



Comparative Study of Occupational Burnout and Job Stress of Frontline and Non-Frontline Healthcare Workers in Hospital Wards during COVID-19 Pandemic

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Abstract

Background: Paying attention to the issue of mental health in the workplace, especially with current pandemic conditions of COVID-19 is of significant importance. Therefore, this study aimed to determine the factors affecting occupational burnout among health care center staff during the pandemic of coronavirus infection.

Methods: The present study was a case-control study carried out in the first half of the year 2020 on medical staff working in hospitals in Tehran. The sample size was 324 individuals, including 175 employees working in general (non-COVID) wards and 149 people working in COVID-19 wards. Demographic characteristics questionnaire and two standard questionnaires of Maslach Burnout Inventory and Parker and DeCotiis Job Stress Scale were distributed.

Results: Total score of job stress and its two dimensions (time and pressure) had a significant relationship with different levels of occupational burnout. Logistic regression analyses showed significant relations between job stress with emotional exhaustion (95% CI, 1.11-1.19, OR=1.15) and depersonalization. Participants in both wards experienced statistically significant increasing trends given the different components of occupational burnout concurrently by increasing their total stress score.

Conclusion: Hospital staff's levels of stress and occupational burnout regardless of where they worked (COVID-19 wards or general wards) were not significantly different and existed among the members of both groups. On the other hand, job stress and its dimensions (time pressure and anxiety) had a significant relationship with the main dimensions of occupational burnout.

Keywords: COVID-19; Burn out; Healthcare workers; Job stress



Introduction

According to WHO, viral diseases are still a serious public health issue (1). The COVID-19 infection first broke out in Dec 2019 in China (2). This infection caused by SARS-CoV-2 has spread very quickly in all countries around the world (3) (4).

One of the main impacts of COVID-19 pandemic is its psychological effects on the healthcare workers and patients suffering from COVID-19 along with their family members and relatives (5). The existence of various clinical manifestations with different intensities in patients infected with COVID-19 has increased the number of referrals and hospitalizations in healthcare centers, and therefore the working environment for medical staff is now high-risk, meaning that not only they but also their families are also exposed to the risk of COVID-19 infection, and many deaths among healthcare staff and their families have been reported worldwide (6).

The staff at health centers are at the forefront of the battle against this virus. This fact and the persistence of the COVID-19 pandemic put the staff at health centers at the risk of occupational burnout (7). Occupational burnout rate among nurses in Iran is typically above average, even higher than the global average. Considering psychological, economic, and familial pressures caused by the onset of the disease and the outbreak itself, psychological problems such as occupational burnout will reach a higher degree (8).

In the current pandemic situation, the working environment for the employees of the health centers of the country is associated with high job stress and low control and has caused psychological and physical distress. Such work environments eventually deplete people's emotional and psychological resources and exacerbate the symptoms of occupational burnout (9).

Occupational burnout on the one hand impacts medical staff members' job performance in multiple forms: reduced service quality, increased medical errors, prolonged recovery time of patients, and reduced patient satisfaction. Burnout

additionally may contribute to healthcare workers increased depression and suicidal ideation, increased likelihood of substance abuse, reduced self-care and increased risk of getting involved in vehicle accidents (10).

Paying attention to the issue of mental health in the workplace (meaning resisting the emergence of mental problems and behavioral disorders among employees and improving the psychological climate) especially with current pandemic conditions of COVID-19 is of significant importance. Therefore, this study aimed to determine the factors affecting occupational burnout among health care center staff during the pandemic of coronavirus infection in several university referral hospitals for hospitalized patients.

Methods

The present study was a case-control study carried out in the first half of the year 2020 on medical staff working in hospitals in Tehran. In this study, the rate of occupational burnout and job stress among medical staff working in COVID-19 wards as well as employees working in non-COVID wards during the COVID-19 pandemic was investigated.

