How did the psychological impact of COVID-19 change healthcare workers in times of fighting the pandemic?

Bahadir Demir[1,*], Sengul Kocamer Sahin[2], Unzile Meryem Atalay[3], Esra Aslan[4],
Gülcin Elboga[5] and Abdurrahman Altindag[6]
Department of Psychiatry, Faculty of Medicine, Gaziantep University, Gaziantep, Turkey

Abstract.

BACKGROUND: This study is the second leg of a two-leg project. In the first leg, the effect of the COVID-19 pandemic on healthcare workers (HCWs) was investigated in the period between the first case in Turkey and the arrival of the first case in the hospital.

OBJECTIVE: In this second leg, three months after the first evaluation, we aimed to investigate whether psychological effects of COVID-19 such as stress, anxiety, depression, and sleep quality have been changed on HCWs.

METHODS: This was a 3-month observational study. 169 hospital staff who participated in the first leg of the study were reached and asked to participate in the second leg evaluation in Gaziantep University Medical Faculty Hospital.110 HCWs accepted to participate. Impact of Event Scale (EIS-R), Depression Anxiety Stress Scale (DASS-21), and Pittsburgh Sleep Quality Index (PSQI) were used to assess in both two legs. Paired Sample *T*-test was used for comparison of normally distributed variables. Wilcoxon test was used for the comparison of abnormally distributed variables. SPSS 22.0 software was used in the analysis of variables.

RESULTS: Of the HCWs with an average age of 33.9 ± 6.6 years, 59% (65) were males. There was no significant difference between the two legs in terms of IES-R, DASS-21, and PSQI scales.

CONCLUSION: This study suggests that the psychological effects of the COVID-19 pandemic on HCWs started with the pandemic, before the arrival of the first case in the hospital. Also, these psychological effects continued similarly without significant change after the initiation of direct contact with COVID-19 patients and even after the increase in COVID-19 patients in a hospital which in they work.

Keywords: Pandemics, coronavirus, healthcare workers, health personnel, anxiety, depression

*Address for correspondence: Bahadir Demir, Associate Professor, Department of Psychiatry, Faculty of Medicine, Gaziantep University, Gaziantep, Turkey. E-mail: bahadirdemir23@gmail.com.

[1]ORCID: 0000-0003-2798-6255
[2]ORCID: 0000-0002-5371-3907
[3]ORCID: 0000-0001-5623-2351
[4]ORCID: 0000-0002-1000-8837
[5]ORCID: 0000-0003-3903-1835
[6]ORCID: 0000-0001-5531-4419

1. Introduction

While the coronavirus disease 2019 outbreak (COVID-19) continues as a serious public health problem worldwide, according to the World Health Organization (WHO) data, 2.581.976 people died at the time of writing this article [1]. The number of

cases is increasing rapidly in many countries. Millions of people around the world have been and continue to be psychologically affected. Within this population, healthcare workers (HCWs) who worked in COVID-19 units, were quarantined, or had friends infected with coronavirus experienced significantly more anxiety, depression, frustration, fear, and post-traumatic stress than those without such experience [2]. Initial studies came from China, where the disease was first seen, and it was reported that depression (50.4%), anxiety (44.6%), insomnia (34.0%), and a sense of distress (71.5%) were observed in a significant portion of the HCWs [3]. In subsequent studies and meta-analyses, results supporting these data were obtained [4–6].

In the last 20 years, new infectious disease outbreaks such as SARS (2002) and H1N1 (2009) influenza pandemics have been observed worldwide, and during these processes, anxiety, depression, and distress have been detected at high rates in HCWs [7]. Therewithal, anxiety, and degree of anxiety have been significantly associated with intentional absenteeism, restriction of social contacts, and psychological distress [7]. The COVID-19 pandemic has been on the agenda for approximately 14 months, and it is understood that it has already lasted longer than the SARS and H1N1 pandemics. There is no study on what the psychological effects of the prolongation of the process will be or whether there will be a change in reactions.

With the detection of the first case of COVID-19 in China, many healthcare professionals and people were exposed to a psychological effect even without encountering the cases, with the effect of the widely used information sources of the age (social media; Twitter, Youtube, Instagram). In the first leg of this study, our working group investigated and reported stress, anxiety, depression, sleep quality, and influencing factors in volunteer HCWs from different groups who do not have secondary trauma to COVID-19 in the period between the first cases in Turkey until the first case in the hospital. It was shown that 29.6% of the participants had psychological effects even before the epidemic was seen in the hospital.

