transmitting the virus to others; restrictions such as social distancing and business closures due to the pandemic; infection, illness and death of patients, co-workers or loved ones; feelings of inadequacy and desperation, especially in relation to the condition and treatment of their patients; and work-related problems such as relationships with colleagues, perceived workplace administrative failures, and lack of material and training (23). The results of the aforementioned study are consistent with the results of our study.

In the present study, the analysis of the correlations between the mean scores the nurses obtained from the Perceived Stress Scale and the sub-dimensions of the Ways of Coping with Stress Questionnaire scores revealed that there was a very weak positive correlation between the Perceived Stress Scale and the Desperate Approach and Submissive Approach sub-dimensions. This suggests that they were not competent enough in using the methods of coping with stress. In Klaid et al.'s study conducted in Saudi Arabia, providing personal protective equipment, wearing protective equipment while treating everyone who presented to the hospital, and providing sufficient information to prevent infection were regarded as factors that could be used in coping with COVID-19 (24).

## 5. CONCLUSION

In our study, health institutions should reduce the stress on nurses and provide support to motivate them to work keenly. During the pandemic, in the field of health, the aim should be to improve nurses' coping skills and resilience, and to reduce their burnout levels and risk of developing mental health problems. In addition, the health workers' basic physical needs such as safety (access to personal protective equipment), food and water, rest and sleep must be met. Healthcare workers' right to take breaks and to spare time for themselves should be ensured. Quality communication should be ensured with all personnel, and they should be informed accurately.

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