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The Challenges Of The Medical Doctors Working In The Intensive Care Unit During Covid-19 Pandemic

Research Article

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Abstract

Background/Aim: Healthcare professionals working in intensive care unit (ICU) have been in the frontline from the beginning of COVID-19 pandemic. We aimed to evaluate the technical and psychological difficulties encountered by medical doctors working in the ICU of the hospitals within Başkent University Faculty of Medicine during this pandemic.
Methods: A questionnaire consisting of 52 questions was applied to the medical doctors working in the ICUs of Başkent University affiliated centers.
Results: Out of the 73 ICU physicians who were invited to participate, 62 (84.9%) of them completed the survey. Out of 59.7% of the participants stated that they did not feel safe while caring for the patients. The most common reason for their insecurity was the fear of contamination (70.3%). Out of 69.4% ICU physicians stated that their anxiety level was moderate. It was observed that the anxiety level of ICU physicians decreased as the number of patients followed up increased ($p = 0.025$), the increase in the number of hospital beds was found to be significantly associated with increased anxiety level ($p = 0.015$). It was found that the presence of anxiety complaint increased the state of having high anxiety related to COVID-19 disease 28.3 times ($p = 0.001$).
Conclusion: We found that more than half of the physicians participating in our study didn't have anyproblem of PPE deficiency, which is one of the most important technical difficulties.
When it comes to psychological difficulties, we found that doctors who had anxiety complaints before had much more difficulties in managing the pandemic process than others.

Keywords: Covid-19 Pandemic; ICU; Anxiety.

Introduction

Coronavirus infection (COVID-19), which was declared as a pandemic by the World Health Organization on March 11, 2020, was first reported in Wuhan, China on December 31, 2019.[1, 2] The mortality of this infection, which progresses with high fever, shortness of breath, and bilateral pulmonary infiltrate, has been reported as 3.8%.[1]

The novel human coronavirus disease, caused by asingle-stranded, enveloped RNA virus,is transmitted via respiratory droplets and direct contact and keeps spreading worldwide. It is stated that contagiousness can start 1 to 2 days before the symptomatic period and continue until the fourteenth day after the symptoms ocur. 2 In case of severe pneumonia, respiratory failure, and/or deterioration in organ functions, mechanical ventilation and intensive care follow-up are essential.[2, 3]

The pandemic list of the World Health Organization consists of a wide spectrum, starting with the plague infection in 1347, continuing with Cholera, Russian flu, Spanish flu, Asian flu, AIDS and Influenza infections, and finally, Covid-19infection.[4, 6] The novel pandemic highlights the intense stress effects on healthcare workers.[4,6]Healthcare professionals responsible for the treatment of suspected or confirmed cases are at risk in terms of increased transmission as well as mental health problems.[7] In our study, it was aimed to evaluate the technical and psychological difficulties encountered by medical doctors working in the intensive care unit (ICU) of the hospitals within Başkent University Faculty of Medicine during this pandemic.

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Materials and Methods

Medical doctors working in the ICUs of BaşkentUniversity affiliated centers in other cities (Ankara Hospital, Istanbul Hospital, İzmir Hospital, Adana Hospital, Konya Hospital and Alanya Hospital), during the COVID-19 pandemic, were included in this prospective study. This study was approved by the Baskent University Institutional Review Board (project no KA 20/217). The coordinator center of the study is Başkent University Ankara Hospital. The study was on a voluntary basis. A questionnaire consisting of 52 questions was applied to the medical doctors who accepted to participate in the study. The questionnaire is shared in Annex 1.

The primary outcome of the study is to identify the technical and psychological difficulties faced by ICU physiciansduring the COVID-19 pandemic.

The secondary outcome of the study is identifying factors that affect the anxiety of doctors.

Statistical Analysis

Data were summarized as mean ± standard deviation and median (minimum-maximum) for continuous variables, frequencies (percentiles) for categorical variables. Student's t test was used for independent group comparisons. Chi-square test was used for proportions and its counterpart Fisher's Exact test was used when the data were sparse. The association between anxiety focused on being high or medium level was evaluated by multiple logistic regression analysis. Odds ratios and their confidence intervals were calculated. A "p" value of less than 0.05 was considered statistically significant and SPSS 15.0 for Windows were used for all these statistical analyzes.

