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Perceived stress and affecting factors related to COVID-19 pandemic of emergency nurses in Turkey

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Abstract

Aim: To examine the perceived stress and affecting factors related to the COVID-19 pandemic of emergency nurses at the first stage of the pandemic.

Background: During pandemic process, nurses reported to experience stress due to a very high risk of being infected and hard work.

Method: A descriptive study. The sample of the study consisted of 169 emergency nurses. To collect data, a personal information form was used together with the Perceived Stress Scale.

Results: The factors that significantly affect the perceived stress score of emergency nurses during the COVID-19 pandemic included applying respiratory isolation, changing the way of life, not being able to access protective equipment, insufficient nurses in the unit and thinking that COVID-19 will be transmitted to oneself.

Conclusion: Nearly half of the emergency nurses perceived stress above average during pandemic, and their working conditions affected this situation.

Implications for Nursing Management: Meeting physiological needs and applying psychological guidance and counselling interventions in the stress management of emergency nurses may contribute to the reduction of their stress levels. Effective infection control, reducing workload, increasing the number of nurses and strengthening the coping mechanisms can minimize the perceived stress level of emergency nurses.

KEYWORDS
emergency nurses, health workers, pandemic, stress

1 | INTRODUCTION

COVID-19 is an infectious disease caused by a newly emerging coronavirus infection. A pandemic was announced by the World Health Organization (WHO) in March 2020 due to COVID-19 disease (WHO, 2020a; Chen & Huang, 2020; Li et al., 2020). Since the announcement of the COVID-19 pandemic, a total of 43 million COVID-19 cases have been reported globally, including approximately one million deaths. In Turkey, according to the latest data of the Ministry of Health, a total of 361 thousand COVID-19 cases, including 9,799 deaths, have been identified (WHO, 2020a).

The COVID-19 pandemic has started to threaten the health care systems of countries and has increased the burden on health care professionals (Chen & Huang, 2020; Açıksarı & Kınık, 2020). Health care professionals are the most valuable resource in protecting, preventing and treating public health for all countries (WHO, 2020b;

Açıksarı & Kınık, 2020; Chen & Huang, 2020). The emergency services of hospitals, which are one of the units where these basic services are provided, are the units that have important roles in the pandemic process as in other disasters and make the first intervention to patients affected by the infectious agent (Açıksarı & Kınık, 2020).

Stress is a universal human experience and is an integral part of the biological structure of any living organism. Stress has both positive and negative effects on people. While a low level of stress is motivating for the person, above-average stress can cause people to be unable to work or cause serious physiological problems (Görüş, 2016). Factors such as isolation measures taken in the pandemic, contact with infected individuals, exposure and transmission risk, excessive workload, difficult triage decisions, lack of personal protection equipment, lack of some medications, separation from family, stigma, fear of losing patients and colleagues, and insufficient social and psychological support can increase the stress level in nurses (United Nations, 2020; Lai et al., 2020; Li et al., 2020; Chersich et al., 2020; Spoorthy et al., 2020; Polat, 2020; Duncan, 2020).

2 | BACKGROUND

Some studies reported that in previous epidemics, psychological problems such as stress, anxiety and depression were observed in emergency nurses (Wu et al., 2009; Mukhtar, 2020). During the pandemic process, health professionals have been reported to experience physical and mental fatigue, affective disorders and sleep problems due to the stress experienced (Li et al., 2020; Zhan et al., 2020). If emergency nurses are not provided with timely, effective support and training during the COVID-19 pandemic process, stress-related health problems may develop (Mukhtar, 2020). WHO had identified these risks for health care professionals and had reported a greater need to prevent depression and exhaustion, and manage stress and anxiety (United Nations, 2020).

The key to global success in pandemic management and to get the pandemic under control is empowering health care systems and professionals. For this reason, in the COVID-19 pandemic, it is important to protect and improve physical and mental health by ensuring that health care professionals have certain levels of stress in maintaining effective, safe and quality care (United Nations, 2020; Lai et al., 2020; Chersich et al., 2020; Liu et al., 2020). In this context, in order to develop evidence-based strategies to reduce the psychological problems of health professionals lead by the adverse conditions caused by the pandemic, it is recommended to conduct studies to determine the psychological effects (United Nations, 2020; Wang et al., 2020; Polat, 2020; Bohlken et al., 2020; Labrague & Los Santos, 2020). It has been observed that the articles published at the beginning of the pandemic process were mostly written as 'letters to the editor' (Bohlken et al., 2020). Therefore, it is obvious that more research data are needed.

