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Research article

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Fear of coronavirus in intensive care nurses: A cross-sectional study

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Ethics Committee Approval
The study was approved by the COVID-19 Studies Scientific Committee of Turkish Ministry of Health and Kırklareli University Health Sciences Institute Scientific Research Ethics Committee (number: 69456409-199-E.14455, protocol number: 2020/251 and date: 06.10.2020). All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

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No conflict of interest was declared by the authors.

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Abstract

Background/Aim: The COVID-19 pandemic has had negative effects on healthcare workers and caused burnout and psychosocial problems, endangering their mental health. This study aimed to reveal the COVID-19 fears of intensive care nurses during the pandemic.

Methods: The data of this cross-sectional study were collected with the participation of 128 nurses working in the intensive care units of two public hospitals between October 2020 and November 2020. The Nurse Identification Form and the Fear of COVID-19 Scale were used in data collection. The online survey forms were delivered to the nurses through WhatsApp groups to protect the health of both researchers and participants during the COVID-19 pandemic.

Results: The nurses' mean COVID-19 fear scale score was found to be 22.7 (5.1). The mean scale scores differed at statistically significant levels, depending on the education status and the number of patients per nurse in one single shift ($P < 0.05$).

Conclusion: The COVID-19 pandemic is a cause of stress and fear for nurses and other healthcare workers. During the COVID-19 pandemic process, it is crucial to assess the fears and coping skills of intensive care nurses; the nurses should also be supported physiologically, psychologically, and sociologically. New studies are needed to reveal the effectiveness of support services related to emotion management and infection control in nurses.

Keywords: Coronavirus, Fear, Intensive care unit, Nurse, Pandemic

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Introduction

The novel coronavirus disease 2019 (COVID-19) first appeared in Wuhan, China, with respiratory symptoms (i.e., fever, cough, and shortness of breath) and was spreading rapidly throughout the world by January 30, 2020 [1]. The World Health Organization (WHO) declared it a "Public Health Emergency of International Concern (PHEIC)" [2]. Cases continued to increase; the number of cases was reported to be 162,773,940 as of May 17, 2021 [3]. It was reported that healthcare workers accounted for 14–35% of these cases [4]. The U.S. Center for Disease Control and Prevention (CDC) reported that the number of healthcare workers infected with COVID-19 in a population of 14.717.298 people, 19.06% of whom were healthcare workers, was 335,312; and the number of healthcare personnel who lost their lives was 257.831 as of January 3, 2021 [5]. According to the Turkish Ministry of Health, 7,428 healthcare workers were infected with COVID-19 in that country as of April 29, 2020 [6].

The symptoms of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS CoV2) were mild in some patients and severe enough to require intensive care support in others [3]. According to the report of the Novel Coronavirus Pneumonia Emergency Response Epidemiology Team in China, approximately 5% of individuals diagnosed with COVID-19 require treatment in intensive care units (ICUs) for varied problems (e.g., respiratory failure, septic shock, and/or multiple organ dysfunction/failure) [7]. Being in contact with patients who have COVID-19 in risky care environments, such as ICUs, has brought high exposure to the infection agent for nurses, which causes them to experience fear [2, 8]. Like all healthcare workers, intensive care nurses have concerns and fears about lack of access to appropriate personal protective equipment, being infected with coronavirus and then infecting family members, the possibility of not being able to be tested quickly for COVID-19 when necessary, the possibility of not being able to meet their personal and family needs if they become infected, childcare problems caused by increased working hours and school closures, and deficiencies in access to up-to-date information [9].

The COVID-19 pandemic has had negative effects on healthcare workers, causing burnout and psychosocial problems and endangering the mental health of workers [10]. It is important to first reveal the causes of fear to determine approaches to support the psychological and mental health of healthcare workers [9].

This study aimed to reveal the COVID-19 fears of intensive care nurses during the pandemic.

Materials and methods

Research questions

What is the fear level of intensive care nurses during the COVID-19 pandemic?

Which nursing practices have increased the fears of intensive care nurses during the COVID-19 pandemic?