After the approval of this study by the University Ethics Committee under the registration number: IR.TUMS.VCR.REC.1399.019, the researcher attended the study site (Tehran hospitals) and after identifying the treatment staff, entered them into the study by random sampling method. Regarding the sampling formula, the sample size was 324 individuals, including 175 employees working in general (non-COVID) wards and 149 people working in COVID-19 wards. The objectives of the study were explained to all participants, and all of them took part in the study after signed consent was sought from them. All study participants were assured that their information in the questionnaire was confidential and that the researcher would not use this data in other studies.

Demographic characteristics questionnaire and two standard questionnaires of Maslach Burnout Inventory (MBI) (1985) (11), and Parker and DeCotiis Job Stress Scale (1983) (12) were distributed and they take their time responding to the questions carefully.

Maslach Standard Burnout Inventory: This is a 22-item Likert scale that has been developed in two dimensions of frequency ratings from never=0 to daily=6 and intensity from never=0 to very high=6 and measuring three-component scales: emotional exhaustion (items 1-2-3-10-11-12-17-18-19), depersonalization (items 7, 9, 16, 20 and 22) and personal accomplishment (items 4-5-6-8-13 Includes -14-15-21). The reliability and validity of this questionnaire were confirmed in Moalemi's study on the nurses with Alpha Cronbach higher than 0.7 (13).

Parker and DeCotiis Job Stress Scale: This scale is comprised of 13 items scored on a 5-point Likert scale (ranging from strongly disagree=1 to strongly agree=5) and consists of two dimensions of time pressure and job anxiety. The reliability and validity of this scale were confirmed in Arshadi's study with a value equal to 0.90 (14).

Statistical Analysis

Data were inserted to SPSS software (ver. 24, Chicago, IL, USA) and were analyzed at a significance level of 0.05. The characteristics of participants were presented as mean \pm SD for continuous variables, and frequency and percent for categorical variables. Differences in interested variables were assessed using the Student's T-test between two kinds of wards. A one-way ANOVA test was applied to compare numeric variables among more than two groups (Patients were divided by tertile of burnout score). Chi-square index was utilized to assess differences between categorical variables. Linear regression models as assessment trends were fitted separately for frontline and other wards and p-values for trend in each group were reported. The interaction between the two kinds of wards and each category of stress scores were checked in a separate model by entering interaction effects in a single model

including both frontline and others wards. Finally, to assess correlation between job stress and different domains of burnout, logistic regression analysis was implemented and then crude and adjusted odds ratio were reported.

Results

Total research participants were 324 healthcare workers, comprising 253 female (78.1%), and 71 male individuals (21.9%) with a mean age \pm standard deviation (SD) of 38.12 ± 8.42 years. Overall, 122 (37.7%) of the individuals were nurses and doctors and 202 (62.3%) were other workers and employees who provided services for the patients in the wards. Overall, 149 (45.9%) were working in inpatients wards of COVID-19 as frontline workers and 175 (54.0%) at general wards or triage and clinics. Additional description of the sample is provided in Table 1. Table 2 shows a correlation between occupational burnout with demographic characteristics and job stress. In unadjusted analysis, total score of job stress and its two dimensions (time and pressure) had a significant relationship with different levels of occupational burnout ($P < 0.0001$). However, there was no significant relationship between job type, working section (in frontline or general wards) and occupational burnout (Table 2). Logistic regression analyses showed significant relations between job stress with emotional exhaustion (95% CI, 1.11-1.19, OR=1.15) and depersonalization (95% CI, 1.03-1.09, OR=1.06), after adjustment for gender, age and marital status. Odds ratios, adjusted for age, gender and marital status are presented in Table 3.

Participants in both wards experienced statistically significant increasing trends given the different components of occupational burnout concurrently by increasing their total stress score (All P for trend < 0.0001).

By increasing job stress, the changes in different components of occupational burnout did not show any difference between these two kinds of wards (P -value for interaction was not significant).