Results

Out of 73 ICU physicians who were invited to participate, 62 (84.9%) of them working in the ICU completed the survey. The mean age was 39.6 ± 9.1 (between 27-60 years old) and 69.4% of them were female (n=43). The medical specialist (most of them anesthesiologist)group constituted the highest percentage(40.3%) of the survey participants (Table-1).

Out of 91.9% ICU physicians stated that they were working in mixed medical and surgical ICUs and 95.2% stated that they had mixed type rooms both isolation rooms and open wards. Sixty one (98.4%) participants stated that they created a different ICU for Covid-19 PCR positive patients due to the Covid-19 pandemic. Fifty two (83.9%) participants had negative pressure isolation rooms.

According to the survey results, 39 (62.9%) of the participants reported having sufficient medical doctors in the ICU, while 27 (43.5%) of the participants reported having sufficient nurses. While the mean working duration of doctors was 11.2 ± 5.5 (6-30 hours) hours per day, the same time was 10.7 ± 1.9 (6-12 hours) for nurses. The maximum shift duration among doctors was 24 hours (45.2%), it was less than 24 hours among nurses (91.9%) (Table-2). For doctors with a shift duration more than 24 hours, the mean shift duration was 28.7 ± 4.0 hours (26-36 hours).The mean number of patients a doctor and a nurse has to care for in one shift was 11.4 ± 6.7 (4-36), 3.5 ± 4.1 (2-21) respectively. 80.6% of the participants stated that (n = 50) there was a specialist doctor in the ICU for 24 hours and their specialty was reported as anesthesiology by 26 participants (41.9%). The specialty distributions of non-anesthesiologist ICU doctors were internal diseases (n = 3), infectious diseases (n = 2), general surgery and cardiology (n = 1) (Table-3).

66.1% of the participants (n = 41) stated that the same doctors worked at COVID-19 ICUs and non COVID-19 ICUs. Additionally 85.2% (n = 52) stated that non-ICU teams were not included in the ICU working order. In the emergency department, it was found that all three branches, emergency service, infectious diseases and chest diseases physicians actively participated in the management of COVID-19 patients (n = 34 / 55.7%).

The admissions of the patients to the ICU were done by 30.6% of the ICU doctors and the othersby the relevant branch doctors. In 85.5% (n = 53) of the centers, patients were followed up as closed format intensive care units. It was found that 41.9% (n = 26) of the patients who were primarily hospitalized by intensive care physicians had a problem with their transfer to the ward after recovery. It was stated that 25.8% (n = 16) of the patients who passed away had problems in the burial procedures.

Table 1. Demographic Characteristics of Doctors.

Variables	Mean± SD	Median (Min.-Max.)
Age (years)	39.6 ± 9.1	40.0 (27-60)
	Frequency (n)	Percent (%)
Female/Male	43/19	69.4/30.6
Academic title		
General practitioner	5	8.1
Resident	22	35.5
Medical Specialist	25	40.3
Assistant professor	3	4.8
Associate professor	2	3.2
Professor	5	8.1

SD: Standart deviation, Min: minimum, Max: maximum

For the diagnosis of COVID-19, both clinical, radiological and PCR tests were used in most of the patients (n = 54, 87.1%). It was determined that 71% (n = 44) of the patients in the centers were admitted from the emergency services, other wards in-hospital and other hospitals through the emergency call center (calling 112).

Thirty-eight participants (61.3%) stated that they used all protective personal equipment (PPE) in their units, and all participants used at least surgical masks or N95 masks withgloves (Table-3). Most of the participants (n = 57, 91.9%) were using all PPE, even if the patients had a probable COVID-19 case, while 20 participants (32.3%) were using all PPE in negative cases. The number of teams using all PPE while approaching patients withnegative COVID PCR test was less (n = 42, 67.7%). In procedures involving aerosol, the number of clinics using all PPE was less (n = 10, 16.1%), all participants at least used surgical masks or N95 masks and gloves, 4 participants (6.5%) stated that they did not use N95 masks.

Patients with clinical and radiological appearance of viral pneumonia were admitted to the ICU for probable COVID-19pneumonia treatment (n=7, 11.3%), exclusion (n=7, 11.3%) and both (n=48, 77.4%).

Out of 80.6% of the participants (n = 50) received information about the COVID-19 disease, 65.4% (n = 34) received this information through in-house training, 93.5% (n = 58) followed the ministry of health guidelines, 32.3% (n = 20) of them stated that they alsoread non-ministry of health resources, and 95.2% (n = 59) of them stated that they prepared protocols for admission and treatment of patients.

