Psychological Readiness to Normalization Process and Burnout Level of Healthcare Workers of Pediatric Clinic After Three Months of COVID-19 Pandemic

Sevliya ÖCAL DEMİR[1], **Hasan Turan KARATEPE**[2], **Taha ÖZÇELİK**[3], **Gökhan AKKUŞ**[3], **Hüsnü Fahri OVALI**[4]

[1]SB Istanbul Medeniyet University Göztepe Prof. Dr. Süleyman Yalçın City Hospital, Pediatric Department, Pediatric Infectious Diseases, İstanbul, Turkey

[2]SB Istanbul Medeniyet University Göztepe Prof. Dr. Süleyman Yalçın City Hospital, Psychiatry Department, İstanbul, Turkey

[3]SB Istanbul Medeniyet University Göztepe Prof. Dr. Süleyman Yalçın City Hospital, Pediatric Department, İstanbul, Turkey

[4]SB Istanbul Medeniyet University Göztepe Prof. Dr. Süleyman Yalçın City Hospital, Pediatric Department, Neonatology, İstanbul, Turkey

Abstract

Since December 2019, a new coronavirus, SARS-CoV-2 spread rapidly worldwide within months and caused stress and anxiety both in public and healthcare workers (HCWs). This study was conducted to determine psychologic effect of COVID-19 outbreak on and burnout level among HCWs of Pediatric Clinic while entering normalization process of pandemic. This cross-sectional study was carried out between June 10, 2020 and June 15, 2020 with participation of 261 HCWs. Questionnaire about demographic data, Depression Anxiety Stress Scale-21 (DASS-21), Acceptance and Action Questionnaire-II (AAQ-II), Maslach Burnout Inventory (MBI) were self-reported by the participants. The mean age of participants was 29±9.88 years, 78.9% of them was female, 33% were physicians, 40.2% were nurses. In general, psychological outcomes of the participations were determined as depressive symptoms in 143 (54.8%), anxiety in 129 (49.4%), and stress in 87 (33.3%). Being female, having direct contact with COVID-19 patients increased the risk for anxiety, depression, stress, and psychological inflexibility. Younger age, less work experience, and longer working hours had a significant correlation with burnout as well as a its significant correlation with depression, anxiety, stress, psychological inflexibility. In multiple regression analysis psychological inflexibility, stress levels and working hours showed significant predictive effect on burnout. And also, predictive effects of psychological parameters on burnout were found more stronger than the environmental parameters. Psychological factors showed a stronger relationship with burnout scores compared to environmental factors. Even so, organizational strategies like limiting working hours, and doing a fair shift for HCWs who work on the front line and have direct contact with COVID-19 patients will help to reduce the psychological pressure on HCWs.

Keywords: COVID-19, psychology, anxiety, healthcare workers

Öz

COVID-19 Pandemisinden Üç Ay Sonra Çocuk Sağlığı ve Hastalıkları Kliniğinde Çalışan Sağlık Personellerinde Tükenmişlik Düzeyi ve Normalleşme Sürecine Psikolojik Hazır Olma Durumu

Aralık 2019'dan bu yana, yeni bir korona virüs, SARS-CoV-2 dünya çapında aylar içinde hızla yayıldı ve hem halk hem de sağlık personelleri (SP) arasında stres ve kaygıya neden oldu. Bu çalışma, normalleşme sürecine girerken, COVID-19 salgınının Çocuk Sağlığı ve Hastalıkları Kliniğinde çalışan SP üzerindeki psikolojik etkisini ve sebep olduğu tükenmişlik düzeylerini belirlemek amacıyla yapıldı. Bu kesitsel çalışma, 261 sağlık çalışanının katılımıyla 10 Haziran 2020 ve 15 Haziran 2020 tarihleri arasında gerçekleştirildi. Demografik verilerle ilgili anket, Depresyon Anksiyete Stres Ölçeği-21 (DASS-21), Kabul ve Eylem Anketi-II (AAQ-II), Maslach Tükenmişlik Envanteri (MIB) katılımcılar tarafından dolduru. Katılımcıların yaş ortalaması 29±9,88 yıl, %78,9'u kadın, %33'ü hekim, %40,2'si hemşire idi. Genel psikolojik sonuçlar 143'ünde (%54,8) depresyon belirtileri, 129'unda (%49,4) anksiyete, 87'sinde (%33,3) stres şeklinde belirlendi. Kadın olma ve COVID-19 tanılı hasta ile doğrudan temasta bulunmanın anksiyete, depresyon, stres ve psikolojik esneklik için riski artırdığı görüldü. Daha genç olma, iş deneyiminin az olması ve uzun saatler çalışmanın depresyon, anksiyete, stres, psikolojik esneklik kaybı ile olduğu gibi, tükenmişlik ile de ilişkisi vardı. Regresyon analizinde psikolojik esneklik, stres düzeyine çalışma saatinin tükenmişlik üzerinde anlamlı yordayıcı etkisi olduğu gösterildi. Psikolojik faktörler çevresel faktörlere göre tükenmişlik puanları ile daha güçlü bir ilişki göstermektedir. Bununla beraber çalışma saatlerini sınırlandırmak, ön saflarda çalışan COVID-19 hastalarıyla doğrudan temas halinde olan SP arasında adil vardiya düzenlemek gibi kurumsal stratejiler, SP üzerindeki psikolojik baskıyı azaltmaya yardımcı olacaktır.