Table 1: Characteristics of study population based on ward of working

<i>Variable</i>	<i>Total (n=324)</i>	<i>Frontline ward (Direct corona patients) (n=149)</i>	<i>Usual ward (without corona patients) (n=175)</i>	<i>P-value</i>
Age, year (Mean ± SD)*	38.12 ± 8.42	37.70±8.64	38.41±8.24	0.514
Gender				
Men	71 (21.9)	41 (27.5)	30 (17.1)	0.024
Women	253 (78.1)	108 (72.5)	145 (82.9)	
Marital status				
Married	240 (74.1)	103 (69.1)	137 (78.3)	0.061
Single/separated/divorced	84 (25.9)	46 (30.9)	38 (21.7)	
Occupation type				
Nurse / Medicine	122 (37.7)	100 (67.1)	22 (12.6)	<0.0001
Others	202 (62.3)	49 (32.9)	153 (87.4)	
Years of work experiences (mean ± SD)	1.73 ± 0.44	1.53± 0.49	1.90 ± 0.29	<0.0001
job stress, total (mean ± SD)	34.83±15.01	35.75±18.49	34.04± 11.21	0.743
Job stress, time (mean ± SD)	20.79±6.66	21.20±5.66	20.44±7.40	0.310
Job stress, pressure (mean ± SD)	14.03 ± 11.88	14.55±11.81	13.59± 4.55	0.468
Burn out, total score (mean ± SD)	66.32 ±17.88	66.57± 16.74	66.10±18.85	0.812
Emotional exhaustion score, (mean ± SD)	23.42±13.30	23.22±12.49	23.58± 13.98	0.808
Depersonalization score, (mean ± SD)	6.64±6.79	7.41±6.01	6± 5.10	0.063
Accomplishment score, (mean ± SD)	36.25 ± 9.95	35.93 ± 9.81	36.51± 10.09	0.605
Emotional exhaustion ≥ 27	133 (41)	62 (41.6)	71 (40.6)	0.850
Depersonalization ≥ 10	94 (29)	53 (35.6)	41 (23.4)	0.016
Accomplishment ≤ 33	127 (39.2)	65 (43.6)	62 (35.4)	0.132

All values are reported as frequency (percent) and mean ± SD

Table 2: Characteristics of study population based on burn out score (tertile)

<i>Variable</i>	<i>Overall burn out according tertile (n=324)</i>			<i>P-value</i>
	<i>First tertile (low) (<57)</i>	<i>Second tertile (moderate) (57-71)</i>	<i>Third tertile (severe) (>71)</i>	
Burn out total score	38.89±8.97	38.28± 8.50	37.15± 7.69	0.310
Age, year (Mean ± SD)*				
Gender				
Men	31 (28.2)	27 (24.8)	13 (12.4)	0.013
Women	79 (71.8)	82 (75.2)	92 (87.6)	
Marital status				
Married	88 (80)	83 (76.1)	69 (65.7)	0.048
Single/separated/divorced	22 (20)	26 (23.9)	36 (34.3)	
Occupation type				
Nurse / Medicine	39 (35.5)	43 (39.4)	40 (38.1)	0.825
Others	71 (64.5)	66 (60.6)	65 (61.9)	
Type of wards				
Usual wards	62 (56.4)	57 (52.3)	56 (53.3)	0.821
Frontline wards	48 (43.6)	52 (47.7)	49 (46.7)	
Years of work experiences (mean ± SD)	1.76±0.41	1.69± 0.46	1.73± 0.44	0.498
job stress, total (mean ± SD)	28.66± 9.01	33.56± 7.89	40.69± 10.14	<0.0001
Job stress, time (mean ± SD)	17.24± 5.81	20.66±5.09	24.63± 6.86	<0.0001
Job stress, pressure (mean ± SD)	11.41±3.66	12.89±3.57	17.96±19.68	<0.0001
Emotional exhaustion score, (mean ± SD)		21.11±8.13	37.40±10.07	<0.0001
Depersonalization score, (mean ± SD)	12.35±6.67	5.34±5.01	12.03±7.40	<0.0001
Accomplishment score, (mean ± SD)	2.79± 3.85	37.73±10.05	37.83±9.72	<0.0001