Study design and participants

The data of this cross-sectional study were collected with the participation of 128 nurses working in the ICUs of two public hospitals (level 1, level 2, and level 3) between October 2020 and November 2020. The universe of the study consisted of 152 intensive care nurses who were actively working in the ICU of one of two public hospitals. In the present study, the purpose was to reach nurses working in all ICUs (152) without using any sampling methods. The sampling of the study consisted of 128 intensive care nurses who volunteered to participate in the study. The power of the study in representing the universe was 84.2%. The study included nurses working actively in ICUs during the study process who volunteered to participate. Nurses who were on leave during the study process and other healthcare professionals who worked in the ICU were not included in the study.

Data collection tools

The Nurse Identification Form and the Fear of COVID-19 Scale (FVC-19S) were used in data collection.

Nurse Identification Form

The form was created by the researchers (two intensive care nurses, one academic nurse, and another academic nurse with 10 years of intensive care nursing experience) based on the literature [11, 12].

The form consisted of 16 questions on sociodemographic characteristics (i.e., age, gender, educational status, working in an ICU, professional experience duration, intensive care experience time, weekly working hours, shift type, number of patients cared for in one shift), and COVID-19-related experiences (COVID-19 patient care status, test status, status of infection with COVID-19, being able to access PPE, access to care filters, the aspiration system used, and practices increasing the risk of infection).

The Fear of COVID-19 Scale (FCV-19S)

The scale was developed by Ahorsu et al. [12] in 2020and adapted to the Turkish language by Bakioglu et al. [13]. The scale consists of one single dimension and seven items The scale does not have reverse items and takes the form of a 5-point Likert scale. "I strongly disagree" is scored with 1 point, and "I strongly agree" is scored with 5 points. The total score that can be received from all the items of the scale reflects the level of coronavirus fear experienced by the individual. Total scores can range between 7 and 35. High scores show that the individual experiences high coronavirus fear. The scale questionnaire takes 10 minutes to fill out. The Cronbach Alpha Coefficient was calculated as 0.88 in the original study [13] and 0.76 in this study.

Data collection

The online survey forms were delivered to the nurses through WhatsApp groups to protect the health of both researchers and participants during the COVID-19 pandemic. The participants were informed about the study on the first page of the survey form, and their approval to participate in the study was verified. The participants also filled in the data collection forms after providing consent on the written consent form.

Ethical considerations

The ethical approval required for conducting the research was obtained from the Kırklareli University Health Sciences Institute Scientific Research Ethics Committee (number: 69456409-199-E.14455, protocol number: 2020/251 and date: 06.10.2020), and permission was obtained from the public hospitals. An electronic informed consent form was

presented on the first page of the online survey. The nurses were electronically informed on the first page of the survey that their participation was voluntary and that they could withdraw from the survey at any time.

Statistical analysis

Data were analyzed using IBM SPSS Statistics 22.0 (IBM, Armonk, NY, USA). The data were gathered by using descriptive statistics, such as mean (standard deviation), percentage, and frequency. The Kolmogorov Smirnov test was used to test the compatibility of the data with normal distribution. The Independent Sample t-test and ANOVA were used in cross-group comparisons. The Spearman Correlation test was used to examine and determine relations between the variables. The statistical significance value was taken as $P < 0.05$.

Results

The mean age of the nurses in the study was 29.7 (6.6) years, and 82.8% were women. Also, 67.2% of the participating nurses worked in level 3 intensive care, and the mean weekly working time was 49.6 (10.1) hours. A total of 80.5% of the nurses provided care to patients who were infected with COVID-19; 94.5% were tested for COVID-19 (positive molecular RT-PCR on nasopharyngeal swab) at least once, and 21.4% of those tested were positive. The rate at which the nurses had access to personal protective equipment was found to be 88.3%. It was found that the mean scale score was different at statistically significant levels depending on the education status and the number of patients per nurse in one single shift ($P < 0.05$) (Table 1).

