İSTANBUL UNIVERSITY PRESS

RESEARCH / ARAŞTIRMA
DOI: 10.26650/IUITFD.1168211
İst Tıp Fak Derg 2023 / J Ist Faculty Med 2023

TURKISH DIALYSIS HEALTHCARE PROVIDERS' PSYCHOLOGICAL RESPONSE TO COVID-19

TÜRK DİYALİZ SAĞLIK ÇALIŞANLARINDA COVID-19'A BAĞLI GÖRÜLEN RUHSAL TEPKİLER

Irmak POLAT[1], Mehmet Şükrü SEVER[2], Erol DEMİR[2], Halil YAZICI[2], Serkan Kubilay KOÇ[3], Rabia PAPİLA[3], Mine ÖZKAN[1]

[1]Istanbul University, Istanbul Faculty of Medicine, Department of Psychiatry, Istanbul, Turkiye
[2]Istanbul University, Istanbul Faculty of Medicine, Department of Internal Medicine, Division of Nephrology, Istanbul, Turkiye
[3]Private clinic, Istanbul, Turkiye

ORCID IDs of the authors: I.P. 0000-0003-3631-6018; M.Ş.S. 0000-0002-6074-2239; E.D. 0000-0003-0128-5645; H.Y. 0000-0003-2526-3483; S.K.K. 0001-8634-1583; R.P. 0000-0002-6909-3159; M.Ö. 0000-0002-2981-9541

Cite this article as: Polat I, Sever MS, Demir E, Yazici H, Koc SK, Papila R, et al. Turkish dialysis healthcare providers' psychological response to COVID-19. J Ist Faculty Med 2023;86(1):14-27. doi: 10.26650/IUITFD.1168211

ABSTRACT

Objective: COVID-19 has been a stressful experience for healthcare providers (HCPs) and created additional distress for dialysis HCPs due to patients' higher risk of infection, symptom severity, and death. This study aims to investigate Turkish dialysis HCPs' levels of psychological difficulties during COVID-19's initial outbreak.

Materials and Methods: The study has recruited physicians, nurses, and healthcare workers in dialysis centers. The participants completed an online survey that includes the screening questionnaire, Depression Anxiety Stress Scale-21 (DASS-21), and Multidimensional Scale of Perceived Social Support (MSPSS). The study conducts the chi-square test, Fisher's exact test, Mann-Whitney U test, Kruskal Wallis H test, Spearman correlation, and linear regression analyses.

Results: The study involves 953 respondents, with nurses making up the majority (n=465, 48.8%), followed by healthcare workers (n=402; 42.2%) and physicians (n=86; 9%). HCPs' most significant concerns were getting infected with COVID-19 and transmitting the disease to their loved ones. Single participants, those without children, those who had trouble finding equipment, and those worried about being able to find equipment in the future, being in contact with COVID-19 (+) people, those whose tobacco and alcohol use increased, and those who declared sleep, appetite, and/or somatic problems had higher DASS-21 scores. When compared respectively to healthcare workers and physicians, nurses were found to be more worried about getting COVID-19 (94.6% compared to 90.6% and 84.7%; $p < 0.001$), experience equipment shortages (52.9% compared to 29.4% and 26.3%; $p<0.001$), have sleep (62.2% compared to 43.5% and

ÖZET

Amaç: COVID-19, sağlık çalışanları için psikolojik sorunların başlamasına veya kötüleşmesine yol açmıştır. Hastaların enfeksiyon, semptom şiddeti ve ölüm riskinin daha yüksek olması nedeniyle COVID-19, diyaliz çalışanları üzerinde ek bir stres oluşturmuştur. Bu çalışmada, salgının erken döneminde Türk diyaliz çalışanlarındaki psikolojik zorlanma ve ilişkili etmenleri araştırmayı amaçladık.

Gereç ve Yöntem: Çalışmaya Türkiye'deki özel ve kamu diyaliz merkezlerinden doktor, hemşire ve yardımcı sağlık personelleri katılmıştır. Katılımcılar, COVID-19'la ilişkili sorular, Depresyon Anksiyete Stres Ölçeği-21 (DASÖ-21) ve Çok Boyutlu Algılanan Sosyal Destek Ölçeği'ni (ÇBASDÖ) içeren çevrimiçi bir anket doldurmuşlardır. Ki-Kare, Fisher's exact, Mann-Whitney-U, Kruskal Wallis, Spearman korelasyon ve lojistik regresyon analizleri uygulanmıştır.

Bulgular: Çoğunluğu hemşireler (n=465; %48,8) olmakla birlikte, yardımcı sağlık personeli (n=402; %42,2) ve doktoların (n=86; %9) yanıtlarından eksiksiz olan toplam 953 yanıt analize alınmıştır. Enfekte olmak ve COVID-19'u çevresindekilere bulaştırmak en büyük endişe kaynakları olarak saptanmıştır. DASÖ-21 puanları bekar, çocuğu olmayan, koruyucu ekipman bulmakta güçlük çeken veya ileride bulma kaygısı yaşayan, COVID-19(+) kişilerle temas halinde olan; sigara ve alkol kullanımını artıran; yeni başlayan uyku, iştah ve somatik sorunlar bildiren katılımcılarda daha yüksek bulunmuştur. Enfeksiyonu kapmak (%94,6) vs. (%90,6) vs. (%84,7); $p<0,001$] ve ekipman sorunuyla ile ilgili endişeler [(%52,9) vs. (%29,4) vs. (%26,3); $p<0,001$], uyku [(%62,2) vs.(%43,5) vs. (%34); $p<0,001$, sırasıyla] ve somatik sorunlar [(%58,4) vs. (%50) vs. (%28,2); $p<0,001$] ve DASÖ-21 puanları [(5-21) vs. (3-15) vs.

Corresponding author/İletişim kurulacak yazar: Irmak POLAT – irmakpolat@gmail.com

Submitted/Başvuru: 31.08.2022 • **Revision Requested/Revizyon Talebi:** 06.09.2022 •
Last Revision Received/Son Revizyon: 14.12.2022 • **Accepted/Kabul:** 17.12.2022 • **Published Online/Online Yayın:** 31.01.2023

34%; p<0.001) and somatic problems (58.4% compared to 50% and 28.2%; p<0.001), and higher DASS-21 scores (Range=5-21 compared to 3-15 and 0-12; p<0.001).

Conclusion: Worries and lifestyle changes associated with the outbreak are seen to have been be related to psychological difficulties. An adequate level of knowledge, self-protection, and social support are essential issues for HCPs. While this study recommends that HCPs express and share their worries, institutions should also focus on the psychological status of their staff and provide immediate interventions.

Keywords: COVID-19, dialysis, healthcare providers, psychological response

(0-12); p<0,001] hemşirelerde doktor ve sağlık çalışanlarına göre daha yüksektir.

Sonuç: Salgına yönelik endişeler ve yaşam şekli değişiklikleri psikolojik zorluklarla ilişkili saptanmış olup, yeterli bilgi düzeyi, bulaştan korunma ve sosyal desteğin sağlık çalışanları için önemli konular olduğu görülmektedir. Sağlık çalışanlarının endişelerini yakınları, meslektaşları ve amirlerine/yöneticileriyle paylaşması önerilirken; kurumların da personelin psikolojik durumuna dikkat göstermesi ve gereğinde hızlı girişimler sağlaması önemlidir.

