

Burnout levels of the intensive care unit team during extended COVID-19 outbreak and affecting factors

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ABSTRACT

Aim: This study aimed to determine how intensive care workers are affected by the pandemic period and the factors affecting burnout.

Material and Method: 45 assistants, 76 nurses and 40 specialists working in a tertiary intensive care unit (ICU) with 70 COVID-beds participated in the study. Responses we recollected through a website (www.surveymonkey.com).

Results: The mean age of the respondents was 34.4±8.6 years, and the mean years of experience were 9.4±8.2. The general Emotional Exhaustion (EE), Depersonalization (DP), Reduced Personal Achievement (RPA) scores of the ICUs team were calculated as 20.7, 8.4 and 20.1 and the general arithmetic mean of the burnout scores was 49.1. It was found that the assistant doctors group had a statistically significantly higher risk in the EE and DP scales. ($p=0,016$ $p<0,001$). Considering the satisfaction correlation of the scales, The rate of dissatisfaction was found statistically significantly higher in the intensive care nurses group than assistant doctors and specialist doctors groups ($p<0,001$). Considering the factors affecting burnout, it was found that there was a statistically significant negative correlation between burnout and "Being appreciated at work during the pandemic period and "Adequacy of physical conditions", "Being married", "Having children", "Easily reach to the supervisor".

Conclusion: It is of importance to reveal the causes of burnout during the pandemic, and to make arrangements in working conditions in a way that will increase job satisfaction and reduce burnout.

Keywords: COVID-19, intensive care unit, assistant doctors, specialist doctors, nurses, burnout

INTRODUCTION

Having been identified in Wuhan, China on January 7, 2020, the COVID-19 disease spread worldwide over time and passed into history as the first pandemic caused by the SARS-Cov-2 virus (1, 2). The pandemic period, which started in our country with the diagnosis of the first positive case on March 11, 2020, has been going on for 20 months. The increasing number of infected individuals and the fact that 5% of COVID-19 patients require intubation and ventilation have made intensive care units strategic places (3, 4).

Intensive care unit (ICU) team possesses highly developed skills in risk-taking and crisis management. However, while fighting this disease with a high mortality rate and without a known treatment, a very high working capacity is required to maintain the desired ICU performance, to provide safe ICU service during increased working hours, to find solutions to material deficiencies and supply chain issues.

Burnout syndrome was introduced by Herbert J. Freudenberg in 1974 to explain fatigue, frustration, and job quitting observed among volunteer healthcare professionals. Freudenberg described this situation as failing in the face of excessive

demands and getting tired (5). Later, Maslach et al. (6) made the most detailed definition for the Burnout Syndrome and introduced the 'Maslach Burnout Inventory' consisting of 22 questions.

Studies have shown that burnout can lead to many negative outcomes, from loss of productivity and failure in the working environment to psychosomatic diseases, depression, and insomnia (7).

Various studies have examined the burnout levels of healthcare professionals in both our country and abroad. In most of these studies, specialist doctors, assistant doctors, or nurses were evaluated separately. In this study, we aimed to determine how the intensive care team (specialist doctors, assistant doctors, nurses) was affected by the pandemic period and the level of burnout using a scale. The secondary aim was to identify the factors affecting burnout and to raise awareness.

MATERIAL AND METHOD

The study was carried out with the permission of Kartal Dr. Lutfi Kirdar City Hospital Clinical Researches Ethics Committee (Date: 15.09.2021, Decision No: 2021/514/209/1).

All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

This study was carried out in a city hospital which has been actively serving during the pandemic with approximately 400 beds and 70 ICU beds designated for patients with COVID-19. This prospective, cross-sectional study was initiated.

A questionnaire was e-mailed to 40 anesthesiology and reanimation specialist doctors (SD), 49 assistant doctors (AD), and 250 intensive care nurses (ICN) who volunteered to participate in the study and were actively working in the tertiary level COVID-19 ICU. The survey data and the results of the Maslach Burnout Inventory were collected through a website (www.surveymonkey.com). A total of 161 people (47.4%) that is 45 assistant doctors (91.8%), 76 nurses (30.4%), and 40 specialist doctors (100%) responded to the questionnaire.