Anahtar Kelimeler: COVID-19, psikoloji, anksiyete, sağlık personeli

INTRODUCTION

From December 2019, when first suspected cases of Coronavirus Disease 2019 (COVID-19) were noticed, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) had spread rapidly worldwide within months. World Health Organization (WHO) declared COVID-19 outbreak as a pandemic on March 12, 2020. Three months after this declaration, at 10 June 2020, 7,145,539 confirmed cases and 408,025 deaths have been reported globally by WHO ('Coronavirus disease situation reports', 2020). This rapid global spread with increasing number of infected cases and related deaths caused great panic and anxiety in both public and health care workers (HCWs).

HCWs have a higher risk for becoming infected during outbreaks due to they have role directly in the diagnosis, treatment and care of infected cases. So, they experienced the fear of being infected, infecting their families, and depletion of personnel protection equipment (PPE). Additionally, they had heavy workload for a long time. Working under these extremely stressful conditions is expected to cause stress reaction symptoms such as anxiety, panic and depression and burnout. Indeed, stress disturbances in HCWs have been reported after previous outbreaks due to SARS-CoV-1 and recent COVID-19 pandemic (Mak et al., 2009; Bai et al., 2004, Liu et al., 2012, Chen et al., 2020; Elbay et al., 2020; Koh et al., 2020). Burnout, a complicated problem associated with chronic emotional and interpersonal stressor caused by work, was observed during COVID-19 pandemic, Zhang, Song, Jiang, Ding and Shi (2020) reported that prevalence of burnout is rising and ranged from 66.5% to 87.8% among physicians, and greater in nurses in China after COVID-19 pandemic.

There are many studies on the factors affecting occupational burnout and therapeutic interventions to reduce burnout in healthcare workers (Lloyd, King, & Chenoweth, 2011). Recently studies have been conducted to investigate the effect of acceptance and commitment therapy, which is the most known third generation cognitive and behavioral therapies, on burnout. In studies conducted with healthcare professionals, it has been reported that those with high psychological flexibility are more resistant to the negative burden of environmental conditions, and emotional burnout and depersonalization are observed less (Ramaci, Bellini, Presti, &Santisi, 2019; Ruiz, & Odriozola-González, 2017). A recent intervention study suggested that the impact of psychological flexibility on occupational burnout is important, and group and web-based psychological flexibility interventions may be more effective (Puolakanaho A, Tolvanen A, Kinnunen SM, &Lappalainen R, 2020).

Until now all studies addressed psychologic effect of COVID-19 pandemic on HCWs cared adult COVID-19 patients. HCWs of Pediatric Clinic care children who are usually asymptomatic or have milder symptoms of disease (Mehta et al., 2020). Even if limited evidence suggests that transmission of COVID-19 by children is uncommon (Lee et al., 2020; Lu et al., 2019; Yung et al., 2020), there is a great fear among HCWs about children's role in transmission of virus by unnoticed viral shedding. So, we wanted to demonstrate if there are psychological effects of COVID-19 pandemic HCWs who are actually far from severely ill COVID-19 patients.

Three months after pandemic, Health of Ministry of our country announced June 1, 2020 as date for beginning of normalization process of pandemic. This meant that after strict isolation and limitations, HCWs will start working with new rules to abstain from infection in hospital. In this period, we want to analyze the effect of working conditions and psychological flexibility on the burnout level of healthcare workers.

MATERIAL AND METHODS

The study is a cross-sectional, hospital-based survey conducted between June 10, 2020 and June 15, 2020, after first three months of the COVID-19 outbreak in Turkey. Three hundred eighty-five HCWs of Pediatric Clinic were asked to participate in to the study, 261 of them reported questionnaires. Demographic data were self-reported by the participants, including their age, sex, marital status, occupation, comorbid diseases, history of mental disorders, and smoking status and if living with relatives with comorbidities, having close co-worker with COVID-19. Participants who worked in the emergency room, outpatient clinics and the ward arranged for COVID-19 patients were defined as frontline workers, all others were accepted as second-line workers. Psychological impacts of outbreak on and burnout level of them were evaluated with the Depression Anxiety Stress Scale-21 (DASS-21), Acceptance and Action Questionnaire-II (AAQ-II), Maslach Burnout Inventory (MBI). The study was approved by the decision of Clinical Research Ethics Committee of Istanbul Medeniyet University Göztepe Prof. Dr. Süleyman Yalçın City Hospital with

the number of 2020/0352 and all procedures were in accordance with the Declaration of Helsinki.

The DASS-21 is a self-evaluating scale containing 21 items that assess three constructs: Depression, Anxiety, and Stress (P. F. Lovibond & S. H. Lovibond, 1995). Each subscale includes 7 statements. Items consist of statements referring to the previous week, participants are asked to read these statements and rate the frequency of the negative emotions. Ratings are made on a series of 4-point Likert– type scales from 0 (did not apply to me at all/never) to 3 (applied to me very much/always). Higher scores indicate more severe emotional distress. The validity and reliability studies of the Turkish version of the DASS-21 were performed by Sarıçam (2018) and it was concluded that the scale was a valid and reliable instrument in the assessment of depression, anxiety, and stress levels.