Anahtar Kelimeler: COVID-19, diyaliz, sağlık çalışanları, ruhsal tepki

INTRODUCTION

In December 2019, the world became alarmed by many cases of life-threatening atypical pneumonia caused by a novel retrovirus known as SARS-CoV-2 and called the coronavirus disease 2019 (COVID-19) (1). As the disease and resultant deaths continued to spread uncontrollably, WHO declared COVID-19 to be a pandemic on March 11, 2020 (2).

COVID-19 has been quite a stressful experience and has presented several compelling situations to healthcare providers. The rapid increase of those confirmed/suspected of having COVID-19, uncertainty about its diagnostic and therapeutic aspects as well as outcomes, shortages of personal protective equipment (PPE) and supplies, decreased numbers of actively working colleagues due to either quarantine or sick leaves, as well as an infodemic shaped by contradictory commentaries and speculations in the news, press, and social media formed the leading reasons for distress (3-6). As a result, the COVID-19 outbreak caused either an onset or worsening of existing psychological disorders in healthcare providers (HCPs). Reports from the epicenter and other countries revealed primary care workers involved in the diagnosis, treatment, and care of COVID-19 patients to have varying rates of increased mental health problems (7, 8).

Dialysis HCPs had already been regarded as a group vulnerable to stress and burnout even outside of crises and disasters (9-11). Dialysis nurses in particular spend a long time with patients who often unrealistically view dialysis centers as a threat toward their safety and survival (12). Dialysis HCPs' attempts to provide emotional support as well as the physical demands of their workload (e.g., complex technical content of the procedures, infection risks) also increase their psychological burden (9).

Alongside these difficulties well-known to dialysis treatment, COVID-19 caused additional distress to dialysis HCPs due to their patients being at greater risk of infection, symptom severity, and death due to their comorbidities, immunosuppression, and older age (13). In addition, contraction and transmission of the disease among HCP was another critical issue to closely monitor due to Wuhan reporting varying infection rates between 6.4%-12.1% in the medical staff at dialysis centers in just the brief period after cases started emerging (5, 14).

HCPs' psychological problems are associated with the risk of adversely affecting team spirit and creating disorganization, unfavorable treatment outcomes, medical errors, and patient dissatisfaction. These may also lead to burnout and thus distinguishing staff's level of psychological distress and taking adequate precautions are necessary (15, 16).

This study aims to investigate Turkish dialysis HCPs' levels of depression, anxiety, and stress during the early outbreak period.

MATERIALS AND METHODS

Participants

A convenience sample of healthcare providers, including physicians, nurses, and healthcare workers such as technicians, secretaries, drivers, and cleaning and security staff from private and public outpatient dialysis centers in Turkiye, were contacted to participate in the study. No specific exclusion criteria were set, and all volunteers among the desired sample over 18 years of age and eligible to read and mark the answers could participate.

Procedure

This cross-sectional study was conducted using the online survey method. The researchers transferred the screening questions and inventories to a form on Google Documents, and access links were sent to healthcare providers by contacting the directors of private and public dialysis centers, personal connections, and social network groups, as well as social media and messaging applications such as WhatsApp, Telegram, Instagram, and Facebook. The researchers combined the invento-

ries as a single form, and all participants filled out this final form. Incomplete or abandoned forms were not evaluated. Written informed consent was presented on the first page, and the participants were asked to check a box denoting their acceptance and then to continue with the questions. Attention was paid to anonymity. Only one data entry submission was permitted per person, and the researchers have kept all information confidential. The Ethics Committee of Istanbul University Faculty of Medicine approved the study protocol (Date: 08.05.2020, No: 09). The study has been conducted in accordance with the Declaration of Helsinki.

Instruments

Screening questionnaire

Designed by the researchers, this form covers the socio-demographic characteristics of the participants, including their experiences and opinions about COVID-19.

Depression anxiety stress scale-21 (DASS-21)

This instrument evaluates HCPs' psychological symptoms in the past week. DASS-21 consists of 21 questions on a 4-point Likert-type scale (0-3) with its depression, anxiety, and stress subscales having seven questions each. Higher scores indicate a higher level of symptoms (17). DASS-21 has already been translated into Turkish and validated (18).

Multidimensional scale of perceived social support (MSPSS)

This item measures one's subjective assessment of support from different sources. A total of 12 questions cover its three subscales (i.e., family, friends, and significant others) and are scored from 1 to 7 points (19). MSPSS has already been translated into Turkish and validated (20).

Data analysis

The chi-squared and Fisher's exact tests were performed on the qualitative variables, while the Mann-Whitney U test was used for paired quantitative variable and the Kruskal-Wallis test for more than two quantitative variables with non-parametric distributions. Bonferroni corrections were used for subgroup analyses. Spearman correlation analysis was used to determine the relationships among variables. A Spearman coefficient >0.25 and p value <0.05 were considered correlated. Linear regression analysis was used to identify related factors regarding the odds ratios at a 95% confidence interval with a p-value less than 0.05 being considered significant. SPSS 15.0 for Windows was used for the statistical analyses.

RESULTS

A total of 967 responses were received from the online survey, with the majority being from private centers (n=941; 97.3%). The response/refusal rate could not be calculated due to the survey's distribution path. After excluding the incomplete responses, a total of 953 participants were included in the study. Due to the significant difference between the response numbers from private and public centers, the analyses were conducted over only the group of dialysis HCPs from private centers.

The study group consists mainly of nurses (n=465; 48.8%), followed by healthcare workers (n=402; 42.2%) and physicians (n=86; 9%). The median age of the participants is 38 years old (Range=27-43), most of whom (n=596; 62.5%) are female. The nurses predominantly have an education level of university/postgraduate (51.4%).

The number of married or cohabitant participants (n=652; 68.7%) are significantly higher than either single (n=238; 25.1%) or divorced/widowed participants (n=59; 6.2%; p<0.001). The number of participants with children (n=638; 67.9%) is higher than those without children (n=301; 32.1%; p<0.001). Of the participants, 88.4% live with family members and 67.0% have worked in dialysis centers for more than five years. Table 1 presents the demographic variables. Table 2 shows the changes in work practices as well as the psychosocial features associated with COVID-19. Of the participants, 60.6% declared no change in their weekly work hours, 89.9% declared no difficulty in accessing PPE, and 60.3% declared not worrying about finding PPE in the future. Nurses led the number of those concerned about PPE shortages (52.9%). Of the participants, 62.5% had no dialysis patient with a COVID-19 diagnosis, 75.2% had no colleague with a COVID-19 diagnosis, and 77.3% had no family member with a COVID-19 diagnosis. When considering all the participants, the significant concerns were getting infected with COVID-19 (90.1%) and transmitting the disease to their loved ones (92.5%). Nurses have the highest number of those who declared having worries most of the time. Overall, 67.8% of the participants (primarily physicians) stated the information level concerning COVID-19 to have been sufficient.

Most respondents do not use, decreased or did not change the amount of their alcohol (99.4%) /tobacco (97.6%) consumption after the emergence of COVID-19.