Survey Data Form

The survey data form prepared by the researcher consists of 23 questions addressing age, gender, marital status, average monthly income, number of children, years of experience, years of experience in the department, weekly working hours, number of shifts per month, number of patients cared for per day, whether the physical conditions such as the equipment and the number of personnel at the hospital during the pandemic are sufficient, whether they find the physical conditions such as the equipment and the number of personnel at the hospital sufficient during the pandemic, getting in touch with the supervisor easily while working, being able to work in harmony with their colleagues, being appreciated for their achievements, being subject to verbal-physical violence and mobbing, financial gain or loss of salary-revolving fund during the pandemic, the state of anxiety about the possibility of infecting the people with whom they share the same house (family, friends, etc.) when returning home at the end of the working day, receiving psychological support during the pandemic period, the state of being satisfied with the choice of profession, and whether they would still choose this profession if they had known about the pandemic.

Maslach Burnout Inventory (6)

Maslach analyzed burnout in three categories: "Emotional Exhaustion (EE)", "Depersonalization (DP)" and "Reduced Personal Achievement (RPA)".

Emotional Exhaustion: It describes the depletion of one's emotional resources and the decrease in the individual's energy. Employees who suffer from EE think that they are overloaded and exhausted due to the work they perform and cannot devote themselves to their work emotionally.

Depersonalization: It defines the negative, non-serious attitudes and feelings that a person has towards those they serve, regardless of the fact that they are individuals. It reflects the tendency to be impersonal towards others.

Reduced Personal Achievement: It describes the tendency of a person to evaluate himself/herself negatively. That person's motivation towards work decreases, they feel a lack of control and helplessness.

In inventory there are 9 items (1, 2, 3, 6, 8, 13, 14, 16, and 20) under the EE sub-scale; 5 items (5, 10, 11, 15, and 22) under the DP sub-scale; 8 items (4, 7, 9, 12, 17, 18, 19, and 21) under the RPA sub-scale. A Likert-type scale was used for scoring, with the lowest score being "Never=0" and the highest score being "Always=4". A separate score is obtained for each scale. The items in the EE and DP sub-scales should be scored in the same

way, whereas those in the Reduced Personal Achievement sub-scale should be reverse scored. High scores on the EE and DP sub-scales and low scores on the RPA sub-scale indicate high burnout. The lowest score that can be obtained from general burnout is 0, and the highest is 88.

Statistical Analysis

The SPSS-22 program was used for the analysis of the data obtained through the questionnaire. Descriptive statistics (mean, standard deviation, percentage) were used for the evaluation of the data. Shapiro -Wilk test was used for continuous data. The relationship between the occupational groups was determined based on ANOVA analysis. The Pearson's correlation analysis was used to determine the relationship between the Maslach Burnout Inventory results and the variables, and regression analysis was performed to observe the effects of the variables. The significance level was set at $p < 0.05$.

RESULTS

Of the 161 people who participated in the study, 24.9% ($n=40$) were specialist doctors, 27.9% ($n=45$) were anesthesiology assistants and 47.2% ($n=76$) were ICU nurses. The mean age of the respondents was 34.4 ± 8.6 years, and the mean years of experience were 9.4 ± 8.2 . A comparison of the groups in terms of demographic data revealed that the rate of the respondents that were aged 45 years and older and married was statistically significantly higher in the SD group ($p < 0.001$, $p = 0.031$) and the rate of the respondents that were aged 25-35 years was statistically significantly higher in the AD and ICN group ($p < 0.001$) (Table 1). Considering the years of experience in the department, 40% of the assistant doctors and 47% of the nurses had been working in the same clinic for 1 year and 2 years, respectively.

Table 1. Demographic Characteristics of the Groups

	SD		AD		ICN			
	n	%	n	%	n	%		
Age								
25-29 Years	2	5.0	33	73.3	28	36.8		
30-35 Years	4	10.0	9	20.0	36	47.3		
35-44 Years	9	22.5	3	6.6	3	3.9		
45-50 Years	14	35.0	0	0.0	5	6.5		
50-55 Years	11	27.5	0	0.0	4	5.2	101.547	<0.001
Marital Status								
Married	32	80.0	24	53.3	52	68.4		
Single	8	20.0	21	46.7	24	31.6	6.936	.031
Gender							1.55	.459
Female	23	57.5	24	53.3	49	64.4		
Male	17	42.5	21	46.6	27	35.5		
Experience at the Department (Years)								
1	8	20.0	18	40.0	10	13.2		
2	10	25.0	10	22.2	47	61.8		
3	7	17.5	10	22.2	14	18.4		
4	9	22.5	3	6.7	4	5.3		
5	6	15.0	4	8.9	1	1.3	-	-

When the demographic data of the groups were examined according to the scales, it was found that the risk of EE was higher in assistant doctors group without child. Additional it was found that the risk of DP was higher in male in the specialist doctor group, and higher in singles in the assistant doctors group. ($p = 0.035$, $p = 0.002$, $p = 0.001$) (Table 2).