Acceptance and Action Questionnaire-II (AAQ-II): AAQ– II is a common Acceptance and Commitment Therapy (ACT) measure which assesses the construct referred to as, variously, acceptance, experiential avoidance, and psychological inflexibility (Bond et al., 2011). Higher scores indicate experiential avoidance, lower scores show more acceptance and psychological flexibility state. AAQ-II is a seven-item one-factor structure with 7-point Likert style scale and respondents rate items from 1 ("never true") to 7 ("Always true"). AAQ-II was developed by Bond and colleagues and Turkish validity and reliability study of the scale was conducted by Ulusoy et al. (2016).

Maslach Burnout Inventory (MBI): The 22-item scale consisting of emotional exhaustion (EE), depersonalization (DP) and personal fulfillment (PF) subscales under the heading of burnout was developed by Maslach and Jackson (1981). The Turkish validity and reliability study of the scale was made by Ergin (1992). In the Turkish adaptation of the scale, 7-point Likert type of the original scale converted to the 5-point Likert type between "never" – "every day". As the subscales are used as separate parameters, the total score of the scale shows the general burnout level. Increase in scale scores indicates a high level of burnout. During the evaluation of personal achievement subscale items, item scores are reverse-coded to obtain total scores. We consider a high degree of burnout in the case of EE ≥27 points, DP≥10, and PF <33. Moderate burnout will be considered in the case of 26< EE <19 points, 6< DP <9 points, and 34< PF <39 points. Low levels will be considered for EE ≤18 points, DP≤5 points, and PF ≥40 points (Gómez-Gascón et al., 2013).

Statistical Analysis

All variables were screened for the accuracy of data entry, missing values, and homoscedasticity using SPSS 20. The data had less than 5% of missing items, and no pattern was detected. Descriptive statistic was reported using means and standard deviations for continues variables and frequencies and percentages for categorical variables. Missing data were controlled by visual inspection. The nonparametric Mann-Whitney U test was applied to compare the severity of each symptom between two groups. Relationships between experiential avoidance/ psychological inflexibility (AAQ-II), burnout parameters (MBI) depression, anxiety, distress levels (DASS), age and environmental working conditions (working days, hours and year of professional experience) were calculated using Spearman's rank-order correlation coefficient with a significance level of $p<0.05$. To determine potential risk factors for burnout in participants, multiple linear regression analysis was performed.

RESULTS

Two hundred sixty-one HCWs were participated into the study. Demographic characteristics of all participants are summarized in Table 1; their mean age was 29±9.88 years, majority (78.9%) of them were female, 45.2% of them were married. Physicians consisted 33%, nurses made 40.2%, others HCWs included allied HCWs, technician, clerical staff, administrator, maintenance workers made 26.8% of participants. A hundred fourth-five participants were worked in the front line. One hundred seventy-five HCWs (67%) stated that they had direct contact with COVID-19 cases.

The general analysis of psychological outcomes of overall participations demonstrated that they had higher score for burnout, mild depression, mild anxiety and non-pathological stress level (Table 2). We found depression symptoms in 54.8%, anxiety in 49.4%, stress in 33.3% of participants (Figure 1).

Females had higher score for anxiety, depression, stress, and psychological inflexibility when compared with males (p<0.05), but there was no statistical difference between them in the term of MBI scores. Working in front line or second line did not affect DASS, PI, and MBI scores, whereas when frontline HCWs had direct contact with COVID-19 patients by examining, sampling, nursing or

Table 1: Demographic characteristics of participants (N=261)

	N	(%)
Age (median-SD)	29 (9.88)	-
Gender		
Male	55	21.1
Female	206	78.9
Married status		
Single	143	54.8
Married	118	45.2
Occupation		
Nurse	105	40.2
Physicians	86	33
Other HCW†	70	26.8
Work experience (years)		
1–5	136	52.3
6–10	50	19.2
11–15	29	11.2
>15	45	17.3
Weekly working hours		
<10	2	0.8
11–20	4	1.6
21–40	95	36.3
41–60	128	49.1
61–80	31	11.8
>80	1	0.4
Working position		
Front line (COVID services)	145	56.4
Second-line (Non-COVID s.)	112	43.6
Thought that they have COVID-19 symptoms		
Yes	88	33.7
No	173	66.3
Direct contact with COVID-19 (+) patients		
Yes	175	67.1
No	86	32.9
Working with COVID-19 (+) close colleague staff		
Yes	150	57.4
No	111	42.6
Chronic Disease (HT, DM…)		
Yes	31	11.9
No	230	88.1