Nearly half of the participants (48.7%) suffered a new onset of sleep problems (e.g., decrease/increase in duration, difficulty falling asleep, or interrupted sleep). Of those who reported sleep problems, nurses ranked highest (62.2%). The majority declared no new onset of any appetite problems (77.4%). Of the participants, 44.8% suffered a new onset or increase in somatic symptoms associated with the pandemic, with these again being higher in nurses (58.4%).

MSPSS scores showed no statistical difference among the participants', regarding sources of support (i.e., fam-

Table 1: Demographic characteristics of the participants

		Total (n=953)	Physician (n=86)	Nurse (n=465)	Healthcare worker (n=402)	p
Age (years, median ± IQR)		38 (27-43)	49 (45-52)	32 (26-41)	38 (31-43)	<0.001
Gender (n, %)	Female	596 (62.9)	28 (32.6)	421 (90.7)	147 (37.0)	<0.001
	Male	351 (37.1)	58 (67.4)	43 (9.3)	250 (63.0)	
Education (n, %)	Elementary school	168 (17.7)	0 (0.0)	0 (0.0)	168 (42.2)	
	High school	293 (30.9)	0 (0.0)	164 (35.3)	129 (32.4)	<0.001
	University/post-graduate	488 (51.4)	86 (100)	301 (64.7)	101 (25.4)	
Marital Status (n, %)	Single	238 (25.1)	6 (7.0)	153 (32.9)	79 (19.8)	
	Married/partnered	652 (68.7)	73 (84.9)	286 (61.5)	293 (73.6)	<0.001
	Divorced/widow	59 (6.2)	7 (8.1)	26 (5.6)	26 (6.5)	
Having children (n, %)	No	301 (32.1)	11 (12.9)	193 (42.2)	97 (24.4)	<0.001
	Yes	638 (67.9)	74 (87.1)	264 (57.8)	300 (75.6)	
Cohabitation (n, %)	Living by oneself	75 (7.9)	7 (8.1)	44 (9.5)	24 (6.1)	
	With housemate	34 (3.6)	1 (1.2)	22 (4.8)	11 (2.8)	
	With elementary family	170 (18.0)	2 (2.3)	101 (21.9)	67 (16.9)	<0.001
	With parents	591 (62.6)	73 (84.9)	255 (55.2)	263 (66.4)	
	With large family	74 (7.8)	3 (3.5)	40 (8.7)	31 (7.8)	
Work duration in dialysis center (n, %)	0-6 months	52 (5.5)	1 (1.2)	20 (4.3)	31 (7.8)	
	6 months-5 years	260 (27.5)	7 (8.1)	117 (25.2)	136 (34.4)	<0.001
	> 5 years	633 (67.0)	78 (90.7)	327 (70.5)	228 (57.7)	

IQR; Interquartile range

ily, friend, others) or work position (i.e., physician, nurse, healthcare worker) (p=0.43, 0.469, 0.695, and 0.832 respectively) However, nurses had significantly higher overall and subscale scores on DASS-21 (n=13 with scores between 5-21) compared to physicians (n=9 with scores between 3-15) and healthcare workers (n=5 with scores between 0-12; p<0.001).

Females scored significantly higher on every subscale (depression, anxiety, stress) of DASS-21 compared to males (p<0.001). Single participants; those with no children; those experiencing difficulty finding PPE; those worried about finding PPE in the future; those in contact with COVID-19 (+) patients, coworkers, or family members; those who stated their tobacco and alcohol use to have increased during the pandemic; and those who declared a new onset of sleep, appetite, and/or somatic problems scored higher in all subscales of DASS-21 (Table 3). The duration of employment in a dialysis center (r=0.034, p=0.291) and knowledge about COVID-19 (r=0.02, p=0.537) did not correlate with the DASS-21 total score; however, worry about getting infected (r=0.348, p<0.001) and transmitting the disease to loved ones (r=0.298, p<0.001) did positively correlate with the DASS-21. Meanwhile, perceived total social support showed no strong correlation with depression, anxiety, or stress levels (r=-0.218, p<0.001; r=-0.196, p<0.001; r=-0.187, p<0.001, respectively) (Table 4).

The regression analyses indicate the variables associated with psychological outcomes. Depression was found to be associated with being female, not having children, cohabiting with family/housemates, having a longer work experience worrying about finding PPE in the future, worrying about getting infected, and knowing an acquaintance with COVID-19. Similar associations were found regarding anxiety for all these factors except work duration and with stress for all these factors except cohabitation status. Interestingly, worrying about transmitting the disease to loved ones was only associated with stress scores. In addition, lower levels of perceived social support were determined to be associated with anxiety and stress scores (Table 5).

Table 2: Lifestyle changes, opinions, and psychological parameters of the participants related to COVID-19

		Total	Physician	Nurse	Healthcare worker	p
Changes in working hours (n, %)	Decreased	214 (22.6)	17 (19.8)	84 (18.1)	113 (28.5)	0.004
	Not changed	574 (60.6)	58 (67.4)	293 (63.1)	223 (56.2)	
	Increased	159 (16.8)	11 (12.8)	87 (18.8)	61 (15.4)	
The difficulty of finding PPE (n, %)	No	850 (89.9)	78 (90.7)	409 (88.3)	363 (91.4)	0.313
	Yes	96 (10.1)	8 (9.3)	54 (11.7)	34 (8.6)	
Worry about finding PPE in the future (n, %)	No	570 (60.3)	60 (70.6)	219 (47.1)	291 (73.7)	<0.001
	Yes	375 (39.7)	25 (29.4)	246 (52.9)	104 (26.3)	
COVID-19 (+) patient in the center (n, %)	No	591 (62.5)	50 (58.1)	291 (62.7)	250 (63.1)	0.002
	Yes	171 (18.1)	27 (31.4)	86 (18.5)	58 (14.6)	
	Do not know	184 (19.5)	9 (10.5)	87 (18.8)	88 (22.2)	
COVID-19 (+) coworker in the center (n, %)	No	712 (75.2)	59 (68.6)	346 (74.6)	307 (77.3)	0.082
	Yes	103 (10.9)	16 (18.6)	54 (11.6)	33 (8.3)	
	Do not know	132 (13.9)	11 (12.8)	64 (13.8)	57 (14.4)	
COVID-19 (+) people, in relationship (n, %)	No	733 (77.3)	53 (61.6)	340 (73.3)	340 (85.4)	<0.001
	Yes	215 (22.7)	33 (38.4)	124 (26.7)	58 (14.6)	
Worry about getting infected (n, %)	no	94 (9.9)	8 (9.4)	25 (5.4)	61 (15.3)	<0.001
	sometimes	266 (28.1)	42 (49.4)	96 (20.6)	128 (32.2)	
	most of the shift	310 (32.7)	22 (25.9)	193 (41.5)	95 (23.9)	
	nearly all day, every day	278 (29.3)	13 (15.3)	151 (32.5)	114 (28.6)	
Worry about transmitting the disease to beloveds (n, %)	no	71 (7.5)	9 (10.5)	15 (3.2)	47 (11.8)	<0.001
	sometimes	186 (19.6)	29 (33.7)	68 (14.6)	89 (22.4)	
	most of the shift	130 (13.7)	18 (20.9)	63 (13.5)	49 (12.3)	
	nearly all day, every day	562 (59.2)	30 (34.9)	319 (68.6)	213 (53.5)	
Knowledge about COVID-19 (n, %)	not much	305 (32.2)	11 (12.8)	123 (26.5)	171 (43.1)	<0.001
	enough/ very much	643 (67.8)	75 (87.2)	342 (73.5)	226 (56.9)	
Tobacco use (n, %)	Not using	573 (60.4)	58 (67.4)	285 (61.3)	230 (57.9)	0.158
	Decreased	119 (12.6)	11 (12.8)	46 (9.9)	62 (15.6)	
	no change	233 (24.6)	16 (18.6)	121 (26.0)	96 (24.2)	
	Increased	23 (2.4)	1 (1.2)	13 (2.8)	9 (2.3)	
Alcohol use (n, %)	Not using	790 (83.8)	49 (57.6)	390 (84.2)	351 (88.9)	<0.001
	Decreased	64 (6.8)	17 (20.0)	20 (4.3)	27 (6.8)	
	no change	83 (8.8)	17 (20.0)	50 (10.8)	16 (4.1)	
	Increased	6 (0.6)	2 (2.4)	3 (0.6)	1 (0.3)	
New-onset sleep problems (n, %)	No	486 (51.3)	48 (56.5)	176 (37.8)	262 (66.0)	<0.001
	Yes	461 (48.7)	37 (43.5)	289 (62.2)	135 (34.0)	