The COVID-19 pandemic has increased stress factors in health care professionals. Emergency nurses are the first group to encounter infected patients. For nursing managers to find solutions to the individual and workplace stressors of emergency nurses working at the front line of the pandemic process, it became necessary to determine the stress factors and basic needs. Our research is the first and original study conducted with emergency nurses in Turkey at the first stage of the pandemic process in terms of providing a basis for future studies.

3 | METHOD

3.1 | Aims

This study aimed to examine the stress levels and factors affecting the stress level of nurses working in the emergency department related to the COVID-19 pandemic.

3.2 | Design

This study was conducted in cross-sectional descriptive design. The data of the study were collected between April and August 2020 in Turkey at the first stage of the pandemic.

3.3 | Participants

The population of the study was formed by all nurses working in the emergency services of hospitals during the COVID-19 pandemic process in Turkey and actively registered with the Emergency Nurses Association. It had been determined that there were 250 nurses actively registered with the Emergency Nurses Association in Turkey. Emergency Nurses Association data are collected through the sole association where the emergency nurses are actively registered in Turkey. In the sample of the study, no sample selection was made, and an online questionnaire form was sent to 250 nurses actively registered with the Emergency Nurses Association between April and August 2020. The sample of the study consisted of 169 (67.6%) emergency service nurses who completed the questionnaire completely and returned.

The inclusion criteria were as follows: those who were (a) 18 years of age or older, (b) volunteering to participate in the study, (c) working in emergency services during the COVID-19 pandemic and (d) actively registered with the Emergency Nurses Association.

The exclusion criteria were as follows: those who were (a) having any psychological problem and (b) refusing to participate in the study.

3.4 | Data collection

Reliable online questionnaire creation links were examined by the researchers. In order to protect the confidentiality of data, it was decided to create the questionnaire form sent to nurses via the URL 'surveey.com'. The data were collected by sharing the online

questionnaire link, created by the researchers using the URL address 'surveey.com', with the nurses working in the emergency department over the association. To collect data, a personal information form was used together with the Perceived Stress Scale (PSS).

Information Form: This form, which was developed by researchers by examining the relevant literature, consists of a total of 27 questions that include the socio-demographic characteristics (gender, age, marital status, child situation, educational status, family type, chronic illness, professional experience, clinical status and unit working in the emergency) of nurses and the factors affecting their stress levels related to COVID-19 (have a COVID-19 test, caring for the COVID-19 patient, being COVID-19 (+) in colleagues, isolation applied, use of protective equipment while caring for a COVID-19 patient, access to protective equipment, finding sufficient number of nurses in the unit and weekly working hours in the COVID-19 pandemic) (Açıksarı & Kınık, 2020; Spoorthy et al., 2020; Cai et al., 2020; Lai et al., 2020; Chersich et al., 2020; Mukhtar, 2020; Polat, 2020).

Considering Maslow's hierarchy of needs, what emergency nurses need most during the pandemic was asked as an open-ended question and evaluated accordingly (Maslow, 1943).

Perceived Stress Scale (PSS): This scale was developed by Cohen et al. (1983) to determine how stressful an individual perceives certain situations in his life. Each item in the scale was evaluated as a 5-point Likert type ranging from 'never (0)' to 'very often (4)'. Seven items with positive statements were reversely scored. The lowest score that can be obtained from the scale was 0, and the highest score was 56. A high total score indicates that a person's perception of stress is high (Cohen, 1983). The validity and reliability study of the scale for Turkey was conducted by Eskin et al. (2013), the Cronbach alpha coefficient has been determined as 0.82 (Eskin et al., 2013). In this study, the Cronbach alpha coefficient of the scale was found to be 0.81.

3.5 | Ethical considerations

The study was approved by the Non-Interventional Clinical Research Ethics Committee at a university in Turkey (decision no: 2020/18) and performed in accordance with the Helsinki Declaration. In addition, permission was obtained from the Emergency Nurses Association to conduct the study. Participants first have read the informed voluntary consent text that explains the purpose and rationale of the study in the link sent online. After getting information about the study, the question at the end of the text, 'Would you like to participate in the study voluntarily?' was answered as 'Yes' or 'No'. The volunteers who answered yes have completed the questionnaire. They were informed that they could withdraw from the study at any time without stating a reason.