†Allied health care professional, technicians, clerical staff, administrator, maintenance worker.
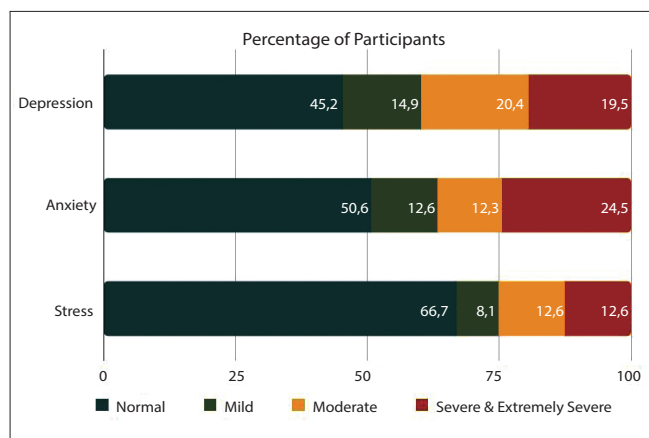
Figure 1. Percentage of participants experiencing psychological impact, stratified by severity by using DASS-21 (N 261).

caring; anxiety, depression, stress and burnout scores was found higher (p=0.03, p=0.03, p=0.02, p=0.007 respectively) than in whom did not have direct contact with patients. DASS, PI and MBI scores had no statistical difference between physicians and allied HCWs, but the mean MBI-EE scores of physicians were significantly higher than the scores of allied HCWs (p=0.009).

Eleven HCWs who had previously had COVID-19 did not demonstrate significant difference in psychological scores than who had not. However, those who thought that they have COVID-19 symptoms during the outbreak had significantly higher mean scores at MBI, AAQ-II, and DASS measures (p<0.001, p=0.003, p<0.001, respectively) than those who did not think so. Being single or married, having education for COVID-19, having close co-workers with COVID-19, having comorbid medical diseases, living with family member with comorbidities were not found to be associated with significant differences at mean scores of MBI, DASS and AAQ-II measures.

The Spearman's correlation analysis demonstrated significant positive correlation between daily working hours,

Table 2: Descriptive statistics

	DASS-D	DASS-A	DASS-St	PI	MBI– EE	MBI-DP	MBI-PF	M-Total
Mean	6.07	4.94	6.63	17.30	24.50	10.10	18.90	50.80
Median	5.00	3.00	6.00	14.00	25.0	9.00	18.00	53.0
Standard deviation	4.72	4.29	4.69	8.99	7.79	4.32	6.18	17.60
Minimum	0.00	0.00	0.00	7.00	9.00	4.00	8.00	0.00
Maximum	21.00	21.00	21.00	49.00	45.00	25.00	40.00	110.00

DASS, AAQ-II and MBI total scores (p<0.001) (Table 3). In contrast, a significant negative correlation was found between the participants' age and work experience with their burnout, depression, anxiety and stress levels (p<0.001, p<0.01). Also, as MIB, DASS scores were found to be significantly correlated with AAQ (p<0.001) But we didn't find any relationship between working days and MBI, DASS and AAQ-II scores.

In the regression analysis where we examine the effect of related parameters (non-psychological and psychological parameters) on burnout we found that independent variables explain 37.5% of the total variance in the burnout level (Table 4). When the effects of predictive variables on the burnout level were examined according to standardized regression coefficient (β), only weekly working hours have a statistically significant effect on burnout (β=0.145, p=0.015) in the working condition parameters. Age, working year and weekly working day did not have any statistically significant effect on burnout. Within the psychological parameters, it was shown that AAQ-II (β=0.175, p=0.01) and DASS-Stress subscale (β=0.24, p=0.03) exhibit statistical significance. DASS-A and DASS-D didn't show a statistically significant effect on burnout when we look at standardized regression coefficient (β) of predictive variables (Table 4).

Table 3: The Spearman's correlation analysis of age, psychological and environmental parameters with burnout levels

	MBI-T	DASS-D	DASS-A	DASS-St	AAQ-II	Age	Working experience	Working days	Daily working hours
MIB-T‡	—								
DASS-D§	0.529***	—							
DASS-A	0.459***	0.762***	—						
DASS-St	0.556***	0.855***	0.769***	—					
AAQ-II¶	0.507***	0.610***	0.608***	0.627***	—				
Age	-0.220***	-0.185**	-0.196**	-0.234***	-0.216***	—			
Years of experience	-0.260***	-0.178**	-0.210***	-0.232***	-0.247***	0.867***	—		
Working days	-0.082	-0.066	-0.079	-0.088	-0.101	0.288***	0.276***	—	
Daily working hours	0.274***	0.177***	0.192**	0.226***	0.097	-0.447***	-0.521***	-0.211***	—

* p<0.05, ** p<0.01, *** p<0.001
‡ MBI-T Maslach Burnout Inventory total scores
§ DASS-D-A-St, depression, anxiety, stress scale-depression-anxiety-stress
¶ AAQ-II, acceptance and action questionnaire-II

Table 4: Multiple regression analysis regarding the predictive effect of age, working conditions and, psychological parameters on Maslach Burnout Inventory

Predictor	Estimate	SE	t	p	Stand. estimate
Intercept	37.48670	5.3752	6.9740	< .001	
Working year	-0.11920	0.1827	-0.6525	0.515	-0.07587
Age	-0.1302	0.1856	-0.701	0.484	-0.0944
Working day	-0.48426	0.5907	-0.8198	0.413	-0.04280
Working hour	0.13665	0.0557	2.4543	0.015	0.14488
DASS-D	0.61082	0.3242	1.8839	0.061	0.21589
DASS-A	-0.13085	0.2960	-0.4421	0.659	-0.04202
DASS-ST	0.69531	0.3266	2.1292	0.034	0.24360
AAQ-II	0.26047	0.1002	2.5998	0.010	0.17498