Table 2: Continue

		Total	Physician	Nurse	Healthcare worker	p
New-onset appetite problems (n, %)	No	734 (77.4)	64 (74.4)	329 (70.9)	341 (85.7)	<0.001
	Yes	214 (22.6)	22 (25.6)	135 (29.1)	57 (14.3)	
Somatic Symptoms (n, %)	No/ decreased	441 (55.2)	37 (50.0)	160 (41.6)	244 (71.8)	<0.001
	New-onset/ increased	358 (44.8)	37 (50.0)	225 (58.4)	96 (28.2)	
MSPSS (years, median ± IQR)	Family	27 (20-28)	26 (20-28)	27 (21-28)	28 (19-28)	0.43
	Friend	22 (15-28)	22 (16-25)	22 (16-26)	22 (15-28)	0.469
	Significant Other	26 (16-28)	25 (18-28)	26 (16-28)	26 (15-28)	0.695
	Total	72 (54-82)	73 (56-79)	71 (54-81)	72 (54-83)	0.832
DASS-21 (years, median ± IQR)	Depression	3 (0-6)	3 (0-6)	4 (2-8)	1 (0-4)	<0.001
	Anxiety	2 (0-5)	2 (0-4)	3 (1-6)	1 (0-3)	<0.001
	Stress	4 (1-6)	4 (1-6)	5 (2-8)	2 (0-5)	<0.001
	Total	9 (2-17)	9 (3-15)	13 (5-21)	5 (0-12)	<0.001

PPE; Personal protective equipment, MSPSS; Multidimensional Scale of Perceived Social Support, DASS-21; Depression, anxiety, stress scale-21, IQR; Interquartile range

Table 3: Demographic and social features, working practice patterns, and psychosomatic problems associated with DASS-21

		Depression (median ± IQR)	Anxiety (median ± IQR)	Stress (median ± IQR)	Total
Gender	Female	4 (1-7.4)	3 (1-6)	5 (2-7.1)	12 (4.6-21)
	Male	1 (0-4)	1 (0-3)	2 (0-4.7)	4 (0-11)
	p	<0.001	<0.001	<0.001	<0.001
Marital status	Single	3 (1-8)	3 (1-5)	4.5 (1-8)	10.4 (3-21.3)
	Married/partnered	3 (0-6)	2 (0-4.5)	4 (0.9-6)	9 (1.6-16)
	Divorced/widow	2 (0-6.6)	1 (0-5)	3 (0.6-6)	6 (1-15)
	p	0.006	0.019	0.007	0.005
Having children	No	4 (1-8)	3 (1-6)	4.6 (1-8)	11 (4-21.4)
	Yes	2.5 (0-5.2)	2 (0-4)	3 (0-6)	8 (1-15)
	p	<0.001	<0.001	<0.001	<0.001
Cohabitation	by one-self	2 (0-6)	2 (0-4)	3 (1-7)	7 (2-18)
	housemate	4.8 (0-8)	3.5 (0-5)	4.6 (1.6-7.25)	12.2 (1.6-20)
	elementary family	3 (1-7)	2.8 (0.4-5)	4 (1-7.6)	10 (3-20)
	parents	3 (0-6)	2 (0-4.2)	3.5 (0.8-6)	8.5 (1.5-16)
	large family	3 (1-7)	2 (1-5)	4.9 (2-7.4)	11 (4.5-16.6)
	p	0.132	0.124	0.089	0.101
Difficulty finding PPE	No	3 (0-6)	2 (0-4)	3.1 (1-6)	8.1 (2-16.1)
	Yes	5 (2-9.75)	3.9 (1-7)	5 (2.2-8)	13 (6.25-22.75)
	p	<0.001	0.001	<0.001	<0.001

Table 3: Continue

		Depression (median ± IQR)	Anxiety (median ± IQR)	Stress (median ± IQR)	Total
Worry about finding PPE in the future	No	2 (0-5)	1 (0-4)	2 (0-5)	6 (1-14)
	Yes	4.6 (2-8.9)	3.2 (1-6)	5 (2-8)	13 (7-22)
	p	<0.001	<0.001	<0.001	<0.001
COVID-19 (+) patient in the center	No	2 (0-6)	2 (0-4)	3 (0-6)	8 (1-16)
	Yes	4 (1-7)	3 (1-5)	4 (1-7)	11 (4-19)
	Do not know	4 (1-7)	3 (1-6)	4.4 (1-7)	11 (3-21.3)
	p	<0.001	<0.001	<0.001	<0.001
COVID-19 (+) coworker in the center	No	2 (0-6)	2 (0-4)	3 (0-6)	8 (1-15.6)
	Yes	4 (1-7)	3 (1-7)	4.8 (2-8)	12.1 (5-21)
	Do not know	4.1 (1-8)	3.2 (1-6)	5 (2-8)	13 (5-22)
	p	<0.001	<0.001	<0.001	<0.001
COVID-19 (+) people in the relationship	No	2.5 (0-6)	2 (0-4)	3 (0-6)	8 (1-16)
	Yes	4 (1-7)	3 (1-6)	5 (2-7)	11.7 (5-20)
	p	<0.001	<0.001	<0.001	<0.001
Tobacco use	Not using	3 (0-6)	2 (0-4.4)	4 (1-6)	9 (1.4-16)
	Decreased	2 (0-5)	2 (0-4)	2 (0-6)	6 (1-16)
	no change	3 (1-6.7)	2 (0-5)	4 (1-7)	9.2 (3-18)
	Increased	8 (2-16)	5 (3-13)	9 (4-14)	27 (11-44)
	p	<0.001	<0.001	<0.001	<0.001
Alcohol use	Not using	2.8 (0-6)	2 (0-4)	3 (1-6)	8 (1-16)
	Decreased	4 (0-7)	3 (0-4.75)	5 (2-7.75)	12.3 (4-18)
	no change	4 (2-9.5)	3.2 (1-8)	5 (2.6-10)	13 (5-27)
	Increased	5.5 (1-17.25)	7.5 (0-12.75)	8 (4.5-15.75)	20.5 (5.75-46.25)
	p	0.001	0.003	<0.001	<0.001
New-onset sleep problems	No	1 (0-3.7)	1 (0-3)	1 (0-4)	3 (0-10.8)
	Yes	5 (2-9)	4 (2-7)	6 (3-9)	14.5 (8-24)
	p	<0.001	<0.001	<0.001	<0.001
New-onset appetite problems	No	2 (0-5)	2 (0-4)	3 (0-5.5)	7 (1-15)
	Yes	5 (2-10)	5 (2-8)	6 (4-10)	15.5 (9.5-28)
	p	<0.001	<0.001	<0.001	<0.001
Somatic Symptoms	No/ decreased	1 (0-3)	0 (0-2)	1 (0-4)	3 (0-10)
	New-onset/ increased	5 (2-9)	4 (2-7)	6 (3-9)	14 (8-24.25)
	p	<0.001	<0.001	<0.001	<0.001