In this study, approximately 3 months after the arrival of the first case in the hospital, we reached the HCWs in the first leg sample and we aimed to investigate whether the psychological effects such as stress, anxiety, and depression and sleep quality changed after exposure to the work (physical) burden and secondary traumas of the epidemic.

2. Materials and methods

2.1. Procedure

Our descriptive prospective study was conducted between March 10 and June 31, 2020, in Gaziantep University Medical Faculty Hospital. 169 hospital staff who can be reached at our hospital and who participated in our study voluntarily were included in the first leg of the study after the official statement by the Ministry of Health that the first case was seen in Turkey. Sampling was stopped with the COVID-19 case seen in our hospital in the first leg of the study. Three months after the arrival of the first case in the hospital, we tried to reach 169 hospital staff in our sample again, and our current study was created with 110 cases that were reached and accepted to participate in the study.

2.2. Assessment tools

Depression Anxiety Stress Scale (DASS-21), Pittsburgh Sleep Quality Index (PSQI) and the Impact of Event Scale (IES-R) have been implemented. Depression Anxiety Stress Scale (DASS-21), Pittsburgh Sleep Quality Index (PSQI) and Impact of Event Scale (IES-R) were applied to all cases after the first case in Turkey (first leg of study) and the arrival of the first case in the hospital (the second leg of study).

Depression Anxiety Stress Scale (DASS-21): This is a 21-item self-report scale aimed at measuring stress, anxiety, and depression levels. Each seven-item scale has four response options, ranging from 0 (never applied to me) to 3 (which applied to me much or often). The maximum score indicates high depression, anxiety, or stress on each scale. The DASS-21 total scale score's internal consistency is 0.93 [8, 9]. The Turkish validity and reliability study of the scale was done by Yilmaz et al. [10]. The total anxiety subscale score was classified as normal (0–6), mild anxiety (7–9), moderate anxiety (10–14), severe anxiety (15–19), and extremely severe anxiety (20–42). The total stress subscale score was classified as normal (0–10), mild stress (11–18), moderate stress (19–26), severe stress (27–34), and extremely severe stress (35–42) [11].

Pittsburgh sleep quality index (PSQI): This is a self-report scale that evaluates sleep quality and sleep disturbance within one month. PSQI was developed by Buysse et al. [12]. In 1989 and has been shown to have sufficient internal consistency, test-retest reliability, and validity. The Turkish validity and

Table 1
Sociodemographic characteristics of participants

Characteristics	n	Percent (%)
Age (year)	33.90 ± 6.62	
Sex		
Male	65	59.1
Female	45	40.9
Marital status		
Married	72	65.5
Single	38	34.5
Position		
Nurse	21	19.1
Medical doctor	37	33.6
Academic member	7	6.4
Non-medical caregiver staff	45	40.9
Smoking		
Yes	26	23.6
No	84	76.4
Chronic illness		
Yes	15	13.6
No	95	86.4
Previously diagnosed with psychiatric disorder		
Yes	11	10
Anxiety	6	
Mood disorders	5	
No	99	90
Previous drug use		
Yes	11	10
No	99	90

Values are presented as mean ± standard deviation or count and percent.

reliability study of the scale was done by Agargün, Kara [13]. Cronbach alpha internal consistency coefficient was determined as 0.80. A total PSQI score of ≤ 5 indicates "good sleep quality" and > 5 indicates a "poor sleep quality". This scale includes 7 dimensions; sleep quality, sleep onset latency, sleep duration, sleep efficiency, sleep disturbance, hypnotic drugs, daytime dysfunction.

Impact of Event Scale (IES-R): The first version of the scale was made by Horrowitz et al. It was developed to screen the severity of PTSD symptoms [14]. Later, the third dimension (7 questions), which included the group of symptoms of overexcitation by Weiss and Marmar, was added to the scale as a screening tool with 22 questions [15]. The Turkish validity and reliability study of the scale was done by Corapcioglu et al. [16]. Scale score's internal consistency is 0.937. In this study, diagnostic performance cut-off value between 24–33 and both sensitivity and specificity were found over 70%. 24 show the highest sensitivity (92.2%), 33 show the highest specificity (81%) cut-off value. The total IES-R score was also classified as 0–23 (normal), 24–32 (mild psychological effect), 33–36 (moderate psychological effect) and > 37 (severe psychological effect) [17].