R=0.612; R²=0.375; F=18.4; p<0.001
DASS-D-A-St, depression, anxiety, stress scale-depression-anxiety-stress
AAQ-II, acceptance and action questionnaire

DISCUSSION

This study showed depression symptoms, anxiety, and stress in HCWs of Pediatric Clinic with frequency 54.8%, 49.4%, and 33.3%, respectively. Three months ago, at the beginning of the outbreak Elbay, Kurtulmus, Arpacioglu and Karadere (2020) conducted a similar study with HCWs of all clinics of our hospital and reported similar results; 64.7% participants had symptoms of depression, 51.6% had anxiety and 41.2% had stress. Even COVID-19 has milder clinical manifestations in children, its' psychological impacts were not lesser on HCWs of Pediatric Clinic. In previous study conducted by Elbay et al, both in Pediatric Clinic and other clinics HCWs did not encounter COVID-19 patients, in this study assessment was made after encountering COVID-19 patients, but this did not change scales scores. In China Lai et al. (2020) enrolled 1257 HCWs in to study and they found that overall, 50.4%, 44.6%, 34.0%, and 71.5% of HCWs reported symptoms of depression, anxiety, insomnia, and distress respectively (Lai et al., 2020).

In our study less distress may be due to the fact that the study was conducted in the Pediatric Clinic managing milder COVID-19 patients, or may be due to late arrival of outbreak to country and slower increase in number of COVID-19 cases. When we look at closer to the time orientation of these three psychological concepts; we see that depression is associated with analytical thinking focusing on the lost goal in the past, in contrast, anxiety typically occurs when an individual faces a threat to self-preservation and more associated with a future orientation but stress is associated with actual aversive conditions (Eysenck & Fajkowska, 2018). HCWs had emerged from a pandemic with many devastating consequences, but there was still a big concern about the COVID-19 cases would increase in the future during our study period (normalization period). For this reason, DASS-D and DASS-A percentage of our study is similar with the two previous study. But in this period, most cases were discharged from hospital, work load of the HCWs' decreased and almost all of the staff returned to the previous working state. Lesser distress outcomes of our study may be due to this normalization time period.

As in many studies, being a woman was associated with experiencing depression symptoms, anxiety, and stress (Luo, Guo, Yu, Jiang, & Wang, 2020). In our study working on frontline was not association with stress disturbance, but direct contact with COVID-19 patients

increased anxiety, depression, stress and burnout. Preti et al. (2020) reviewed 44 studies and concluded that the level of exposure to COVID-19 patients is determinant factor of psychological suffering. Lai et al. (2020) reported that working in the front line, indirectly represent exposure to COVID-19 patients, as independent risk factor for worse mental health outcomes. One study reported different result; Wu et al. (2020) compare burnout frequency among HCWs on the frontline wards and those working in usual wards during the COVID-19 outbreak in Wuhan, China. They found that the group working on the front lines had a lower frequency of burnout and were less worried about being infected compared with the usual wards group. They suggested that directly addressing COVID-19 caused frontline HCWs to have felt a greater sense of control of their situation.

On the other hand, we found no significant differences in MBI, AAQ-II and DASS scores of HCWs working with close colleague with and without COVID-19. This interesting result may be due to the stigmatizing attitudes and xeno-phobic fears claiming foreigners as sources of infection which were reported to be associated with COVID Stress Syndrome (Taylor et al., 2020a, b). These results indicate an interesting area to be investigated in the subsequent studies; the effects of xeno-phobic fears and stigmatization in HCWs' COVID related anxiety. Another factor for this result may be 'avoidance' , the main psychological reaction to stressor factor for establishing and maintaining of anxiety related disorders (Borkovec et al., 2004; Solomon et al., 1954). In anxiety related disorders exposure based therapeutic approaches is the gold-standard interventions (B. J. Sadock &V. A. Sadock, 2011). Coming closer to the feared stimulus, balanced the anxiety reactions in a healthy way, extinction to the feared situation occurs in the basis of systematic desensitization or inhibitory learning mechanism (Craske, Treanor, Conway, Zbozinek, & Vervliet 2014). Investigation of these results through the avoidance and stigmatization mechanism is important.

The significantly higher MBI-EE scores of physicians in contrast to allied HCWs' scores were frequently observed result, most obviously due to physicians work alone at the decision-making level (Rotenstein et al., 2018; West et al., 2016; Panagioti et al., 2018). It is known that burnout is significantly reduced in group work environments especially with shared responsibility and supportive health care systems (West, Dyrbye & Shanafelt, 2018).

During this outbreak while some HCWs worked with shift system, for others this was not possible; such as for physicians of infectious diseases, emergency department, anesthesiology, intensive care units and administrators of departments. This reflected to scales as significant positive correlation between working hours and depression, anxiety, stress, psychological inflexibility and burnout level. Not only for physical well-being but also for mental well-being and to prevent burnout, studies advised limiting physician working hours, promoting a sense of community and core values, and engaging physicians in establishment of new protocols, and psychological support (Bradley & Chahar, 2020).