PPE; Personal protective equipment, DASS-21; Depression, anxiety, stress scale-21, IQR; Interquartile range

Table 4: Correlation between perceived social support and depression, anxiety, and stress levels.

		DASS-21			
		Depression	**Anxiety**	**Stress**	**Total**
Age	rho	-0.094	-0.106	-0.108	-0.111
	p	0.004	0.001	0.001	0.001
Duration of work in the dialysis center	rho	0.027	0.031	0.039	0.034
	p	0.404	0.347	0.227	0.291
Worry about getting infected	rho	0.318	0.347	0.335	0.348
	p	<0.001	<0.001	<0.001	<0.001
Worry about transmitting the disease to beloveds	rho	0.266	0.276	0.293	0.298
	p	<0.001	<0.001	<0.001	<0.001
Knowledge about COVID-19	rho	0.018	0.015	0.015	0.02
	p	0.589	0.653	0.633	0.537
MSPSS- Family	rho	-0.18	-0.187	-0.157	-0.183
	p	<0.001	<0.001	<0.001	<0.001
MSPSS- Friend	rho	-0.203	-0.202	-0.193	-0.211
	p	<0.001	<0.001	<0.001	<0.001
MSPSS - Significant other	rho	-0.137	-0.101	-0.094	-0.117
	p	<0.001	0.002	0.004	<0.001
MSPSS Total	rho	-0.218	-0.196	-0.187	-0.212
	p	<0.001	<0.001	<0.001	<0.001

MSPSS; Multidimensional Scale of Perceived Social Support, DASS-21; Depression, anxiety, stress scale-21

DISCUSSION

The COVID-19 pandemic has caused many physical and psychosocial problems in HCPs. The present paper aims to evaluate the psychological impact of COVID-19 on dialysis HCPs, as they are known as one of the most vulnerable groups in health care (10, 11, 13).

The study found most participants, especially nurses, to have declared being worried about getting infected and transmitting the disease, and these concerns also showed correlations with psychological symptoms. As a result, lower levels of perceived social support were associated with higher anxiety and stress levels. In addition, nearly half of the group reported either a new onset or increased levels of sleep and somatic problems. In addition, increased tobacco and alcohol use was associated with increased psychological difficulties.

Nurses and women were the two prominent groups demonstrating elevated adverse psychological outcomes. This result is not surprising, as being female and the occupational pressure nurses experience have been reported as major risk factors for negative mental consequences during the pandemic (7, 21-23).

Being in close physical contact with the patients' specimens more frequently, working in high-risk units, and reporting more workload are the prominent risk factors associated with higher rates of psychological problems in nurses (23, 24). In addition, the higher rate of females in the nurse group according to the gender distribution in the current study's sample may explain the occurrence of elevated mental symptoms among females here, as mental health disorders are known to show a higher prevalence in female HCPs compared to male HCPs (25).

The study's results emphasize the occupational position of being an HCP, especially working as a nurse, to be an important risk factor for developing mental health problems during crises. Therefore, institutions are recommended to focus on the workload, risks, and needs of this vulnerable group of HCPs.

Most of the study's sample reported their knowledge about COVID-19 as being somewhere between "enough" and "very much." The participants' knowledge levels did not correlate with elevated depression, anxiety, or stress levels. Unlike this study's sample, several studies have shown a relationship to exist between lower occupational competence and mental health problems. Elbay et al. (21) reported lower feelings of occupational compe-

Table 5: Factors associated with DASS-21 scores

	DASS-21 depression score					DASS-21 anxiety score					DASS-21 stress score				
	B	Beta	p	95% CI Lower bound	95% CI Upper bound	B	Beta	p	95% CI Lower bound	95% CI Upper bound	B	Beta	p	95% CI Lower bound	95% CI Upper bound
Constant	5.484			3.034	7.934	4.019			2.048	5.990	5.233	1.149		2.979	7.488
Working position	-0.539	-0.074	**0.024**	-1.006	-0.072	-0.266	-0.045	0.166	-0.641	0.110	-0.582	0.219	**0.008**	-1.012	-0.152
Age	0.000	0.008	0.801	-0.002	0.003	0.001	0.002	0.939	-0.002	0.002	0.000	0.001	0.795	-0.003	0.002
Gender	-1.458	-0.153	**0.000**	-2.059	-0.856	-1.420	-0.184	**0.000**	-1.904	-0.937	-1.362	0.282	**0.000**	-1.916	-0.808
Marital status	-0.131	-0.015	0.734	-0.883	0.622	0.174	0.024	0.573	-0.431	0.779	-0.330	0.353	0.350	-1.022	0.363
Having children	-1.567	-0.159	**0.001**	-2.494	-0.640	-1.352	-0.170	**0.000**	-2.098	-0.607	-1.194	0.435	**0.006**	-2.047	-0.341
Cohabitation	0.403	0.084	**0.030**	0.038	0.767	0.447	0.115	**0.003**	0.154	0.740	0.321	0.171	0.061	-0.015	0.656
Duration of work in the dialysis center	0.562	0.072	**0.045**	0.013	1.111	0.272	0.043	0.228	-0.170	0.713	0.610	0.257	**0.018**	0.104	1.115
Change in a weekly working hour	0.406	0.055	0.074	-0.040	0.851	-0.001	0.000	0.994	-0.360	0.357	0.383	0.209	0.067	-0.027	0.792
Difficulty in finding PPE	0.794	0.051	0.118	-0.203	1.790	0.309	0.024	0.450	-0.493	1.110	0.737	0.467	0.115	-0.180	1.653
Worry about finding PPE in the future	1.207	0.128	**0.000**	0.565	1.849	0.660	0.086	**0.012**	0.143	1.177	0.867	0.301	**0.004**	0.276	1.458
COVID-19 (+) patient in the center	-0.070	-0.012	0.728	-0.466	0.325	0.002	0.000	0.992	-0.317	0.320	0.087	0.186	0.640	-0.277	0.451
COVID-19 (+) coworker in the center	0.354	0.055	0.119	-0.092	0.800	0.449	0.085	**0.014**	0.090	0.808	0.233	0.209	0.265	-0.177	0.643
COVID-19 (+) people in relationship	0.849	0.077	**0.012**	0.185	1.512	0.825	0.093	**0.002**	0.292	1.359	0.922	0.311	**0.003**	0.312	1.532