2.3. Statistical analysis

The descriptive characteristics of the data obtained in the study are given with frequency, percentage distribution, and mean and standard deviation values. Kolmogorov–Smirnov test was used to determine whether the parameters are normally distributed. Paired Sample *T*-test was used for comparison of normally distributed variables. Wilcoxon test was used for the comparison of abnormally distributed variables. All significant levels were 2-tailed and set at the level of 0.05. SPSS 22.0 (IBM Corporation, Armonk, NY, USA) software was used in the analysis of variables.

3. Results

A total of 110 hospital workers, 65 men, and 45 women, were included in our study. The average age of the participants was 33.90 ± 6.62 years. Sociodemographic data such as marital status, position, and smoking status are given in Table-1. DASS-21, IES-R and PSQI tests and the scores of the first and second legs of the study are given in Table-2.

There was no statistically significant difference between DASS-21, IES-R, and PSQI total scores as a result of the comparison of DASS-21, IES-R and PSQI tests and their sub-dimensions between the legs of the study ($p = 0.679$, $p = 0.390$ and $p = 0.717$, respectively). When the subdimension scores were compared, there was no statistically significant difference except for PSQI subdimension 4 (sleep efficiency) and 6 (hypnotic drugs) ($p = 0.033$ and $p < 0.001$, respectively).

The scores of the participants in the first and second leg of the study were compared; There was a statistically significant decrease in DASS-21 total, DASS-21 anxiety, and IES-R total scores in the academic member group only ($p = 0.020$, $p = 0.028$ and $p = 0.043$, respectively). The levels of the assessment scored have been reported in the first leg of the study [18]. We had found that 15.4% of HCWs were affected mildly, 4.7% moderately and 9.5% of them severely and 42.6% of HWs had a poor sleep quality.

4. Discussion

Psychological problems that develop in healthcare workers due to the rapid spread of COVID-19 disease,

Table 2
Mean results of the assessment scales in the first and second leg of the study

	First leg of the study	Second leg of the study
DASS-21	11.30 ± 11.28	11.85 ± 11.77
DASS-21 Anxiety	3.00 ± 3.68	2.98 ± 3.72
DASS-21 Depression	3.60 ± 4.05	4.00 ± 4.63
DASS-21 Stress	4.83 ± 5.07	4.86 ± 5.06
PSQI	5.24 ± 3.25	5.96 ± 5.68
PSQI subdimension 1; sleep quality	1.10 ± 0.83	1.03 ± 0.84
PSQI subdimension 2; sleep onset latency	1.30 ± 1.25	1.09 ± 0.93
PSQI subdimension 3; sleep duration	0.81 ± 0.79	1.00 ± 3.09
PSQI subdimension 4; sleep efficiency	0.30 ± 0.73	0.50 ± 0.77
PSQI subdimension 5; sleep disturbance	0.90 ± 0.77	0.99 ± 0.79
PSQI subdimension 6; hypnotic drugs	0.18 ± 0.57	0.46 ± 1.13
PSQI subdimension 7; daytime dysfunction	0.66 ± 0.75	0.87 ± 1.85
IES-R	16.05 ± 16.11	16.44 ± 14.87
IES-R subdimension 1; avoidance	5.48 ± 6.62	5.88 ± 6.31
IES-R subdimension 2; intrusion	6.60 ± 6.35	6.17 ± 5.86
IES-R subdimension 3; hyperaerousal	3.95 ± 4.82	4.39 ± 4.85

DASS-21: Depression Anxiety Stress Scale, PSQI: Pittsburgh Sleep Quality Index, IES-R: Impact of Event Scale.

uncertainty, unpredictability, workplace safety and lack of adequate support mechanisms were demonstrated in our first cross-sectional study [18]. Here, we compared the psychological symptoms of HCWs such as stress, anxiety, depression, and sleep quality before and after the arrival of the first case in the hospital.

Our results showed that the total scores of the scales (DASS-21, IES-R, and PSQI) which evaluate depression, anxiety, stress, the impact of events and sleep quality applied after the COVID-19 cases were seen in the hospital partially increase compared to the first applied scores. However, there was no statistically significant difference. It was determined that only PSQI subdimension 4 (sleep efficiency) and 6 (hypnotic drugs) of the subscales increased statistically significantly after the case was seen in the hospital. This means that sleep efficiency increased but the need for the hypnotic drugs increased together.