3.6 | Data analysis

Descriptive statistics were used for continuous variables (mean, *SD*), whereas frequency distributions were determined for categorical variables. The Kolmogorov–Smirnov normality test was applied to the scale score for further analyses. One-way ANOVA and independent-sample *t* test were used to evaluate the difference between nurses' characteristics and scale scores. Multiple linear regressions analysis was performed using the backward method to determine the effect of various independent variables on the perceived stress level score of emergency nurses during the pandemic process. The results were presented as estimated β (standard error), *p* values for each variable and R^2 value. All statistical analyses were carried out in SPSS. $p < .05$ was considered to be significant.

3.7 | Validity, reliability and rigour

In this study, the scale which validity and reliability prior made, was used. This questionnaire was checked using a pre-test to establish whether questions are properly worded and clear adequate to understand by Turk nurses. Before beginning the study, the form was pre-applied to a group of seven people who were not included in the study. Since each question was clear in the pre-application, no changes were made in the form. The data of the individuals who were pre-tested were not included in the sample.

4 | RESULTS

4.1 | Socio-demographic characteristics of nurses

The professional characteristics of emergency nurses are given in Table 1. According to this, it was determined that of the emergency nurses, 74.4% were female, 42.9% were between the ages of 25 and 34, 56.5% were single, 68.5% had no children, 94.6% lived with elementary families, and 10.7% had a chronic disease. When the professional characteristics of emergency nurses were evaluated, it was found that 92.9% of them were clinical nurses, 46.4% of them worked in emergency care and follow-up, 75.0% of them had vocational training at the undergraduate level, and 42.5% had 10 years or more professional experience (Table 1).

When the working characteristics of emergency nurses were examined, it was detected that 63.7% of the emergency nurses had a COVID-19 test. It was observed that all emergency nurses who had the COVID-19 test had positive results. 90.9% of the nurses encountered COVID-19 patients, 70.8% of the nurses applied respiratory isolation while following up the patients in the emergency room, only 25.9% of the nurses could use gloves–mask–gown–glasses/visor–overalls protective equipment together, 88.1% of the nurses had access to four protective equipment, 58.9% of the nurses found the number of nurses sufficient in the unit they worked, 5.4% of the nurses worked 56 hr a week, 91.7% of the nurses thought that COVID-19 would infect themselves, and 85.1% of the nurses thought that they would infect COVID-19 to their family. Of the emergency nurses, 58.3% stated that their lifestyle changed during this process and 44.0% received vitamin support during this process (Table 2).

TABLE 1 Distribution of the mean scores of the perceived stress level scale according to the socio-demographic and professional characteristics of the emergency nurses (n = 169)

Variables	n	Perceived stress level scale ($\overline{X} \pm SD$)	Test / p
Gender			
Women	126 (74.4)	30.04 ± 7.93	1.379
Men	43 (25.6)	28.18 ± 5.84	**0.041***
Age groups			
Under 25	40 (23.2)	32.12 ± 8.30*	3.809
25–34 years old	72 (42.9)	29.47 ± 6.68	**0.024***
35 years and older	57 (33.9)	27.80 ± 7.92	
Marital status			
The married	74 (43.5)	28.56 ± 6.85	1.504
Single	95 (56.5)	30.34 ± 8.17	0.317
Child situation			
No	116 (68.5)	29.54 ± 6.91	2,457
1	15 (8.9)	26.06 ± 6.52	0.089
2 and above	38 (22.6)	27.31 ± 6.48	
Educational status			
High school	22 (12.5)	29.00 ± 8.75	0.596
Bachelor	126 (75.0)	28.96 ± 7.38	0.552
Graduate	21 (12.5)	27.09 ± 5.21	
Family type			
Elementary	159 (94.6)	29.54 ± 7.58	−532
Large	10 (5.4)	30.00 ± 9.46	0.86
Chronic illness condition			
Yes	18 (10.7)	30.77 ± 7.48	0.706
No	151 (89.3)	29.42 ± 7.69	0.48
Professional experience			
1–4 years	59 (35.3)	29.28 ± 7.73	0.299
5–9 years	37 (22.2)	28.29 ± 5.28	0.74
10 years and above	72 (42.5)	28.40 ± 7.94	
Clinical status			
Responsible nurse	12 (7.1)	27.16 ± 7.83	0.767
Clinical nurse	157 (92.9)	28.85 ± 7.29	0.44
Unit working in the emergency			
Emergency triage	17 (10.1)	27.83 ± 2.26	0.589
Emergency polyclinic	73 (43.5)	27.29 ± 0.58	0.44
Emergency care and follow-up	79 (46.4)	27.32 ± 0.56	
Perceived Stress Level Scale ($\overline{X} + SD$)	29.57 ± 7.65 (13–51)		

*Significant variable.