Table 1: Comparison of the nurses' COVID-19 fear according to individual variables and their experiences of COVID-19 (n = 128)

Variables		n(%)	FCS Mean (SD)	*P*-value
Age (years)		29.7 (6.6)		0.394
Mean (SD) (Min-Max)		(20-48)		r = 0.024
Gender	Female	106(82.8)	22.8 (4.9)	0.354
	Male	22(17.2)	21.7 (6.1)	t = -0.930
Education	High school	21(16.4)	25.2 (5.9)	0.013
	Bachelor's degree or higher	107(83.6)	22.2 (4.8)	t = -2.517
Working ICU	Level 1	12(9.4)	22.5 (6.6)	0.748
	Level 2	30(23.4)	23.3 (5.4)	F = 0.291
	Level 3	86(67.2)	22.5 (4.8)	
Shift type	Solo night shift	9(7)	23.5 (2.0)	0.292
	Day and night shift	119(93)	22.6 (5.3)	t = 1.086
Weekly working (hours) Mean (SD)		49.6 (10.1)		0.309 r = -0.045
Professional experience duration (month) mean (SD)		71.1 (68.1)		0.087 r = 0.121
Experience duration in ICU (month) Mean (SD)		64.1 (117.7)		0.120 r = -0.088
Number of patients cared for in one shift Mean (SD) (Min-Max)		2.5 (0.7) (1-5)		0.217 r = 0.007
COVID-19 patient care status	Yes	103(80.5)	21.2 (4.2)	0.104
	No	25(19.5)	23.0 (5.3)	t = -1.636
COVID 19 PCR test status	Yes	121(94.5)	22.8 (5.1)	0.332
	No	7(5.5)	20.8 (5.1)	t = 0.975
Status of infection with COVID-19	Yes	26(20.3)	21.8 (5.2)	0.368
	No	95(74.2)	23.0 (5.1)	F = 1.009
	Not tested	7(5.5)	20.8 (4.8)	
Being able to access PPE	Yes	113(88.3)	22.4 (5.1)	0.193
	No	315(11.7)	24.3 (4.9)	t = -1.308
Being able to care filters	Yes	106(82.8)	22.6 (5.3)	0.733
	No	22(17.2)	23.0 (4.2)	t = -0.034
The aspiration system	Open aspiration	80(62.5)	23.1 (4.5)	0.254
	Closed aspiration	48(37.5)	21.9 (6.0)	t = -1.148

r: Spearman correlation analysis, t: independent sample t test, F: ANOVA, $P < 0.05$

The mean score on the Fear of COVID-19 Scale for the nurses was found to be 22.7 (5.1) (Table 2).

A total of 55.5% of the nurses were afraid of losing their lives due to coronavirus. In addition, 69.6% were uncomfortable about the disease, and they had symptoms of stress and anxiety associated with the disease (36.7% had insomnia, 28.3% tachycardia, and 25.8% sweating in the hands); 59.3% of them experienced tension when they saw stories and news about the coronavirus on social media (Table 3).

Table 2: Nurses' mean scores on the fear of COVID-19 scale (n = 128)

Scale	Mean (SD)	Min – Max
The fear of COVID-19 scale	22.7 (5.1)	11-35

Table 3: Nurses' responses to the items of the fear of COVID-19 scale (n = 128)

Items	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I am most afraid of coronavirus.	3(2.3)	18(14.1)	21(16.4)	62(48.4)	24(18.8)
It makes me uncomfortable to think about coronavirus.	5(3.9)	21(16.4)	13(10.2)	55(43.0)	34(26.6)
My hands become clammy when I think about coronavirus-19.	21(16.4)	47(36.7)	27(21.1)	22(17.2)	11(8.6)
I am afraid of losing my life because of coronavirus-19.	7(5.5)	25(19.5)	25(19.5)	48(37.5)	23(18)
When watching news and stories about coronavirus-19 on social media, I become nervous or anxious.	6(4.7)	21(16.4)	29(22.7)	55(46.0)	17(13.3)
I cannot sleep because I'm worrying about getting coronavirus-19	2(1.6)	56(43.8)	23(18.0)	22(17.2)	25(19.5)
My heart races or palpitates when I think about getting coronavirus-19	21(16.4)	44(34.4)	27(21.1)	24(18.8)	12(9.4)

This study determined that the three riskiest interventions that caused fear of COVID-19 for nurses were intubation, invasive aspiration, and inhaler treatment (77.3%, 74.2%, and 72.7%, respectively) (Table 4).