The negative psychological effects of the COVID-19 pandemic on HCWs have been shown in studies conducted in many countries around the world [2–5, 19]. In a study conducted in China, among 1563

healthcare professionals, the rates of stress-related symptoms were 73.4%, depression 50.7%, anxiety 44.7%, and insomnia rates 36.1% [20]. In a study conducted with 442 healthcare professionals in our country, it was reported that 286 (64.7%) of the participants had depression, 224 (51.6%) had anxiety and 182 (41.2%) had stress symptoms [4]. When a previous epidemic was reviewed, it was found that those who were quarantined among HCWs, who worked in SARS units or had family or friends infected with SARS, experienced much more anxiety, depression, frustration, fear and post-traumatic stress than those who did not [21]. The data in the first leg of our study are already compatible with the literature and it has been shown that %15.4 HWs were psychologically affected mildly, %4.7 moderately, %9.5 severely. According to PSQI scale % 42.6 (72) of HWs had poor sleep quality in those results. This information shows that mental health is affected globally.

The amount of information about the novel coronavirus is increasing day by day, and more data is collected worldwide on its route of transmission, reservoirs, incubation time, symptoms, and clinical outcomes [22]. However, the change in mental influence

Table 3
Comparison of the scales and subdimensions with Wilcoxon test

Posttest-Pretest	n	Mean rank	Sum rank	Z	p
PSQI total					
Negative ranks	31	35.94	1114.00	–0.362	0.717
Positive ranks	37	33.30	1232.00		
Ties	42				
PSQI Subdimension 2					
Negative ranks	28	24.59	688.50	–1.668	0.095
Positive ranks	18	21.81	392.50		
Ties	64				
PSQI Subdimension 3					
Negative ranks	25	19.34	483.50	–0.735	0.462
Positive ranks	16	23.59	377.50		
Ties	69				
PSQI Subdimension 4					
Negative ranks	8	26.88	215.00	–2.136	**0.033**
Positive ranks	29	16.93	488.00		
Ties	73				
PSQI Subdimension 5					
Negative ranks	16	20.25	324.00	–1.236	0.217
Positive ranks	24	20.67	496.00		
Ties	70				
PSQI Subdimension 6					
Negative ranks	2	12.00	24.00	–4.207	**< 0.001**
Positive ranks	24	13.63	327.00		
Ties	84				
PSQI Subdimension 7					
Negative ranks	22	23.70	521.50	–0.477	0.634
Positive ranks	25	24.26	606.50		
Ties	63				
IES-R total					
Negative ranks	30	38.70	1161.00	–0.859	0.390
Positive ranks	42	34.93	1467.00		
Ties	38				
IES-R Subdimesion 1					
Negative ranks	26	32.87	854.50	–1.242	0.214
Positive ranks	38	32.25	1225.50		
Ties	46				
IES-R Subdimesion 3					
Negative ranks	26	34.62	900.00	–1.316	0.188
Positive ranks	40	37.78	1311.00		
Ties	44				
DASS-21-Anxiety					
Negative ranks	33	36.14	1192.50	–0.120	0.905
Positive ranks	35	32.96	1153.50		
Ties	42				
DASS-21-Depression					
Negative ranks	23	35.87	825.00	–0.867	0.386
Positive ranks	38	28.05	1066.00		
Ties	49				
DASS-21-Stress					
Negative ranks	30	34.73	1041.00	–0.200	0.842
Positive ranks	35	31.51	1103.00		
Ties	45				

Statistical analysis based on positive ranks. DASS-21: Depression Anxiety Stress Scale, PSQI: Pittsburgh Sleep Quality Index, IES-R: Impact of Event Scale.

Table 4
Comparison of the scales and subdimensions with paired samples
T test

Test	n	$\bar{x}$	S	T	p
PSQI subdimension 1					
Before	110	1.10	0.83	0.894	0.374
After	110	1.03	0.84		
IES-R subdimesion 2					
Before	110	6.60	6.35	0.634	0.527
After	110	6.17	5.86		
DASS-21-total					
Before	110	11.30	11.28	–0.415	0.679
After	110	11.85	11.77		

n: number, $\bar{x}$: mean, S: standard deviation, DASS-21: Depression Anxiety Stress Scale, PSQI: Pittsburgh Sleep Quality Index, IES-R: Impact of Event Scale.