The finding that the risks of stress, anxiety, depression and burnout decrease as the age and work experience of the participants increase is compatible with many reviews stated that the increased age and professional experience are associated with a decrease in burnout scores (Chuang et al., 2016; Simionato, 2018). It was reported that professional skills and problem-solving ability that increase with experience and age have been reported as the most important potential factors reducing burnout.

Study revealed psychological parameters have more strong relationship with MBI-total scores than the environmental parameters for burnout (Table 3). Environmental and psychological variables explained 37.5% of the total variance in the multiple regression analysis. The "working hours" was the most predictive variable in the environmental variables, whereas "psychological inflexibility" or "experiential avoidance" was the most predictive variable in the psychological variables (Table 4). AAQ-II is the most used measure to assess the psychological inflexibility (PI) and efficacy of acceptance and commitment therapy interventions (Bond et al., 2011). A great deal of research showed that PI and experiential avoidance functioned as a mediator in treatment response in depression, anxiety disorders, chronic pain, nicotine dependence, and psychosis (Bach et al., 2002; Kashdan et al., 2010; McCracken et al., 2005). Also, it was shown that PI have a moderating role in the developmental of burnout syndromes, in the recent studies (Noone et al., 2011; Ruiz et al., 2017; Yao et al. 2013). AAQ-II has been shown the most significant effect on burnout in our regression analysis, consistent with the literature. These results indicate that it may be beneficial to choose psychological flexibility interventions in planned psychotherapies for burnout in the future studies.

Although this study is valuable because of being the first investigation evaluating psychological effects of COVID-19 outbreak on HCWs who care pediatric COVID-19, it has some limitations. First of all, the study is cross-sectional, data was collected in as short as 5 days, there is no longitudinal follow-up of participants. Additionally, not all of the staff cared pediatric cases participated to study, so participants may not exactly represent entire population. The number of female participants was significantly higher than male participants, this may affect analysis especially related to gender. The number of HCWs who had had COVID-19 was too low to show their psychological influence. And finally, to minimize face to face interview, self-reported questionnaires were used, diagnostic assessment could not be made by mental health professional.

CONCLUSIONS

COVID-19 pandemic has major psychological impacts on HCWs. It is crucial to prevent burnout urgently with concrete actions to avoid subsequent potential short-term and long-term adverse effects in HCWs. Special attention should be paid for HCWs exposed to COVID-19, especially clarifying and limiting of working hours need to be implemented. HCWs who are woman, young, or with less working experiences require particular attention, such as healthcare organizations can provide information on managing stress, reducing burnout to support clinicians. Psychological factors showed a stronger relationship with burnout scores compared to environmental factors. Psychological inflexibility, stress levels and working hour shows significant predictive effect on burnout. In subsequent studies, the effect of interventions to improve psychological flexibility in reducing burnout can be investigated.

REFERENCES

Bach, P., & Hayes, S. C. (2002). The use of acceptance and commitment therapy to prevent the rehospitalization of psychotic patients: a randomized controlled trial. Journal of Consulting and Clinical Psychology, 70(5), 1129–1139. https://doi.org/10.1037/0022-006x.70.5.1129

Bai, Y., Lin, C.-.C., Lin, C.-.Y., Chen, J.-.Y., Chue, C.-.M., Chou, P. (2004). Survey of stress reactions among health care workers involved with the SARS outbreak. Psychiatric Services, 55(9), 1055–1057. https://doi.org/10.1176/appi.ps.55.9.1055

Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., …, & Zettle RD. (2011). Preliminary psychometric properties of the acceptance and action questionnaire–II: a revised measure of psychological inflexibility and experiential avoidance. Behavior Therapy, 42(4), 676–688. https://doi.org/10.1016/j.beth.2011.03.007

Borkovec, T. D., Alcaine, O., & Behar, E. (2004). Avoidance theory of worry and generalized anxiety disorder. In: Heimberg, C. L. Turk, & D. S. Mennin (Eds.), Generalized Anxiety Disorder: Advances in Research and Practice, (p. 77–108). The Guliford Press.

Bradley, M., & Chahar, P. (2020). Burnout of healthcare providers during COVID-19. Cleveland Clinic Journal of Medicine, 1–3. https://doi.org/10.3949/ccjm.87a.ccc051

Chen, Q., Liang, M., Li, Y., Guo, J., Fei, D., Wang, L, …, & Zhang, Z. (2020). Mental health care for medical staff in China during the COVID-19 outbreak. The Lancet Psychiatry, 7(4), e15–e16. https://doi.org/10.1016/S2215-0366(20)30078-X

Chuang, C. H., Tseng, P. C., Lin, C. Y., Lin, K. H., & Chen, Y-Y. (2016). Burnout in the intensive care unit professionals: A systematic review. Medicine, 95(50), e5629. https://doi.org/10.1097/MD.0000000000005629

WHO. (2020). Coronavirus disease (COVID-19) situation report - 142. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200610-covid-19-sitrep-142.pdf?sfvrsn=180898cd _4

Craske, M. G., Treanor, M., Conway, C. C., Zbozinek, T., & Vervliet, B. (2014). Maximizing exposure therapy: An inhibitory learning approach. Behaviour Research and Therapy, 58, 10–23. https://doi.org/10.1016/j.brat.2014.04.006

Elbay, R. E., Kurtulmus, A., Arpacıoglu, S., Karadere, E. (2020). Depression, anxiety, stress levels of physicians and associated factors in Covid-19 pandemics. Psychiatry Research, 290, 113130. https://doi.org/10.1016/j.psychres.2020.113130

Ergin, C. (1992). Doktor ve hemşirelerde tükenmişlik ve Maslach Tükenmişlik Ölçeğinin uyarlanması. Ankara: Türk Psikologlar Derneği Yayınları, 143–154.