TABLE 2 Distribution of perceived stress level scale mean scores of emergency nurses according to their COVID-19 working characteristics (n = 169)

Variables	n	Perceived stress level Scale ($\overline{X} \pm SD$)	Test / p
Have a COVID-19 test			
Yes	108 (63.7)	30.08 ± 7.24	1.150
No	61 (36.3)	28.67 ± 8.31	0.25
Caring for the COVID-19 patient			
Yes	153 (90.5)	29.62 ± 7.59	0.279
No	16 (9.5)	29.06 ± 8.53	0.78
Being COVID-19 (+) in colleagues			
Yes	108 (63.7)	31.56 ± 8.12	2.636
No	61 (36.3)	28.29 ± 6.76	**0.009***
Isolation applied			
Respiratory isolation	120 (70.8)	33.42 ± 8,85	4.560
Full isolation	49 (29.2)	27.98 ± 6,51	**0.000***
Use of protective equipment while caring for a COVID-19 patient			
Gloves–mask–gown–glasses/visor–overalls	43 (25.0)	26.50 ± 8.72*	4.004
Gloves–mask–gown–glasses/visor	109 (64.9)	29.62 ± 7.48	**0.02***
Gloves–mask–gown	17 (10.1)	30.68 ± 6.71	
Access to protective equipment			
Yes	149 (88.1)	28.70 ± 7.14	4.157
No	20 (11.9)	35.95 ± 8.51	**0.000***
Finding sufficient number of nurses in the unit			
Yes	99 (58.9)	27.71 ± 7.25	3.917
No	20 (41.1)	32.23 ± 7.48	**0.000***
Weekly working hours in the COVID-19 pandemic			
40	88 (51.8)	29.19 ± 7.24	1.894
48	72 (42.9)	29.62 ± 7.77	0.051
56	9 (5.4)	32.77 ± 10.50	
Thinking that COVID-19 would infect you			
Yes	144 (85.1)	30.23 ± 7.64	2.719
No	25 (14.9)	25.80 ± 6.72	**0.007***
Thinking that COVID-19 will infect your family			
Yes	155 (91.7)	29.94 ± 7.62	2.136
No	14 (8.3)	25.42 ± 7.03	**0.031***
Receiving vitamin supplements			
Yes	75 (44.0)	28.37 ± 6.39	1.803
No	94 (56.0)	30.51 ± 8.43	0.073
Lifestyle changed during the COVID-19 pandemic			
Yes	99 (58.3)	31.06 ± 7.81	3.057
No	70 (41.7)	27.48 ± 6.96	**0.003***

*Significant variable.

4.2 | The mean scores of the perceived stress level scale of the emergency nurses and the affecting factors

It was determined that the perceived stress score of the emergency nurses was 29.57 ± 7.65 (13–51) and they experienced moderate stress. However, it was determined that 44.6% of the emergency nurses experienced stress above average (30 points and above). It was found that the stress levels of female emergency nurses were significantly higher than male nurses ($p < .05$) and that the stress levels of emergency nurses under the age of 25 who have just started their profession were significantly higher than those of other age group nurses ($p < .05$) (Table 1). When we look at the requirements most needed by emergency nurses during the COVID-19 pandemic, they were observed to be psychological support (67.9%), quality sleep (67.3%), hygiene (66.7%), reduced working hours (65.5%) and healthy nutrition (60.1%), respectively (Table 3).

The factors that significantly affect the perceived stress score of emergency nurses during the COVID-19 pandemic with the regression analysis performed included applying respiratory isolation, changing the way of life, not being able to access protective equipment, insufficient nurses in the unit and thinking that COVID-19 will be transmitted to oneself. These variables explain 26% of the perceived stress level of emergency nurses during the COVID-19 pandemic (Table 4).

5 | DISCUSSION

Emergency nurses are health care professionals who are the first to face close contact with patients and their families while caring for infected patients and provide first care to patients.