during this process is neglected. After the first cases seen in Turkey and after our study we apply to cases seen in our hospital health workers DASS-21, IES-R and has tried to show psychological changes that are effective with PSQI scales. There was no significant change in DASS-21, IES-R and PSQI scores before and after the first case seen in the hospital. We think these results may be related to more than one factor. The first of these is the importance of information about the new coronavirus and video-based news in international, national and local media sources with the first case seen in Wuhan and the height of the traumatic impact caused by this news. Secondly, it is the sharing of individual bad experiences of patients and healthcare professionals who are infected with the virus from social media sources and their rapid spread. For eg, we had shown that 74.6 of the HCWs provided information about coronavirus via social media during the pandemic [18]. Third, the majority of HCWs were worried that COVID-19 would spread to their family members through them [11]. Forth, stress might continue similarly because of increased workload [23]. Although there were no cases in the hospital yet, sharing about the new coronavirus disease in social media, especially WhatsApp groups of health personnel that includes from Turkey's metropolitan areas may have led to the anxious expectation. Another one is especially important for healthcare professionals; Intensive care occupancy observed in some of the European countries, having to choose patients for a ventilator and decompensation of the health system. Taking steps that verify the seriousness of the situation in our country has initiated a rapid transformation and adaptation process in the health system. To increase the hospital capacity of COVID-19 patients, many inpatient units have been transformed into COVID-19 related services in our hospital as in all Country [24]. All of them can cause people in the healthcare system to be more traumatized than the normal population, even without facing COVID-19. Because increased workload found to affect health complaints and depressive states of workers [23]. The similarity of the level of psychological influence before and after COVID-19 cases in the hospital suggests that expectancy anxiety can affect HCWs similarly to situational anxiety.

PSQI sleep efficiency and hypnotic drugs, which are sub-dimension scales, differed significantly after the occurrence of a case in our hospital compared to before. It can be said that with the process, sleep quality decreases and the need for hypnotic drugs increases and sleep efficiency may be increased by the intake of sleeping pills. In a study conducted in Wuhan, where the new coronavirus disease first appeared, it was found that personnel with heavy loads received direct help from psychiatrists and psychologists [25]. In our study, the increased need for hypnotic drugs shows that healthcare professionals need and receive medical help.

It was observed that there was a statistically significant decrease in DASS-21 total, DASS-21 anxiety, and IES-R total scores only in the academic member, this group had higher education levels and read more scientific publications, so they might be less exposed to disinformation. It has been shown by studies that the number of research conducted in such conditions increases and that more scientific evidence is needed [26].

As a result; the psychological outcomes of the COVID-19 pandemic on health care workers emerged after the outbreak reached in Turkey, seems to continue in a similar way, Although the increase in COVID-19 positive patients in the hospital where they work and the follow-up of these patients. The anxiety of what may arise after the epidemic has largely affected HCWs, and there is no significant increase in this psychological response during the fight against the pandemic. Measures to protect the mental health of healthcare professionals should start with the epidemic at the same time with fighting the epidemic. Online therapies, e-psychological support programs may be effective to reduce the stress levels of HCWs during a pandemic. Keeping the shifts short, increasing the number of HCWs during pandemics, and balancing the workload between workers can also reduce the stress level. In taking these measures, attention should be paid to the power of news

and social media and necessary regulations should be made.

Acknowledgments

Conflict of interest

Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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References

[1] Organization WH. WHO Coronavirus Disease (COVID-19) Dashboard 2020 [updated 04.10.2020. Available from: https://covid19.who.int/.

[2] Luo M, Guo L, Yu M, Wang H. The Psychological and Mental Impact of Coronavirus Disease 2019 (COVID-19) on Medical Staff and General Public–A Systematic Review and Meta-analysis. Psychiatry Research. 2020:113190.

[3] Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA Network Open. 2020;3(3):e203976-e.

[4] Elbay RY, Kurtulmuş A, Arpacıoğlu S, Karadere E. Depression, Anxiety, Stress Levels of Physicians and Associated Factors In Covid-19 Pandemics. Psychiatry Research. 2020:113130.

[5] Rossi R, Socci V, Pacitti F, Di Lorenzo G, Di Marco A, Siracusano A, et al. Mental Health Outcomes Among Frontline and Second-Line Health Care Workers During the Coronavirus Disease 2019 (COVID-19) Pandemic in Italy. JAMA Network Open. 2020;3(5):e2010185-e.