Eysenck, M. W., & Fajkowska, M. (2018). Anxiety and depression: toward overlapping and distinctive features. Cognition and Emotion, 32(7), 1391–1400. https://doi.org/10.1080/02699931.2017.1330255

Gómez-Gascón, T., Martín-Fernández, J., Gálvez-Herrer, M., Tapias-Merino, E., Beamud-Lagos, M., & Mingote-Adán, J.C. (2013). Effectiveness of an intervention for prevention and treatment of burnout in primary health care. BMC Family Practice, 14, 173. https://doi.org/10.1186/1471-2296-14-173

Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. Clinical Psychology Review 30(7), 865–878. https://doi.org/10.1016/j.cpr.2010.03.001

Koh, D. (2020). Occupational risks for COVID-19 infection. Occupational Medicine, 70(1), 3–5. https://doi.org/10.1093/occmed/kqaa036

Lai, J., Simeng, M. A., Wang, Y., Cai, Z., Hu, J., Wei, N., …, & Hu S. (2020). Factors Associated with Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. JAMA Network Open 2, 3(3), e203976. https://doi.org/10.1001/jamanetworkopen.2020.3976

Lee, B., & Raszka Jr., W. V. (2020). COVID-19 Transmission and Children: The Child is not to blame. Pediatrics, 146(2), e2020004879. https://doi.org/10.1542/peds.2020-004879

Liu, X., Kakade, M., Fuller, C. J., Fan, B., Fang, Y., Kong, J., & Wu P. (2012). Depression after exposure to stressful events: lessons learned from the severe acute respiratory syndrome epidemic. Comprehensive Psychiatry 53(1), 15–23. https://doi.org/10.1016/j.comppsych.2011.02.003

Lloyd, C., King R., & Chenoweth, L. (2011). Social work, stress and burnout: A review. Journal of Mental Health, 11(3), 255–265. https://doi.org/10.1080/09638230020023642

Lovibond PF, & Lovibond SH. (1995). The structure of negative emotional states: com-parison of the Depression Anxiety Stress Scales (DASS) with the beck depression and anxiety inventories. Behaviour Research and Therapy 33(3), 335–343. https://doi.org/10.1016/0005-7967(94)00075-u

Lu, Y., Li, Y., Deng, W., Liu, M., He, Y., Huang, L., …, & Du, H. (2020) Symptomatic Infection is Associated with Prolonged Duration of Viral Shedding in Mild Coronavirus Disease 2019: A Retrospective Study of 110 Children in Wuhan. Pediatric Infectious Disease Journal, 39(7), e95–e99. https://doi.org/10.1097/INF.0000000000002729

Luo, M., Guo, L., Yu, M., Jiang, W., & Wang, H. (2020). 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, 291, 113190. https://doi.org/10.1016/j.psychres.2020.113190

Mak, I. W. C., Chu, C. M., Pan, P. C., Yiu, M. G. C., Chan, V. L. (2009). Long-term psychiatric morbidities among SARS survivors. General Hospital Psychiatry 31(4), 318–326. https://doi.org/10.1016/j.genhosppsych.2009.03.001

Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. Journal of Occupational Behavior, 2(2), 99–113. https://doi.org/10.1002/job.4030020205

McCracken, L. M., Vowles, K. E., & Eccleston C. (2005). Acceptance-based treatment for persons with complex, long standing chronic pain: a preliminary analysis of treatment outcome in comparison to a waiting phase. Behaviour Research and Therapy, 43(10), 1335–1346. https://doi.org/10.1016/j.brat.2004.10.003

Mehta, N. S., Mytton, O. T., Mullins, E. W. S., Fowler, T. A., Falconer, C. L., Murphy, O. B., …, & Nguyen-Van-Tam, J.S. (2020). SARS-CoV-2 (COVID-19): What do we know about children? A systematic review. Clinical Infectious Diseases, 71(9), 2469–2479. https://doi.org/10.1093/cid/ciaa556

Noone, S. J., & Hastings, R. P. (2011). Values and psychological acceptance as correlates of burnout in support staff working with adults with intellectual disabilities. Journal of Mental Health Research in Intellectual Disabilities, 4(2), 79–89. https://doi.org/10.1080/19315864.2011.582230

Panagioti, M., Geraghty, K., Johnson, J., Zhou, A., Panagopoulou, E., Chew-Graham, C., ..., & Esmail, A. (2018). Association between physician burnout and patient safety, professionalism, and patient satisfaction: a systematic review and meta-analysis. JAMA Internal Medicine, 178(10), 1317–1330. https://doi.org/10.1001/jamainternmed.2018.3713