Table 5: Continue

	DASS-21 depression score					DASS-21 anxiety score					DASS-21 stress score				
	B	Beta	p	95% CI Lower bound	95% CI Upper bound	B	Beta	p	95% CI Lower bound	95% CI Upper bound	B	Beta	p	95% CI Lower bound	95% CI Upper bound
Worry about getting infected	0.746	0.157	**0.000**	0.391	1.101	0.783	0.203	**0.000**	0.497	1.069	0.677	0.167	**0.000**	0.350	1.004
Worry about transmitting the disease to beloveds	0.186	0.041	0.283	-0.154	0.527	0.168	0.046	0.229	-0.106	0.442	0.361	0.160	**0.024**	0.048	0.674
Knowledge about COVID-19	0.025	0.002	0.936	-0.576	0.625	-0.092	-0.011	0.708	-0.575	0.391	-0.127	0.282	0.652	-0.680	0.426
MSPSS Family	-0.045	-0.069	0.145	-0.105	0.016	-0.061	-0.116	**0.014**	-0.109	-0.012	-0.042	0.028	0.138	-0.098	0.014
MSPSS Friend	-0.048	-0.079	0.073	-0.101	0.004	-0.056	-0.113	0.009	-0.099	-0.014	-0.072	0.025	**0.004**	-0.121	-0.024
MSPSS Significant other	-0.023	-0.040	0.378	-0.073	0.028	0.038	0.083	0.067	-0.003	0.079	0.017	0.024	0.470	-0.029	0.064

MSPSS; Multidimensional Scale of Perceived Social Support, DASS-21; Depression, anxiety, stress scale-21, CI; Confidence interval, p values below 0.05 are marked as bold.

tence during COVID-19-related tasks to be associated with higher DASS scores. Du et al. reported insufficient knowledge about COVID-19, insufficient psychological preparedness, and perceived self-efficacy among HCPs to be associated with depression and anxiety symptoms (26). The data from the current study have shown having sufficient knowledge about the present conditions and being prepared to be positive factors against distress. When considering both this study's results alongside those from other studies, facilities are recommended to provide adequate training on the causes and course of a current disease, the methods of protection, and detailed treatment guides to enhance HCPs' professional competencies.

The study's data indicate that having COVID-19 (+) patients in the dialysis center or among acquaintances and worrying about contracting/transmitting the disease to loved ones to be the prominent issues correlated to depression, anxiety, and stress levels. HCPs are observed to fear being infected or infecting others during infection outbreaks, and these concerns happen to be greater if they experience symptoms of the disease (27, 28). Studies have revealed results similar to the current study's findings where an increased number of diagnosed patients with a disease and having higher levels of concern about a disease are associated with higher stress levels; also, being tested for COVID-19 has been associated with anxiety, insomnia, and distress (21, 23, 29). Karataş et al.'s (30) study on dialysis center employees in particular also found anxiety and depression symptoms to be positively correlated with having/treating COVID-19 patients at the center. In addition, HCPs with confirmed cases in their living community show greater anxiety, with those who have confirmed cases among their relatives, friends, and colleagues representing even greater depression and stress symptoms (23, 31). Lastly, the findings show that special attention is needed for HCPs who encounter and work with more patients who've been diagnosed with COVID-19, as well as HCPs who declare gradually increasing concerns for themselves and others, as this may indicate higher levels of psychological proneness.

The results show that having difficulty finding PPE and being concerned about being able to access PPE in the future correlate to higher levels of depression, anxiety, and stress. The proper and regular usage of PPE is known to provide sufficient protection from COVID-19 (32). The inadequate availability of PPE experienced in the early phase of the pandemic, as well as dissatisfaction with institutions' responses such as feeling not at all or poorly protected by administrations both regarding physical safety (i.e., hygiene) and aspects of emotional support, have been associated with higher perceptions of risk, higher anxiety levels, greater sleep disturbance, and more psychosomatic symptoms (21, 33). In addition, an association of trust in equipment and infection control

procedures with lower emotional exhaustion was also reported during the previous SARS outbreak (34). Previous findings along with this study's data reveal HCPs' confidence in their ability to protect and maintain their health is essential to their positive mental status.

Perceived social support did not differ significantly among all three groups. However, the regression analyses revealed lower levels of support from family members and friends to be associated with higher anxiety and stress. Support obtained from others has been associated with HCPs' psychological status during both previous and current epidemics (35). A systematic review covering 59 studies during COVID-19 showed social support to be associated with fewer mental problems and HCPs to be more interested in social support than professional psychological help (36). Kılınç and Sis Çelik's (37) study on nurses during the pandemic reported an increase in perceived social support to increase nurses' psychological resilience. Alongside the studies mentioned above, the data from the current study suggest that providing sufficient social support to HCPs may have an essential role in decreasing depression, anxiety, and stress. Talking about the challenges and concerns about the current crisis, discussing physical and emotional experiences, and sharing individual needs with others can help reduce negative feelings. Lastly, this study recommends that local administrators create a warm work environment with a positive peer-and-supervisor feedback system to help maintain HCPs' psychological well-being.

Nearly half the participants in the current study (primarily nurses) stated experiencing a new onset of sleep problems, with the participants who experienced sleep problems showing higher levels of depression, anxiety, and stress. HCPs experience sleep disturbances during health crises (7). Preti et al.'s (38) review on the current pandemic and previous outbreaks found the rate of insomnia symptoms among HCPs to be between 34%-36.1%. The close relationship between anxiety and sleep disturbances is well known; thus, significant sources of anxiety such as occupational stress during the pandemic, uncertainty regarding the nature of the disease and controlling its spread, worries about getting infected or contracting the virus, and the stress of keeping oneself and loved ones healthy can be noted as significant sources of HCPs' sleep problems during the outbreak (7, 39-40). Likewise, studies have shown poor sleep quality in nurses during COVID-19 to be related to their occupational stress (7, 26, 39).

Although appetite problems were not as prevalent as expected in this study's sample, a new onset of problems correlated with DASS-21 and changes in populations' eating behaviors during the pandemic have been widely reported and mainly attributed to COVID-19-induced stress, negative emotions, and lockdown restrictions (41). Studies with HCP also state poor appetite to be related to distress (8).

Of the participants in the current study, 44.8% expressed either a new onset of or increase in somatic problems. The relationship between the deterioration of emotional well-being and somatic symptoms is well-known (8, 42). Likewise, the current study's results indicate higher levels of depression, anxiety, and stress in participants who express somatic problems. Studies on HCPs have revealed occupational pressure, emotional exhaustion, inadequate institutional support perception, and insufficient safety and hygiene regulations to be correlated with psychosomatic symptoms (33).

A new onset of or increase in sleep, appetite, and/or somatic problems in the current study's sample as well as in the studies mentioned above indicate that HCPs experience not only emotional difficulties but also physical problems related to their negative psychological states. These disturbances may also appear as earlier signs of mental problems. Therefore, paying attention to these problems in HCPs may assist in recognizing and addressing their psychological needs.