59.7% of the participants (n = 37) stated that they did not feel safe while caring for the patients, and the most common reason for their insecurity was the fear of contamination (70.3%). Others were PPE insufficiency (18.9%) and having an underlying chronic disease (10.8%), respectively.

The anxiety levels of the doctors and nurses working in the ICU are presented in Table-4. 87.1% (n = 54) of the participants stated that they were not diagnosed with panic disorder, anxiety disorder or obsessive-compulsive disorder before the pandemic. 61.3% of the participants (n = 38) stated that they did not have any psychiatric complaints during this period.

No statistically significant difference was found between the level of anxiety related to COVID-19 disease and professional title (p>0.05). The anxiety levels associated with COVID-19 disease between the participants who were previously diagnosed with anxiety and those who did not were similar. While it was observed that the anxiety level of ICU physicians decreased as the number of patients followed up increased (p = 0.025), the increasing number of hospital beds was found to be significantly associated with increased anxiety level (p = 0.015) (Table-5). No statistically

Table 2. Specialties, working places and durations of Doctors.

	Frequency (n)	Percent (%)
Duration of a shift for doctors		
<24 hours	19	30.6
24 hours	28	45.2
>24 hours	15	24.2
Duration of a shift for nurses		
<24 hours	57	91.9
24 hours	3	4.8
>24 hours	2	3.2

Table 3. Distribution of personal protective equipment usage.

Types of PPE	Frequency (n)	Percent (%)
SM+N95+F+G+OA+OS	1	1.6
Not use OA	17	27.4
Not use N95	1	1.6
All of them (SM +N95+F+Gl+G+OA+OS)	38	61.3
Use of PPE in aerosol generating procedures		
All of them (SM +N95+F+Gl+G+OA+OS)	10	16.1
Not use C	4	6.5
Not use N95	4	6.5
Not use OA	26	41.9
Not use F or Gl	5	8.1

PPE: personal protective equipment. SM: surgical mask, N95: N95 mask, F: face shield, G: glove, OA: overalls, OS: overshoe, Gl: goggles, C: Intubation Cabin

Table 4. Anxiety levels of doctors and nurses.

Levels	Doctors (n/%)	Nurses (n/%)
Low	1/1.6	3/4.8
Medium	43/69.4	27/43.5
High	18/29.0	32/51.6

Table 5. Factors Affecting Anxiety of Doctors.

Anxiety levels	Medium Level		High Level		
	Mean ± SD	Median (Min.-Max.)	Mean ± SD	Median (Min.-Max.)	P value
Age (years)	40.2 ± 9.6	41.0 (27-60)	38.1 ± 7.9	39.0 (27-51)	0.408
Number of hospital beds	248.7 ± 133.4	292.5 (32-450)	359.8 ± 192.2	400.0 (27-600)	0.015
Number of ICU beds	30.9 ± 11.9	30.0 (6-60)	25.8 ± 12.9	26.0 (6-60)	0.145
Number of Patients for doctors	12.6 ± 6.8	12.0 (4-36)	8.4 ± 5.3	6.0 (4-27)	0.025
Number of Patients for nurses	4.1 ± 4.9	3.0 (2-12)	2.3 ± 0.49	2.0 (2-3)	0.142
Working duration of doctors (hours)	10.5 ± 5.2	9.0 (8-30)	12.7 ± 5.9	10.0 (6-26)	0.155
Working duration of nurses (hours)	10.8 ± 1.8	12.0 (8-12)	10.6 ± 2.2	12.0 (6-12)	0.681

SD: Standart deviation, Min: minimum, Max: maximum, ICU: Intensive Care Unit

Table 6. The results of the multivariate logistic regression model.

	SE	Exp B (Odds)	P value	%95 Confidence Interval	
				Lower limit	Upper limit
Number of hospital beds	0.003	1.004	0.245	0.997	1.011
Number of Patients per doctors	0.197	0.718	0.092	0.489	1.056
Complaint of anxiety	1.014	28.33	0.001	3.884	206.643

SE: Standart error

significant difference was found between the content and number of PPE and the anxiety level (p = 0.052). According to the multivariate logistic regression model, it was found that the presence of anxiety complaint increased the state of having high anxiety related to COVID-19 disease 28.3 times (p = 0.001) (Table-6).