[6] Sheraton M, Deo N, Dutt T, Surani S, Hall-Flavin D, Kashyap R. Psychological effects of the COVID 19 pandemic on healthcare workers globally: A systematic review. Psychiatry Research. 2020;292:113360.

[7] Goulia P, Mantas C, Dimitroula D, Mantis D, Hyphantis T. General hospital staff worries, perceived sufficiency of

information and associated psychological distress during the A/H1N1 influenza pandemic. BMC Infectious Diseases. 2010;10(1):322.

[8] Page AC, Hooke GR, Morrison DL. Psychometric properties of the Depression Anxiety Stress Scales (DASS) in depressed clinical samples. British Journal of Clinical Psychology. 2007;46(3):283-97.

[9] Henry JD, Crawford JR. The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. British Journal of Clinical Psychology. 2005;44(2): 227-39.

[10] Yılmaz Ö, Boz H, Arslan A. Depresyon Anksiyete Stres Ölçeğinin (DASS-21) Türkçe Kısa Formunun Geçerlilik-Güvenilirlik Çalışması. Finans Ekonomi ve Sosyal Araştırmalar Dergisi (FESA). 2017;2(2):78-91.

[11] Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. 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. 2020;17(5):1729.

[12] Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. Psychiatry Res. 1989;28(2):193-213.

[13] Ağargün MY, Kara H, Anlar Ö. The validity and reliability of the Pittsburgh Sleep Quality Index. Turk Psikiyatri Derg. 1996;7(2):107-15.

[14] Horowitz M, Wilner N, Alvarez W. Impact of Event Scale: A measure of subjective stress. Psychosomatic Medicine. 1979;41(3):209-18.

[15] Weiss DS. The impact of event scale: revised. Cross-cultural assessment of psychological trauma and PTSD: Springer; 2007. pp. 219-38.

[16] Çorapçıoğlu A, Yargıç İ, Geyran P, Kocabaşoğlu N, editors. Olayların etkisi ölçeği. IES-R) Türkçe versiyonunun geçerlilik ve güvenilirliği Yeni Symposium; 2006.

[17] Creamer M, Bell R, Failla S. Psychometric properties of the impact of event scale—revised. Behaviour Research and Therapy. 2003;41(12):1489-96.

[18] Sahin SK, Arslan E, Atalay ÜM, Demir B, Elboga G, Altındağ A. Psychological impact of COVID-19 outbreak on health workers in a university hospital in Turkey. Psychology, Health & Medicine. 2021:1-10.

[19] Zandian H, Alipouri-sakha M, Nasiri E, Zahirian Moghadam T. Nursing work intention, stress, and professionalism in response to the COVID-19 outbreak in Iran: A cross-sectional study. Work. 2021(Preprint):1-11.

[20] Liu S, Yang L, Zhang C, Xiang Y-T, Liu Z, Hu S, et al. Online mental health services in China during the COVID-19 outbreak. The Lancet Psychiatry. 2020;7(4):e17-e8.

[21] Xiang Y-T, Yang Y, Li W, Zhang L, Zhang Q, Cheung T, et al. Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. The Lancet Psychiatry. 2020;7(3):228-9.

[22] Corman VM, Landt O, Kaiser M, Molenkamp R, Meijer A, Chu DK, et al. Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR. Eurosurveillance. 2020;25(3):2000045.

[23] Kawada T, Ueda H, Hayashi M, Sakamoto A, Uchida K, Shirato T, et al. Relationship among workload, health complaints, and depressive state of workers as revealed using a questionnaire survey. Work. 2010;37(4):333-9.

[24] Sofuoğlu T, Emiroğlu M, Köse Ş. Koronavirüs Pandemisi Sırasında Eğitim ve Araştırma Hastanesinde Gerçekleştirilen Zarar Azaltma, Hazırlık ve Müdahale Uygulamaları. İzmir Tepecik Eğitim Hastanesi Dergisi. 2020;30:10-8.

[25] Kang L, Li Y, Hu S, Chen M, Yang C, Yang BX, et al. The mental health of medical workers in Wuhan, China dealing with the 2019 novel coronavirus. The Lancet Psychiatry. 2020;7(3):e14.

[26] Babamiri M, Alipour N, Heidarimoghadam R. Research on reducing burnout in health care workers in critical situations such as the COVID-19 outbreak. Work (Reading, Mass). 2020;66(2):379-80.