		SD		AD		ICN		p
		n	Mean±SD	n	Mean±SD	n	Mean±SD	
EE								
Female	23	19.8±6.6	24	23.7±3.8	49	22.5±9.6	.229	
Male	17	15.3±7.8	21	21.2±5.6	27	18.3±8.8	.071	
DP								
Female	23	6.6±4.3	24	10.4±1.8	49	9.8±8.2	.087	
Male	17	9.5±2.2	21	4.7±4.7	27	6.8±4.8	.002	
RPA								
Female	23	20.7±4.3	24	19.5±4	49	19.2±6.1	.516	
Male	17	21.4±4.2	21	19.5±3	27	21.5±4.8	.217	
EE								
Married	32	18.1±6.4	24	22.7±4.7	52	21.9±8.8	.035	
Single	8	17.1±10.9	21	22.2±5.1	24	19.1±10.8	.316	
DP								
Married	32	6.0±4.8	24	9.7±2.2	52	9.5±8.1	.032	
Single	8	5.0±3.5	21	10.3±1.9	23	7±4.7	.001	
RPA								
Married	32	21±4.1	24	20.8±3.2	52	19.7±6.2	.493	
Single	8	21.2±4.9	21	18±3.4	24	20.6±4.5	.078	
EE								
Have no child	34	18.5±6.7	9	24.8±3.6	13	16.5±10.2	.035	
Have a child/ children	6	14.5±10.7	36	22.0±5.04	63	22±9.2	.094	
DP								
Have no child	34	5.9±4.6	9	10.9±1.7	13	7±8.6	.067	
Have a child/ children	6	5.1±4.1	36	9.8±2.1	63	9.1±7.1	.189	
RPA								
Have no child	34	20.9±4	9	18.9±4.3	13	19.6±8.7	.321	
Have a child/ children	6	21.8±5.4	36	19.7±3.4	63	21.8±5.6	.604	
EE: Emotional Exhaustion DP: Depersonalization RPA: Reduced Personal Achievement								

EE: Emotional Exhaustion DP: Depersonalization RPA: Reduced Personal Achievement

The general EE, DP, RPA scores of the ICUs team were calculated as 20.7, 8.4 and 20.1 respectively, and the general arithmetic mean of the burnout scores was 49.1 (**Table 3**). When the general scores and risk groups they got according to the occupational groups were examined, it was found that the AD group had a statistically significantly higher risk in the EE and DP scales. ($p=0,016$, $p<0,001$) (**Table 4**).

	n	Minimum	Maximum	Mean±SD
EE	161	.00	36.00	20.7±8.1
DP	160	.00	51.00	8.4±5.8
RPA	161	.00	32.00	20.1±4.8
General Burnout	161	3.00	72.00	49.1±1.2

Table 4. The EE, DP and RPA Risk Groups by ICUs Team								
	SD		AD		ICN		Chi-square	p
	n	%	n	%	n	%		
Emotional Exhaustion							12.122	.016
Low risk	7	17.5	1	2.2	13	17.1		
Moderate risk	11	27.5	5	11.1	13	17.1		
High risk	22	55.0	39	86.7	50	65.8		
Reduced Personal Accomplishment							4.416	.353
Low risk	20	50.0	31	68.9	45	59.2		
Moderate risk	17	42.5	12	26.7	23	30.3		
High risk	3	7.5	2	4.4	8	10.5		
Depersonalization							31.225	0,001
Low risk	21	52.5	0	0.0	26	34.2		
Moderate risk	10	25.0	19	42.2	18	23.7		
High risk	9	22.5	26	57.8	32	42.1		

Considering the satisfaction correlation of the scales, The rate of dissatisfaction was found statistically significantly higher in the ICN group than AD and SD groups ($p<0,001$) (**Table 5**). When the The distribution of satisfaction of the groups were examined according to the scales, satisfaction with their profession was found to be statistically significantly higher in the EE subscale scores of the ICN group ($p=0,004$) (**Table 6**).