Emergency nurse managers' planning regarding pandemic management is important in terms of reducing the perceived stress in employees. Study findings showed that the COVID-19 pandemic affected the stress levels of emergency nurses. In our study, it was determined that emergency nurses experienced moderate perceived stress during the pandemic process, and nearly half (44.6%) of them had a perceived stress level above the average. There is no study encountered showing the stress levels of emergency nurses in the literature. However, according to the United Nations COVID-19 and mental health action report published by WHO, it has been stated that approximately half of the health care professionals (47%) in Canada need psychological support. In a study conducted with health professionals in Pakistan, it has been reported that approximately half of the participants (42%) experienced moderate psychological distress (United Nations, 2020). In other studies with health care professionals, it has been stated that more than half of the participants experienced intense stress or stress-related symptoms (Shuai et al., 2020; Lai et al., 2020). Studies conducted during pandemics such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) have shown that emergency room

TABLE 3 Requirements of emergency nurses during the COVID-19 pandemic ($n = 169$)

Requirements*	n	%
Psychological support	114	67.9
Quality sleep	113	67.3
Hygiene	112	66.7
Reduced working hours	110	65.5
Healthy eating	101	60.1
Financial support	9	5.4

*More than one answer was given.

TABLE 4 Effect of various factors on the perceived stress level score in emergency nurses during the COVID-19 pandemic ($n = 169$)

Dependent variable perceived stress level			
Independent variables	B	SE	B
Constant	38.978	4.773	
Isolation type (1 respiratory, 2 full)	−2.18	0.59	−0.26*
Being COVID-19 (+) in colleagues (1 yes, 2 no)	−1.75	1.10	−0.11
Change of lifestyle (1 yes, 2 no)	−2.45	1.07	−0.24**
Accessing protective equipment (1 yes, 2 no)	3.85	1.71	0.16**
Sufficient nurses in the unit (1 yes, 2 no)	2.38	1.12	0.15**
Thinking that COVID-19 would infect you (1 yes, 2 no)	−3.65	1.67	−0.17**
Thinking that COVID-19 would infect your family (1 yes, 2 no)	−0.40	2.18	−0.14
R	0.513		
R^2	0.263		
F	8.177		
p	0.000		

*$p < .001$.; **$p < .05$.

workers have a higher development of post-pandemic stress disorder (Tam et al., 2004; Min et al., 2018).

In this study, perceived stress levels of female nurses were found to be higher than male nurses ($p < .05$). In a study conducted in Turkey, it has been reported that female health professionals have higher anxiety and stress levels than males (Polat, 2020). A study conducted in Wuhan has shown that females, nurses and front-line health care professionals experienced more severe psychological symptoms than others (Lai et al., 2020). Our study finding was similar to other studies, suggesting that female nurses' concern for the risk of infecting their families and staying away from their families to protect them from infection negatively affect their stress levels. Among the participants in the study, it was found that the stress levels of the emergency nurses who were 25 years old and

younger were higher than the nurses of other age groups ($p < .05$). According to a review conducted during the pandemic process, it has been stated that there was a relationship between the age of health professionals and their stress levels. It has been reported that health care professionals aged 30 and younger had higher depression scores (Spoorthy et al., 2020). The fact that young emergency nurses started their profession recently and had less professional experience compared with other nurses was also predicted to have an effect on stress levels. In the light of these findings, the nursing management should plan the emergency care services in order to prevent the interruption of emergency care services, while personnel planning should be made by considering the socio-demographic characteristics such as gender and age in the nurses who will work in the emergency.

In studies conducted with health care professionals, the safety of their colleagues and the lack of preventive treatment for COVID-19 have been identified as other important factors causing stress (Spoorthy et al., 2020; Cai et al., 2020; Elbay et al., 2020). In our study, stress levels were found to be significantly higher in those whose co-workers tested positive for COVID-19, those who think that the COVID-19 infection would infect themselves and infect their family, and those who expressed that their lifestyle has changed during the pandemic process. It is of vital importance to protect the physical and mental health of health care professionals in order to carry out health care services effectively in the management of the pandemic process. Studies have shown that of the health care professionals, 2.09%–29% in China, 20% in Italy, 6% in the Netherlands, 3%–11% in the United States and approximately 7,428 people in our country have been reported to be infected with COVID-19 (Sommerstein et al., 2020; Tan et al., 2020). This study also suggested that the increase in COVID-19 cases in the community and health care professionals affected the stress level of emergency nurses. In a study conducted in China, it has been stated that the most important source of stress for health care professionals was to worry that they could transmit COVID-19 to their families (Cai et al., 2020). The presence of parents and young children at-risk groups in the families of the emergency nurses involved in the study, and the concern of the risk of infecting them might have led to an increase in their stress levels. In Turkey, many health care professionals have stayed away from their homes for fear of infecting their families or have left the care of their young children to their parents and relatives. The fact that the pandemic process is still continuing has also negatively affected this process and has increased the time they are away from their families.