This study has associated participants' increased tobacco and alcohol use with their depression, anxiety, and stress levels. Studies have revealed COVID-19-related psychological distress, social distancing, lockdown restrictions, uncertainty, and hopelessness to be closely associated with tobacco and alcohol consumption as coping behaviors (43, 44). Compatible with other studies, the current study's findings emphasize the importance of evaluating HCPs' tobacco, alcohol, and even substance use habits in order to bring deeper psychological problems to light. For example, a new onset of or increase in usage may be an earlier sign of developing mental disorders that would require exceptional support.

This study has several limitations. First of all, the study was performed using convenience sampling without any power analysis, and the majority of the sample was obtained from private dialysis centers. Private centers usually offer better work conditions and sufficient supplies. Therefore, the study's findings are not generalizable to most Turkish dialysis HCPs, and Type I and II errors may have occurred. Secondly, the study's sample does involve a control group (i.e., HCPs from other medical specialties or intervention centers). Therefore, the results cannot be interpreted precisely for dialysis HCPs. In addition, the data collection was based on self-report inventories instead of a diagnostic evaluation performed by a mental health professional. This may have resulted in biased results due to assessing only the participants' subjective perceptions. Lastly, this cross-sectional study was performed in regard to the early period of the pan-

demic. Since then, several new waves have occurred, and COVID-19 remains a global health problem in many aspects (45). The current study shows the immediate psychological response to the crisis; however, the long-term consequences remain unknown.

CONCLUSION

This study has examined the early psychological response to the COVID-19 pandemic and its relevant factors with regard to dialysis HCPs in Turkiye. The study has indicated the worries and lifestyle changes associated with the outbreak to be associated with depression, anxiety, and stress. In addition, the dialysis HCPs' reported having adequate levels of knowledge about the disease and sufficient self-protection to be essential issues for their confidence. In addition, employers should take into account the safety of their medical care teams, provide reassurance about their staff's protection, and fulfill their needs regarding PPE and hygiene in the best possible way.

The findings have also shown nurses and women to have a high risk of developing psychological problems. When considering the vulnerability these two groups have regarding the healthcare system, more attention and closer monitoring should be given to the psychological difficulties they experience.

Healthcare providers mental well-being is a critical factor in the optimal sustainability of the healthcare system, especially during crises such as COVID-19. The study's results have shown HCPs' social support and their perceptions of it to be associated with mental well-being. Thus, HCPs are recommended to express their worries about COVID-19 with each other and their loved ones, as well as to their supervisors and/or institution representatives. Government institutions, local administrations, and employers should focus on the psychological status of their staffs and provide immediate interventions as needed. Firstly, close contact with and observation of staff members' physical and psychosocial aspects are essential. This is achievable by communicating empathetically, asking how they feel, talking about more than work, and sharing their uneasiness. Administrators are recommended to plan appropriate actions (i.e., establish informal or formal support groups, provide training and applications on how reducing stress, activating functional coping mechanisms, and learning relaxation techniques can be beneficial) in accordance with HCPs' needs; institutions may also facilitate contact between HCPs and mental health professionals for advanced evaluations or assistance.

Prospective studies are needed for the period ahead in order to research the long-term consequences of this outbreak as well as the emerging needs of dialysis HCPs.

Acknowledgments: The study would like to thank Fresenius Medical Care Türkiye for helping reach the most dialysis physicians, nurses, and other personnel.

Ethics Committee Approval: This study was approved by Istanbul Faculty of Medicine Clinical Research Ethics Committee (Date: 08.05.2020, No: 09).

Peer Review: Externally peer-reviewed.

Author Contributions: Conception/Design of Study- I.P., M.Ş.S., M.Ö., S.K.K., R.P., H.Y.; Data Acquisition- I.P., S.K.K., R.P.; Data Analysis/Interpretation- I.P., H.U., M.Ş.S., M.Ö.; Drafting Manuscript- I.P., E.D.; Critical Revision of Manuscript- M.Ş.S., M.Ö.; Final Approval and Accountability- M.Ş.S.; Supervision- M.Ş.S., M.Ö.

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

Financial Disclosure: The authors declared that this study has received no financial support.

REFERENCES

1. World Health Organization. Novel Coronavirus (2019-nCoV) SITUATION REPORT - 1. [cited 2021 Feb 13]. Available from: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200121-sitrep-1-2019-ncov.pdf?sfvrsn=20a99c10_4
2. World Health Organization. WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020. [cited 2020 5 July]. Available from: https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020
3. Koffman J, Gross J, Etkind SN, Selman L. Uncertainty and COVID-19: how are we to respond? J R Soc Med 2020;113(6):211-6. [CrossRef]
4. Sasangohar F, Sasangohar F, Jones SL, Masud FN, Vahidy FS, Kash BA. Provider Burnout and Fatigue during the COVID-19 Pandemic: Lessons Learned from a High-Volume Intensive Care Unit. Anesth Analg 2020;131(1):106-11. [CrossRef]
5. Li J, Xu G. Lessons from the Experience in Wuhan to Reduce Risk of COVID-19 Infection in Patients Undergoing Long-Term Hemodialysis. Clin J Am Soc Nephrol 2020;15(5):717-19. [CrossRef]
6. Kilincel S, Tuncer Issi Z, Kilincel O, Akpinar Aslan E, Ay R, Erzin G, et al. Effects of coronavirus (COVID-19) pandemic on health anxiety levels of healthcare professionals. J Contemp Med 2020;10(3):312-8. [CrossRef]
7. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsi E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. Brain Behav Immun 2020;88:901-7. [CrossRef]
8. Chew NWS, Lee GKH, Tan BYQ, Jing M, Goh Y, Ngiam NJH, et al. A multinational, multicentre study on the psychological outcomes and associated physical symptoms amongst healthcare workers during COVID-19 outbreak. Brain Behav Immun 2020;88:559-65. [CrossRef]