Table 5. ICUs Team's Satisfaction Status								
	SD		AD		ICN		Chi-square	P
	n	%	n	%	n	%		
Would you still choose this profession if you had known about the pandemic?							11,982	.003
Yes	26	65.0	36	80.0	37	48.7		
No	14	35.0	9	20.0	39	51.3		
Are you satisfied with your profession?							29.00	0.001
Yes	14	35.0	14	31.1	53	69.7		
No	20	50.0	15	33.3	16	21.1		
Indecisive	6	15.0	16	35.6	7	9.2		
Have you been appreciated for your achievements at workplace during the pandemic?							7.783	.020
Yes	13	32.5	23	51.1	20	26.3		
No	27	67.5	22	48.9	56	73.7		
Have you started receiving psychological support?							4.761	.093
Yes	6	15.0	2	4.4	14	18.4		
No	34	85.0	43	95.6	62	81.6		

'Would you still choose this profession if you had known about the pandemic?'							
	SD		AD		ICN		P
	n	Mean±SD	n	Mean±SD	n	Mean±SD	
No							
EE	14	20.9±7.8	9	20.7±5.4	39	26.4±6.5	.011
DP	14	7.2±4.5	9	10.6±1.8	39	9.1±4.3	.156
RPA	14	19.6±4.7	9	18.6±4.5	39	19±5.2	.890
I am satisfied with my profession							
EE	20	16.8±5.7	15	16.6±6.6	16	22.1±4.5	.004
DP	20	5.7±4.9	15	9.8±2.2	16	9.6±11.1	.186
RPA	20	20.8±3.6	15	19±3.6	16	20.2±4.0	.378
I am not satisfied with my profession							
EE	14	22±7.5	14	23.2±3.7	53	24.6±7.9	.475
DP	14	7.5±3.9	14	10.9±1.2	53	9.2±5.5	.181
RPA	14	19.7±4.3	14	19.5±2.7	53	19.3±6.1	.981

Are you satisfied with your profession to the question, 69.7% of the ICN group answered I am not satisfied. Similarly "Would you still choose this profession if you had known about the pandemic?" It was observed that those who gave negative answers to the question were statistically significantly higher in the ICN group ($p=0,003$) (**Table 5**). While the assistant doctors answered "Yes" to the question 'Have you been appreciated for your achievements at workplace during the pandemic?' and to this question, specialist doctors and nurses gave a statistically significant "No" answer ($p=0,020$). During the pandemic, 67.5 % of the respondents stated that they have not started receiving psychological support. There was no significant difference between the groups ($p=0,093$) (**Table 5**).

95.6% of the assistant doctors answered "Yes" to the question of whether they could easily reach the supervisor during the pandemic period and this result was statistically significantly higher than ICN group ($p<0,001$).

Considering the factors affecting burnout; a statistically significant negative correlation was found between EE and

'Adequacy of physical conditions' in the SD group ($p=0.044$). There was a statistically significant negative correlation between RPA and being married in the AD group ($p=0.023$). A statistically significant negative correlation was found between DP and having a child in the ICN group ($p=0.032$). Furthermore, there was a statistically significant negative correlation between EE and the parameters of being exposed to mobbing in the workplace, coordination within the team and appreciation at work during the pandemic period in the ICN group ($p=0.001$, $p=0.001$, $p=0.022$) (Table 7).

Table 7. Factors Affecting Burnout

	Low risk		High risk		Chi-square	p
	n	%	n	%		
Emotional Exhaustion /Specialist Doctors						
Was the equipment in the hospital adequate?						
Adequate	11	64.7	6	35.3	6.233	.044
Somewhat adequate	6	40.0	9	60.0		
Inadequate	1	12.5	7	87.5		
Reduced Personal Achievement/ Assistant Doctors						
Marital status						
Married	11	45.8	13	54.2	5.201	.023
Single	3	14.3	18	85.7		
Depersonalization/Intensive Care Nurses						
Status of having children						
Have no child	33	52.4	30	47.6	4.593	.032
Have a child/children	11	84.6	2	15.4		
Emotional Exhaustion/Intensive Care Nurses						
Have you been subjected to mobbing at workplace?						
Yes	12	22.6	41	77.4	10.414	.001
No	14	60.9	9	39.1		
Do you work in coordination with together as a team?						
Yes	23	47.9	25	52.1	10.875	.001
No	3	10.7	25	89.3		
Have you been appreciated for your achievement?						
Yes	11	55.0	9	45.0	5.212	.022
No	15	26.8	41	73.2		