Lack of personal protective equipment, insufficient nurses and increasing cases experienced in the first phase of the COVID-19 pandemic process were other important conditions that increase the stress level of emergency nurses. According to our study findings, the stress levels of the nurses who only applied respiratory isolation and could not reach protective equipment were found to be high ($p < .05$). WHO has recommended that health care professionals should use personal protective equipment including gloves, surgical masks, goggles/visors and gowns for complete isolation when providing direct care to COVID-19 patients or suspected cases (WHO, 2020c). In a study evaluating the knowledge and attitudes of emergency nurses regarding the use of personal protective equipment during the intervention to infectious agents and suspected patients, it has been reported that almost all of them used only gloves and masks as personal protective equipment and could not access other protective equipment (Kılıç Akça et al., 2013). It has been found that there was a significant correlation between the use of appropriate personal protective equipment when necessary during the COVID-19 pandemic process and the low anxiety and stress scores of health care professionals (Polat, 2020). Due to the continuing rapid increase in the number of COVID-19 cases, health care professionals working in the emergency department are increasingly concerned about the risk of transmission due to the continuing lack of nurse and busy working conditions despite the provision of full personal protective equipment (Tan et al., 2020). The COVID-19 outbreak has significantly increased work environment-related stressors in emergency nurses. To ensure employee safety in emergency nurses and to maintain the basic nursing workforce, working conditions must be improved and the protective equipment that nurses need during their work must be provided.

According to our research findings, the most needed requirements of emergency nurses during the COVID-19 pandemic were psychological support (67.9%), quality sleep (67.3%) and hygiene (66.7%). It was seen that the needs of the emergency nurses involved in the study during the pandemic process were mostly psychological and physiological needs. Various practices have been reported in many countries to meet the needs of health care professionals during the pandemic process. In Wuhan, China, in order to relieve the health professionals working in the front line, the number of personnel was increased, the shift system was arranged, the information to reduce the risk of transmission was provided on online platforms, and psychological counselling and guidance support services by phone were provided (Kang et al., 2020; Shuai et al., 2020). In Turkey, on the other hand, psychological counselling and guidance services for health professionals have started to be provided by national professional organisations (Psychiatric Association of Turkey, 2020; Turkish Nurses Association, 2020).

5.1 | Limitations

There are some limitations to be considered for the present study. First of all, this study was conducted with emergency nurses working in Turkey during the pandemic. Therefore, the results from the present study cannot be generalized for other nurses. Second, data collection forms are filled online, and we did not have the chance to control the data collection process. Third, we evaluated emergency nurses' stress levels only one time period of the pandemic process. Therefore, the long-term stress effects of a pandemic on nurses have not been studied.

6 | CONCLUSIONS

As a result, nearly half of the emergency nurses experienced stress above average during the COVID-19 pandemic, and their working conditions affected this situation; various factors on the perceived stress level score in emergency nurses during the COVID-19 pandemic include using isolation type, accessing protective equipment when needed, sufficient number of nurses in the unit and thinking that COVID-19 would infect you. Effective infection control, personal protective measures, reducing workload, increasing the number of nurses, reducing working hours with the shift system, strengthening the coping mechanisms, providing psychological counselling and guidance services, and strategies to be implemented with open institutional policies and protocols can minimize perceived stress level of emergency nurses.

7 | IMPLICATIONS FOR NURSING MANAGEMENT

Emergency nurse managers have a key role in actively back-up nurses during and after the COVID-19 pandemic outbreak. In particular, suitable communication, training, adequate resources and meeting the basic requirements seem to be compulsory in preventing nurses' stress and fears, and furthermore in preparing for other wave. Emergency nurses should be prepared for all kinds of epidemics and natural disasters with virtual simulations. Meanwhile, the professional value attributed to the patient care and to the appropriate amount of nursing resources at the bedside during the epidemic should be promoted and continued by nurse leaders also over the pandemic while returning to normality. Caring for COVID-19 patients reserved to also be a change for improving team working and association.

CONFLICTS OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

AUTHOR CONTRIBUTION

DÇ, NKA, PZB and YB made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data. DÇ, NKA and PZB involved in drafting the manuscript or revising it critically for important intellectual content. DÇ, NKA, PZB and YB gave final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. DÇ, NKA, PZB and YB agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ETHICAL APPROVAL

The study was approved by the Non-Interventional Clinical Research Ethics Committee at a university in Turkey (decision no: 2020/18).