Discussion

We conducted a survey, consisting of 53 questions examining the difficulties faced during the COVID-19 pandemic, with 62 doctors physicians in charge of ICU of Başkent University hospitals. It was determined that more than 90% of the participants had sufficient knowledge about this disease through the trainings given by the institution they are working at and their own researches, and more than 95% of them created a protocol for admission and management of critically ill COVID-19 patients. Although more than 80% of the participants stated that they have sufficient personal protective equipment (PPE), more than half of the participants stated that they don't feel safe while caring for the patient. The most common reason for this insecurity was found to be the fear of infecting their families and close contacts. We found that the anxiety levels of the doctors who had anxiety complaints before are higher than the others,and also increase in the number of beds in the hospital is related with the anxiety level of the doctors and that there is a decrease in the anxiety level of intensive care doctors in parallel with the increase in the number of patients treated.

As a result of the survey, 69.4% of the doctors working in the intensive care unit (ICU) stated that their anxiety level was moderate, while 29% stated that it was at a higher level. It is known that healthcare professionals working in ICU have been in the frontline of the COVID-19 pandemic from the very beginning. [8] In studies conducted out of the ICU, it has been reported that insomnia, anxiety and depression were observed at a high rate in healthcare professionals participated in the treatment of COVID-19 patients. [9] In a survey conducted with healthcare professionals working in ICU, it was reported that anxiety and depression were observed in more than 50% of the healthcare professionals.[9] In accordance with these studies, it was found that particularly the moderate anxiety rate of the doctors participating in our study was more than 50%. Also, the doctors stated that especially female nurses working in the covid ICU have higher anxiety levels in accordance with the literature, and they observed high anxiety in 50% of the nurses. [10, 11] We attribute this to the fact that nurses are in close contact with COVID-19 PCR positive patients for longer periods of time for treatment. Of course, this data is entirely based on the observation of the doctors participating in the survey. A survey wasn't conducted with nurses working in the COVID-19ICU. In accordance with Elina et al., we determined that the most important reason for the increase in anxiety of the participants is the fear of infecting their families and close contacts despite having the sufficient PPE, and this fear was detected in more than half of the participants.[12]

When compared with the other participants, no difference was found in the anxiety levels of the participants who were diagnosed with anxiety and received treatment before. It was found that the anxiety levels of the participants, who did not have an anxiety diagnosis and treatment but had anxiety complaints before, were higher than the others. We attribute this to the fact that the treatment participants with anxiety diagnosis receiving for their existing complaints might have suppressed their covid-related anxiety, and that the complaints of the participants who did not receive any treatment even though they had anxiety complaints before may have been triggered further.

Different from the findings of Azoulay et al., we found that there is no significant relationship between age, experience, academic title and anxiety levels.[13] Contrary to what was expected, we did not conclude that anxiety decreased with increasing age and experience. Again contrary to findings of Azoulay et al., we found that there is a statistically significant decrease in the anxiety level of doctors in parallel with the increase in the number of patients treated.[13] We attribute this to the fact that the doctors who take care of more patients get to know this disease better and control their fears as they get to know it. In accordance with other articles published, we think that the unknowns about the course and results of this new disease, cause more anxiety in healthcare professionals.[12, 14]

In our study, we found that the increase in the number of beds in hospital have a statistically significant relationship with the anxiety level of doctors working in the ICU. We think that the reason for this may be the possibility that the number of beds in the ICU can not meet the potential number of patients who need to be admitted to ICU and may cause blockage.

The low number of doctors participating in our study and the fact that the level of anxiety was evaluated by how the participants feel themselves rather than a valid test, are the limitations of our study.

Conclusion

In conclusion, we have found out that although more than half of the participants have sufficient PPE, they don't feel safe due to the fear of infecting their families and close contacts. We also found that the anxiety levels of the doctors who had anxiety complaints before were higher than the others,and also increase in the number of beds in the hospital is related with the anxiety level of the doctors and that there is a decrease in the anxiety level of intensive care doctors in parallel with the increase in the number of patients treated. We think that in the future, more reliable results will be obtained with the planning of more comprehensive studies including notonly doctors but also otherhealthcare professionals working in the COVID-19 intensive care unit and using international objective scales measuring the anxiety levels.

Supplementery

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