DISCUSSION

During the pandemic, the healthcare staff working in ICU has been exposed to an extremely stressful environment due to long working hours, wearing personal protective equipment, rapid patient circulation, inadequate treatment approaches, and high mortality rates. Based on this point of view, our study aimed to reveal the burnout levels of the ICUs team working actively during the ongoing COVID-19 pandemic, and the factors affecting this process. It was observed that the burnout risk of assistant doctors was high and the rate of dissatisfaction among ICU nurses was statistically significantly higher.

There are studies addressing the burnout of healthcare professionals which were conducted before the pandemic. The risk of burnout is high, especially in areas where people work under stress, such as emergency services, ICU, and infectious diseases wards (8). To illustrate, in a study by Bircan et al.(9), who investigated a population consisting of emergency medicine physicians (practitioners, residents, specialists), the mean EE, DP, and RPA scores were found to be high, i.e. 16, 6, and 21, respectively.

Since the pandemic began to affect the whole world, many studies have been conducted on the effects of the disease process on healthcare professionals. Publications from different countries have shown that the impact of the pandemic on healthcare professionals can be at different levels and there are many external factors affecting this process. In their meta-analysis, Pappa et al. (10) evaluated 33.062 healthcare professionals and found that most of them had mild depression, anxiety, and insomnia.

There are very few national publications on the effects of the COVID-19 pandemic on healthcare professionals in our country. One of the first studies conducted in Türkiye is the one conducted by Akalın et al.(11) Twenty-seven anesthesiologists, 53 anesthesia technicians, 40 ICU nurses volunteered to participate in that study. The scores from the EE, DP, RPA, subscales and the general mean scores of the healthcare professionals were found to be 19, 6, 20, and 46, respectively. Similarly, the scores were calculated as 20, 8, 20, and 49 in our study. Considering that the highest score to be obtained is 88, it could be argued that the burnout levels of healthcare professionals are slightly above the average. It is an expected result that professionals struggling with a disease with high mortality during the pandemic period have a high risk of burnout.

The study by Arpacioğlu et al. (12) encompassing all healthcare professionals and including 371 volunteers investigated the level of burnout and depression during the pandemic using the Maslach Burnout Inventory and indicated that the burnout rates were greater in females than in males, in individuals that did not have children compared to those that had children, and in single individuals compared to married individuals. Similarly, being single and not having children increased the risk of burnout in subscales in our study.

Considering other studies conducted during the pandemic period; this study is not designed in the early phase of the pandemic, but after a 20-month period and only for pandemic intensive care workers. In this respect, it is different and important.

In the another study conducted in an emergency ward by Erol et al., the EE rates were found to be lower in those who had children compared to those who did not, and in those who were married compared to those who were not, which is consistent with our study. Additionally, in that study that Erol et al. (13) conducted with doctors, midwives, nurses, and emergency medical technicians, the authors concluded that there was no relationship between being married or single and burnout. Among the respondents, the highest burnout rates were observed in the doctors group. In our study, the AD Group fell into the high burnout risk group, but when the satisfaction rates were analyzed, it was found that the satisfaction rates of the AD Group were high and those of the ICN Group were low. This could be interpreted as those assistant doctors have been feeling more successful in terms of professional development during the pandemic. When the literature on intensive care nurses was reviewed, we found studies showing that nurses are more negatively affected by the pandemic (14,15). Although this may seem different from the expected result at first glance, as explained in the tables above, it turns out to be a normal result that should be expected due to many reasons putting pressure on individuals such as workload, working conditions, wages, etc.

CONCLUSION

During the COVID-19 pandemic, it is essential to reveal the causes of burnout among healthcare staff working with devotion above the standard in ICUs, to improve their working conditions in a way that increases job satisfaction and reduce burnout, and to clearly define the scope of their authority and responsibilities. It is only possible for healthcare institutions and organizations to always remain dynamic and successful against new pandemic waves if doctors, nurses, and other healthcare professionals can work selflessly without exhaustion..

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Kartal Dr. Lütfi Kırdar City Hospital Clinical Researches Ethics Committee (Date: 15.09.2021, Decision No: 2021/514/209/1).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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