DATA AVAILABILITY STATEMENT

Data available on request due to privacy/ethical restrictions. The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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REFERENCES

Açıksarı, K., & Kınık, K. (2020). Experience in an emergency department of research and training hospital during the course of COVID-19 outbreak in Turkey. *Anatolian Clinic Journal of Medical Sciences*, *25*(1), 263–283.

Bohlken, J., Schömig, F., Lemke, M. R., Pumberger, M., & Riedel-Heller, S. G. (2020). COVID-19-pandemie: Belastungen des medizinischen personals [COVID-19 pandemic: Stress experience of healthcare workers - a short current review]. *Psychiatrische Praxis*, *47*(4), 190–197.

Cai, H., Tu, B., Ma, J., Chen, L., Fu, L., Jiang, Y., & Zhuang, Q. (2020). 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. *Medical Science Monitor: International Medical Journal of Experimental and Clinical Research*, *26*, e924171-1–e924171-16.

Chen, W., & Huang, Y. (2020). To protect health care workers better, to save more lives with COVID-19. *Anesthesia and Analgesia*, *131*(1), 97–101. https://doi.org/10.1213/ANE.0000000000004834

Chersich, M. F., Gray, G., Fairlie, L., Eichbaum, Q., Mayhew, S., Allwood, B., English, R., Scorgie, F., Luchters, S., Simpson, G., Haghighi, M. M., Pham, M. D., & Rees, H. (2020). COVID-19 in Africa: Care and protection for frontline healthcare workers. *Globalization and Health*, *16*(1), 46. https://doi.org/10.1186/s12992-020-00574-3

Cohen, S., Kamarck, T., & Mermelstein, R. (2020). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*(4), 385–396.

Duncan, D. (2020). What the COVID-19 pandemic tells us about the need to develop resilience in the nursing workforce. *Journal of Nursing Management*, *27*(3), 22–27. https://doi.org/10.7748/nm.2020.e1933

Elbay, R. Y., Kurtulmuş, A., Arpacıoğlu, S., & Karadere, E. (2020). Depression, anxiety, stress levels of physicians and associated factors in Covid-19 pandemics. *Psychiatry Research*, *290*, 113130. https://doi.org/10.1016/j.psychres.2020.113130

Eskin, M., Harlak, H., Demirkıran, F., & Dereboy, Ç. (2013). The Adaptation of the perceived stress scale into Turkish: A reliability and validity analysis. *New/Yeni Symposium Journal*, *51*(3), 132–140.

Görüş, S. (2016). Body defense. In: N. Ovayolu, & Ö. Ovayolu (Eds), *Pathophysiology a clinical approach*, 2nd edn (pp. 31–50), Çukurova Nobel Tıp Kitabevi.

Kang, L., Li, Y., Hu, S., Chen, M., Yang, C., Yang, B. X., Wang, Y., Hu, J., Lai, J., Ma, X., Chen, J., Guan, L., Wang, G., Ma, H., & Liu, Z. (2020). Correspondence the mental health of Wuhan, China dealing with the 2019 novel Coronavirus. *Lancet Psychiatry*, *7*(3), e14.

Kılıç Akça, N., Başer, M., & Gül Kuzucu, E. (2013). Knowledge and attitudes of emergency nurses towards Crimean-Congo haemorrhagic fever in endemic regions of Turkey. *International Journal of Nursing Practice*, *19*(6), 603–608. https://doi.org/10.1111/ijn.12109

Labrague, L. J., & De Los Santos, J. (2020). COVID-19 anxiety among front-line nurses: Predictive role of organisational support, personal

resilience and social support. *Journal of Nursing Management*, *28*(7), 1653–1661. https://doi.org/10.1111/jonm.13121

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. (2020). Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Network Open*, *3*(3), e203976. https://doi.org/10.1001/jamanetworkopen.2020.3976

Li, W., Yang, Y., Liu, Z. H., Zhao, Y. J., Zhang, Q., Zhang, L., Cheung, T., & Xiang, Y. T. (2020). Progression of mental health services during the COVID-19 outbreak in China. *International Journal of Biological Sciences*, *16*(10), 1732–1738. https://doi.org/10.7150/ijbs.45120

Liu, S., Yang, L., Zhang, C., Xiang, Y.-T., Liu, Z., Hu, S., & Zhang, B. (2020). Online mental health services in China during the COVID-19 outbreak. *The Lancet Psychiatry*, *7*(4), e17–e18. https://doi.org/10.1016/S2215-0366(20)30077-8

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, *50*(4), 370–396. https://doi.org/10.1037/h0054346

Min, S., Sub, W., Cho, A., Kim, T., & Kyung, J. (2018). Psychological impact of the 2015 MERS outbreak on hospital workers and quarantined hemodialysis patients. *Comprehensive Psychiatry*, *87*, 123–127.