Preti, E., Mattei, V. D., Perego, G., Ferrari, F., Mazzetti, M., Taranto, P., …, & Calati, R. (2020). The Psychological Impact of Epidemic and Pandemic Outbreaks on Healthcare Workers: Rapid Review of the Evidence. Current Psychiatry Reports, 22(8), 43. https://doi.org/10.1007/s11920-020-01166-z

Puolakanaho, A., Tolvanen, A., Kinnunen, S. M., & Lappalainen, R. (2020). A psychological flexibility-based intervention for Burnout: A randomized controlled trial. Journal of Contextual Behavioral Science, 15, 52–67. https://doi.org/10.1016/j.jcbs.2019.11.007

Ramaci, T., Bellini, D., Presti, G., & Santisi, G. (2019). Psychological Flexibility and Mindfulness as predictors of individual outcomes in hospital health workers. Frontiers in Psychology, 10, 1302. https://doi.org/10.3389/fpsyg.2019.01302

Rotenstein, L. S., Torre, M., Ramos, M. A., Rosales, R. C., Guille, C., Sen, S., …, & Mata, D. A. (2018). Prevalence of burnout among physicians: a systematic review. JAMA, 320(11), 1131–1150. https://doi.org/10.1001/jama.2018.12777

Ruiz, F. J., & Odriozola-González, P. (2017). The Predictive and moderating role of psychological flexibility in the development of job burnout. Universitas Psychologica, 16(4), 282–289. https://doi.org/10.11144/javeriana.upsy16-4.pmrp

Sadock, B. J., & Sadock, V. A. (2011). Kaplan and Sadock's Synopsis of Psychiatry: Behavioral Sciences/Clinical Psychiatry. Lippincott Williams & Wilkins.

Sarıçam, H. (2018). The psychometric properties of Turkish version of Depression Anxiety Stress Scale-21 (DASS-21) in health control and clinical samples. Journal of Cognitive-Behavioral Psychotherapy and Research, 7, 19–30. https://doi.org/10.5455/JCBPR.274847

Simionato, G. K., & Simpson, S. (2018). Personal risk factors associated with burnout among psychotherapists: A systematic review of the literature. Journal of Clinical Psychology 74(9), 1431–1456. https://doi.org/10.1002/jclp.22615

Solomon, R. L., & Wynne, L. C. (1954). Traumatic avoidance learning: the principles of anxiety conservation and partial irreversibility. Psychological Review, 61(6), 353–385. https://doi.org/10.1037/h0054540

Taylor, S., Landry, C. A., Rachor, G. S., Paluszek, M. M., & Asmundson, G. J. (2020). Fear and avoidance of healthcare workers: An important, under-recognized form of stigmatization during the COVID-19 pandemic. Journal of Anxiety Disorders, 75, 102289. https://doi.org/10.1016/j.janxdis.2020.102289

Taylor, S., Landry, C., Paluszek, M., Fergus, T. A., McKay, D., & Asmundson, G. J. (2020). Development and initial validation of the COVID Stress Scales. Journal of Anxiety Disorders, 72, 102232. https://doi.org/10.1016/j.janxdis.2020.102232

Ulusoy, S., Iskin, M., Esen, F. B., Burhan, H. S., Karadere, M. E., & Yavuz, F. (2016). Turkish version of Acceptance and Action Questionnaire-II (AAQ-II): A reliability and validity analysis in clinical and non-clinical samples. Bulletin of Clinical Psychopharmacology, 26(4), 397–408. https://doi.org/10.5455/bcp.20160223124107

West, C. P., Dyrbye, L. N., & Shanafelt, T. D. (2018). Physician burnout: contributors, consequences and solutions. Journal of Internal Medicine, 283(6), 516–529. https://doi.org/10.1111/joim.12752

West, C. P., Dyrbye, L. N., Erwin, P. J., & Shanafelt, T. D. (2016). Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. The Lancet, 388(10057), 2272–2281. https://doi.org/10.1016/S0140-6736(16)31279-X

Wu, Y., Wang, J., Luo, C., Hu, S., Lin, X., Anderson, A. E., …, & Qian, Y. (2020). A Comparison of Burnout Frequency Among Oncology Physicians and Nurses Working on the Frontline and Usual Wards During the COVID-19 Epidemic in Wuhan, China. Journal of Pain and Symptom Management, 60(1), e60–e65. https://doi.org/10.1016/j.jpainsymman.2020.04.008

Yao, Y., Yao, W., Wang, W., Li, H., & Lan, Y. (2013). Investigation of risk factors of psychological acceptance and burnout syndrome among nurses in China. International Journal of Nursing Practice, 19(5), 530–538. https://doi.org/10.1111/ijn.12103

Yung, C. F., Kam, K. Q., Nadua, K. D., Chong, C. Y., Tan, N. W. H., Li, J., …, &, Ng, K. C. (2020). Novel coronavirus 2019 transmission risk in educational settings. Clinical Infectious Diseases, 72(6), 1055–1058. https://doi.org/10.1093/cid/ciaa794

Zhang, X., Song, Y., Jiang, T., Ding, N., & Shi, T. (2020). Interventions to reduce burnout of physicians and nurses: An overview of systematic reviews and meta-analyses. Medicine (Baltimore), 99(26), e20992. https://doi.org/10.1097/MD.0000000000020992