Table 4: Practices increasing the risk of COVID-19 infection in nurses (n = 128)

Practices	Yes		No	
	n	%	n	%
Intubation	99	77.3	29	22.7
Invasive aspiration	95	74.2	33	25.8
Inhaler drug application	93	72.7	35	27.3
Cardiopulmonary resuscitation (CPR)	81	63.3	47	36.7
Tracheostomy care	63	49.2	65	50.8
Nasogastric / urinary catheterization and care	61	47.7	67	52.3
Prone positioning	56	43.8	72	56.2
Noninvasive aspiration	56	43.4	73	56.6
Taking anamnesis	50	39.1	78	60.9
Transfer for medical viewing	43	33.6	85	66.4
Delivery of valuable items to patients' relatives	41	32.0	87.0	68.0
High-flow oxygen treatment	34	26.6	94	73.4
Hemodialysis / hemofiltration therapy	28	21.9	76.9	78.1
Central venous pressure measurement and catheter maintenance	27	21.1	101	78.9
Others (feeding, blood sampling, body cleansing)	12	9.4	116	90.6

Discussion

A total of 80.5% of the intensive care nurses provided care for patients infected with COVID-19, and 94.5% were tested for COVID-19 at least once. Of those tested, 21.4% were positive for the coronavirus. Quigley et al. [14] determined that healthcare workers had a three-times higher risk of becoming infected with COVID-19 than the general population. Bandyopadhyay et al. [15] reported that the rate of infected nurses was 38.6% in their global studies. Kambhampati et al. [16] found that nurses had the highest share (36.3%) of the healthcare workers hospitalized. Semerci et al.'s [17] study reported that 18.9% of participating oncology nurses provided care for patients with COVID-19, and 2.7% were positive for SARS CoV-2. Lombardi et al. [18] found that 8.8% of healthcare workers were infected. A study by Eyre et al. [19] found that

COVID-19 positive rates were lower in intensive care workers because of the low-level difficulty they have in accessing PPE.

That study found that those who did not acquire PPE experienced more COVID-19 fear, even if no statistically significant differences were detected. Hendy et al. [20] found that nurses who had trouble acquiring PPE were more stressed. Likewise, Luceño-Morene et al. [21] found that accessibility to PPE affected anxiety levels. Pouralizadeh et al. [22] identified the key factor affecting anxiety during the COVID-19 pandemic as PPE deficiency. A study by Halcomb et al. [23] was reported that 40% of participating nurses could not access gowns, 45.4% could not access P2/N95 masks, 22.1% could not access surgical masks, and 28.6% could not access goggles. PPEs are crucial elements in providing patient care, and the lack of this safety equipment triggers fear in healthcare professionals [9, 23]. In this study, the high rate of accessing PPEs, at 88.3%, might explain the different results.

High school graduate nurses were more fearful of COVID-19 in the present study. Labrague and De los Santos [11] reported that educational status did not affect anxiety around COVID. However, the nurses who participated in the study had at least undergraduate degrees, which is considered to be effective and necessary for intensive care nurses in dealing with stress and fear management.

The study also found that the fear of COVID-19 among nurses increased as the number of patients increased per nurse in one single shift. Likewise, another study also found that nurse-to-patient ratio > 1:3 nurses experienced more stress [20]. It was reported in a study with a sampling of healthcare workers that an increase in workload triggered burnout due to fear of COVID-19 [25]. It was found that nurses had more time for the care of COVID-19 patients in the ICU, and it was recommended that the ratio of nurses to patients should be 1:1 [26]. Since an increase in the number of patients the nurses care for in one single shift also increases the risk of infection, this is considered to be a factor triggering the fear of COVID-19.