Mukhtar, S. (2020). Mental well-being of nursing staff during the Coronavirus disease 2019 outbreak: A cultural perspective. *Journal of Emergency Nursing*, *46*(4), 426–427.

Polat, Ö. (2020). Determining the relationship between personal protective equipment uses of medical healthcare workers and depression, anxiety and stress levels in the COVID-19 pandemic. *Medical Journal of Western Black Sea*, *4*(2), 51–58.

Psychiatric Association of Turkey (2020). A Guide to coping with COVID-19 fear and anxiety for physicians and healthcare professionals. Retrieved from https://www.psikiyatri.org.tr/uploadFiles/213202011418-saglikcalisanibrosur.pdf. Accessed September 10, 2020.

Sommerstein, R., Fux, C. A., Vuichard-Gysin, D., Abbas, M., Marschall, J., Balmelli, C., Troillet, N., Harbarth, S., Schlegel, M., & Widmer, A. (2020). Risk of SARS-CoV-2 transmission by aerosols, the rational use of masks, and protection of healthcare workers from COVID-19. *Antimicrobial Resistance and Infection Control*, *9*(1), 1–8. https://doi.org/10.1186/s13756-020-00763-0

Spoorthy, M. S., Pratapa, S. K., & Mahant, S. (2020). Mental health problems faced by healthcare workers due to the COVID-19 pandemic-A review. *Asian Journal of Psychiatry*, *51*, 102119. https://doi.org/10.1016/j.ajp.2020.102119

Tam, C. W., Pang, E. P., Lam, L. C., & Chiu, H. F. (2004). Severe acute respiratory syndrome (SARS) in Hong Kong in 2003: Stress and psychological impact among frontline healthcare workers. *Psychological Medicine*, *34*(7), 1197–1204.

Tan, Z., Khoo, D., Zeng, L. A., Tien, J. C., Lee, A., Ong, Y. Y., Teo, M. M., & Abdullah, H. R. (2020). Protecting health care workers in the front line: Innovation in COVID-19 pandemic. *Journal of Global Health*, *10*(1), 010357. https://doi.org/10.7189/jogh.10.010357

Turkish Nurses Association (2020). COVID-19 nurse training guide and care algorithms. Retrieved from https://www.thder.org.tr/uploads/files/thd-covid-2020-2.pdf. Accessed: September 10, 2020.

United Nations (2020). *Policy Brief: COVID-19 and the Need for Action on Mental Health* (pp. 3–10). World Health Organization.

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health*, *17*(1729), 1–25.

World Health Organization (WHO) (2020a). WHO Coronavirus Disease (COVID-19) Dashboard. Retrieved from https://covid19.who.int/. Accessed October 27, 2020.

World Health Organization (WHO) (2020b). Coronavirus disease 2019 (COVID-19) situation report-49. World Health Organization. Retrieved from https://www.who.int/emergencies/diseases/novel coronavirus-2019/situation-reports/. Accessed September 10, 2020.

World Health Organization (WHO) (2020c). Rational use of personal protective equipment (PPE) for coronavirus disease (COVID-19): Interim guidance, 19 March 2020. World Health Organization. Retrieved from https://apps.who.int/iris/handle/10665/331498. Accessed September 10, 2020.

Wu, P., Fang, Y., Guan, Z., Fan, B., Kong, J., Yao, Z., Liu, X., Fuller, C. J., Susser, E., Lu, J., & Hoven, C. W. (2009). The psychological impact of the SARS epidemic on hospital employees in China: Exposure, risk perception, and altruistic acceptance of risk. *Canadian Journal of Psychiatry*, *54*(5), 302–311. https://doi.org/10.1177/070674370905400504

Zhan, Y., Liu, Y., Liu, H., Li, M., Shen, Y., Gui, L., Zhang, J., Luo, Z., Tao, X., & Yu, J. (2020). Factors associated with insomnia among Chinese front-line nurses fighting against COVID-19 in Wuhan: A cross-sectional survey. *Journal of Nursing Management*, *28*(7), 1525–1535. https://doi.org/10.1111/jonm.13094