9. Klersy C, Callegari A, Martinelli V, Vizzardi V, Navino C, Malberti F, et al. burnout in health care providers of dialysis service in Northern Italy - A multicentre study. Nephrol Dial Transplant 2007;22(8):2283-90. [CrossRef]
10. Agrawal V, Plantinga L, Abdel-Kader K, Pivert K, Provenzano A, Soman S, et al. burnout and emotional well-being among nephrology fellows: A national online survey. J Am Soc Nephrol 2020;31:675-85. [CrossRef]
11. Karakoc A, Yilmaz M, Alcalar N, Esen B, Kayabasi H, Sit D. Burnout syndrome among hemodialysis and peritoneal dialysis nurses. Iran J Kidney Dis 2016;10(6):395-404.
12. Argentero P, Dell'Olivo B, Ferretti MS. Staff Burnout and Patient Satisfaction With the Quality of Dialysis Care. Am J Kidney Dis 2008;51(1):80-92. [CrossRef]
13. Kliger AS, Silberzweig J. Mitigating risk of COVID-19 in dialysis facilities. Clin J Am Soc Nephrol 2020;15(5):707-9. [CrossRef]
14. Ma Y, Diao B, Lv X, Zhu J, Chen C, Liu L, et al. Epidemiological, clinical, and immunological features of a cluster of COVID-19–contracted hemodialysis patients. Kidney Int Rep 2020;5(8):1333-41. [CrossRef]
15. Hall LH, Johnson J, Watt I, Tsipa A, O'Connor DB. Healthcare staff well-being, burnout, and patient safety: a systematic review. PloS one 2016;11(7):e0159015. [CrossRef]
16. Janes G, Mills T, Budworth L, Johnson J, Lawton R. The Association Between Health Care Staff Engagement and Patient Safety Outcomes: A Systematic Review and Meta-Analysis. J Patient Saf 2021;17(3):207-16. [CrossRef]
17. Lovibond PF, Lovibond SH. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. Behav Res Ther 1995;33(3):335-43. [CrossRef]
18. Sarıçam H. The Psychometric Properties of Turkish Version of Depression Anxiety Stress Scale-21 (DASS-21) in Community and Clinical Samples. J Cogn Psychother Res 2018;7(1):19-30. [CrossRef]
19. Gratz KL, Roemer L. Multidimensional Assessment of Emotion Regulation and Dysregulation: Development, Factor Structure, and Initial Validation of the Difficulties in Emotion Regulation Scale. J Psychopathol Behav Assess 2004(26);41-54. [CrossRef]
20. Eker D, Arkar H, Yaldiz H. Factorial structure, validity, and reliability of revised form of the multidimensional scale of perceived social support. Turk J Psychiatry 2001;12(1):17-25. [CrossRef]
21. Elbay RY, Kurtulmuş A, Arpacıoğlu S, Karadere E. Depression, anxiety, stress levels of physicians and associated factors in Covid-19 pandemics. Psychiatry Res 2020;290:113130. [CrossRef]
22. Hacimusalar Y, Kahve AC, Yasar AB, Aydin MS. Anxiety and hopelessness levels in COVID-19 pandemic: A comparative study of healthcare professionals and other community sample in Turkey. J Psychiatr Res 2020;129:181-8. [CrossRef]
23. Si MY, Su XY, Jiang Y, Wang WJ, Gu XF, Ma L, et al. Psychological impact of COVID-19 on medical care workers in China. Infectious diseases of poverty 2020;9(1):1-13. [CrossRef]
24. Brooks SK, Dunn R, Amlôt R, Rubin GJ, Greenberg N. A systematic, thematic review of social and occupational factors associated with psychological outcomes in healthcare employees during an infectious disease outbreak. J Occup Environ Med 2018;60(3):248-57. [CrossRef]
25. Kim MS, Taeshik K, Lee D, Yook JH, Hong YC, Lee SY, et al. Mental disorders among workers in the healthcare industry: 2014 national health insurance data. Ann. Occup. Environ Med. 2018;30(1):31. [CrossRef]
26. Du J, Dong L, Wang T, Yuan C, Fu R, Zhang L et al. Psychological symptoms among frontline healthcare workers during COVID-19 outbreak in Wuhan. Gen Hosp Psychiatry 2020;67:144-5. [CrossRef]
27. Maunder R, Hunter J, Vincent L, Bennett J, Peladeau N, Leszcz M, et al. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. Can Med Assoc J 2003:168(10);1245-51.
28. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. Lancet 2020;395(10227):912-20. [CrossRef]
29. Şahin MK, Aker S, Şahin G, Karabekiroğlu A. Prevalence of depression, anxiety, distress and insomnia and related factors in healthcare workers during COVID-19 pandemic in Turkey. J Community Health 2020;45(6): 1168-77. [CrossRef]
30. Karataş A, Canakci E, Kaya Y, Bostan, S., Özturan A, et al. Impact of The Covid-19 Pandemic on Anxiety and Depression Levels of The Dialysis Center Employees. Middle Black Sea Journal of Health Science 2020;6(2): 240-8. [CrossRef]
31. 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 Netw Open 2020;3:e2010185. [CrossRef]
32. Centers of Disease Control and Prevention (CDC). Infection Control Guidance for Healthcare Professionals about Coronavirus (COVID-19) [Internet]. [cited 2021 13 February]. Available from: https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control.html
33. Marinaci T, Carpinelli L, Venuleo C, Savarese G, Cavallo P. Emotional distress, psychosomatic symptoms and their relationship with institutional responses: A survey of Italian frontline medical staff during the Covid-19 pandemic. Heliyon 2020;6(12):e05766. [CrossRef]
34. Marjanovic Z, Greenglass ER, Coffey S. The relevance of psychosocial variables and working conditions in predicting nurses' coping strategies during the SARS crisis: An online questionnaire survey. Int J Nurs Stud 2007;44(6):991-8. [CrossRef]
35. Chigwedere OC, Sadath A, Kabir Z, Arensman E. The Impact of Epidemics and Pandemics on the Mental Health of Healthcare Workers: A Systematic Review. Int J Environ Res Public Health 2021;18(13):6695. [CrossRef]
36. Muller AE, Hafstad EV, Himmels JPW, Smedslund G, Flottorp S, Stensland SØ, et al. The mental health impact of the covid-19 pandemic on healthcare workers, and interventions to help them: A rapid systematic review. Psychiatry Res 2020;293:113441. [CrossRef]
37. Kılınç T, Sis Çelik A. Relationship between the social support and psychological resilience levels perceived by nurses during the COVID-19 pandemic: A study from Turkey. Perspect Psychiatr Care 2020;57(3):1000-8. [CrossRef]
38. Preti E, Di Mattei V, Perego G, Ferrari F, Mazzetti M, Taranto P, et al. The Psychological Impact of Epidemic and Pandemic Outbreaks on Healthcare Workers: Rapid Review of the Evidence. Curr Psychiatry Rep 2020;22(8):43. [CrossRef]

39. Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 epidemic in China: A web-based cross-sectional survey.Psychiatry Res 2020;288:112954. [CrossRef]
40. Jahrami H, BaHammam AS, AlGahtani H, Ebrahim A, Faris MAI, AlEid K, et al. The examination of sleep quality for frontline healthcare workers during the outbreak of COVID-19. Sleep Breath 2021;25:503-11. [CrossRef]
41. Di Renzo L, Gualtieri P, Pivari F, Soldati L, Attinà A, Cinelli G, et al. Eating habits and lifestyle changes during COVID-19 lockdown: An Italian survey. J Transl Med 2020;18:229. [CrossRef]
42. Haug TT, Mykletun A, Dahl AA. The association between anxiety, depression, and somatic symptoms in a large population: The HUNT-II study. Psychosom Med 2004;66(6):845-51. [CrossRef]
43. Yach D. Tobacco Use Patterns in Five Countries During the COVID-19 Lockdown. Nicotine Tob Res 2020;22(9):1671-2. [CrossRef]
44. Rodriguez LM, Litt DM, Stewart SH. Drinking to cope with the pandemic: The unique associations of COVID-19-related perceived threat and psychological distress to drinking behaviors in American men and women. Addict Behav 2020;110:106532. [CrossRef]
45. Çıtak N. Dünyada ve Türkiyede Pandeminin Seyri. Pandeminin İkinci Yılı Değerlendirme Raporu. Türk Tabipleri Birliği Yayınları Ankara. 2022.p: 19-40.