The mean score of the nurses in terms of the fear of COVID-19 was above average levels at 22.7 (5.1). A study by Labrague and De los Santos [11] found a COVID-19 fear scale score average of 19.92 (5.25) (5-35) in frontline nurses. In a study conducted with registry nurses as the sampling, it was reported that nurses experienced high COVID-19 fear levels (7.72 (2.21) in a 10-point rating) [27]. Gonzales-Gill et al. [28] reported that 37.5% of the nurses working in ICUs and emergency departments feared becoming infected. A study conducted in Wuhan reported that nurses (63.2%) experienced high levels of fear [24]. The fact that the intensive care nurses had fears in the face of this disease with high infection rates might have stemmed from their constant contact with COVID-19 patients.

It was determined in the study that 55.5% of the nurses were fearful of losing their lives due to coronavirus, and 69.6% were uncomfortable about the disease. Also, the symptoms of stress and anxiety associated with the disease were detected in nurses (36.7% experienced insomnia, 28.3% tachycardia, and 25.8% sweating in the hands). Hu et al. [24] found that nurses experienced fear of losing their lives to the disease. Another study reported that intensive care nurses experienced fear of death over the course of the pandemic [29]. Yifan et al. [30] determined that 31.4% of the intensive care nurses had an increase in angina and heart rates, and 30.7% had dyspnea during the pandemic. Studies with healthcare workers as the sampling showed that sleep quality decreased and more sleep problems occurred during the COVID-19 pandemic [31, 32]. Sunjaya et al. [33] found that healthcare workers showed symptoms of depression, such as loneliness, insomnia, and difficulty in concentrating. Increased heart rates, sweating, tension, and the idea that something unwanted will happen are common symptoms of anxiety. The symptoms are limited with time in most cases and disappear when the associated event ends [34]. The study results showed that the COVID-19 pandemic has been a cause of stress and fear for nurses and other healthcare workers.

It was found that 59.3% of nurses experienced tension when they saw stories and news on coronavirus on social media. Tayyib and Alahosatimi [27] identified fear and stress of seeing the news on social media as predictive in nurses. It was determined in another study that disinformation on social media created fear in society, with the panic effect manifesting during the course of the pandemic [35]. Therefore, social media news about COVID-19 has psychological effects on society and on nurses.

In the present study, the three riskiest interventions that contribute to the fear of COVID-19 infection for nurses were intubation, invasive aspiration, and inhalation treatment (77.3%, 74.2%, and 72.7%, respectively). Yifan et al. [30] determined that ICU nurses who cared for COVID-19 patients with pneumonia were exposed to infection risk from each patient 11 times during nursing initiatives and interventions (e.g., intubation, open suction, close suction, etc.). Since aerosol-forming procedures (e.g., intubation, cardiopulmonary resuscitation (CPR), NIV, tracheostomy, inhaler drug application, prone positioning, high-flow oxygen treatment, etc.) increase the risk of infection [36], it can be said that intensive care nurses experience fear during aerosol-forming procedures. To decrease intensive care nurses' fears during aerosol-forming procedures, nurses should be informed about performing these practices on COVID-19 patients.

Limitations

In this study, the COVID-19 fears of intensive care nurses, who have a special place in the care of COVID-19 patients during the pandemic, which is a topic of current interest, were evaluated, and a valid and standardized scale was used to measure the fear of coronavirus.

However, the fact that the results were limited to the sample affected their generalization. The results should not be generalized to all intensive care nurses since the study was conducted in two small cities and two separate centers where the study took place had different conditions (physical characteristics, equipment availability, patient population, etc.). Research results should be interpreted with this situation in mind.

Conclusion

Nurses are concerned about the COVID-19 pandemic. During a pandemic process, the fears and coping skills of intensive care nurses must be identified, and the nurses should be supported physiologically, psychologically, and sociologically.

Necessary measures must be taken for intensive care nurses who are high school graduates or who care for an increased number of patients as they face increased fear due to the risk of infection and spread of the disease during the COVID-19 pandemic. Preventable factors should be considered. Information must be provided at certain periods to keep the information of nurses up-to-date on emotion management and infection control. Emphasis should be made on considering news on the scientific and official sites, not on social media, to avoid an infodemic.

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