All values are reported as frequency (percent) and mean ± SD

Table 3: Unadjusted and adjusted odds ratio for stress and overall and also each dimension of burnout in logistic regression models

<i>Outcomes</i>	<i>Overall Burnout * (Moderate and Severe)</i>		<i>Emotional Exhaustion (Higher than ≥ 27)</i>		<i>Depersonalization (Higher than ≥ 10)</i>		<i>Personal Accomplishment (Lower than ≤ 33)</i>	
	Number of events	214	133	94	127			
	Odd ratio (95%CI)	P-value	Odd ratio (95%CI)	P-value	Odd ratio (95%CI)	P-value	Odd ratio (95%CI)	P-value
Job stress, total score								
Unadjusted model	1.11 (1.07-1.14)	<0.0001	1.16 (1.11-1.20)	<0.0001	1.06 (1.03-1.08)	<0.0001	1.02 (0.99-1.04)	0.067
Adjusted model	1.11 (1.07-1.14)	<0.0001	1.15 (1.11-1.19)	<0.0001	1.06 (1.03-1.09)	<0.0001	1.02 (1.00-1.04)	0.052
Job stress, time score								
Unadjusted model	1.17 (1.12-1.23)	<0.0001	1.24 (1.17-1.31)	<0.0001	1.08 (1.0-1.12)	<0.0001	1.03 (0.99-1.06)	0.079
Adjusted model	1.17 (1.12-1.23)	<0.0001	1.24 (1.17-1.31)	<0.0001	1.08 (1.04-1.13)	<0.0001	1.03 (0.99-1.07)	0.065
Job stress, pressure score								
Unadjusted model	1.21 (1.13-1.29)	<0.0001	1.33 (1.24-1.44)	<0.0001	1.15 (1.08-1.22)	<0.0001	1.04 (0.99-1.10)	
Adjusted model	1.21 (1.13-1.29)	<0.0001	1.34 (1.24-1.44)	<0.0001	1.16 (1.09-1.23)	<0.0001	1.05 (0.99-1.11)	

*Moderate and severe in tertile was defined as burn out outcome in participants
 Unadjusted model: without any adjustment
 Adjusted model: adjusted for age, sex, marital status

Discussion

This study evaluated the issues of stress and occupational burnout among the medical staff of referral hospitals for patients infected with COVID-19 in the town of Tehran during the COVID-19 pandemic. The main objective of this study was to determine the role of various factors predicting occupational burnout with emphasis on the two factors of workplace and job stress. Numerous studies have been conducted among different segments of healthcare workers respecting the level of stress, depression, and anxiety during the COVID-19 pandemic, and different findings have been produced depending on

whether the employees are frontline workers or engaged in specific fields such as anesthesia or surgery. Finally, increased depression and anxiety have been observed in all studies (15).

In a study conducted on occupational burnout during the COVID-19 pandemic, the rate of burnout and job stress among frontline nurses was higher than those working in general wards. The employment status of people working in the health care system, hospital resources, experiences in taking care of patients infected with COVID-19 and job stress were significantly associated with occupational burnout. However, in the regression analysis of this study, job stress

was the only factor associated with work burnout among frontline nurses (16).

In the current study, no significant difference was observed between the two frontline groups and the staff at general wards regarding job stress and occupational burnout. This finding was somewhat unexpected. An explanation for this finding can be attributed to the fact that new strategies have been communicated to all personnel and that the working conditions of frontline and non-front line personnel have been equally affected. Another explanation is that people who work in clinics or triage or general wards are skeptical about the referred patients being infected with COVID-19 which increases their stress level. On the other hand, personnel working in COVID-19 inpatient wards have a higher level of access to personal protective equipment (PPE), which increases their sense of security and reduces their stress. Another factor that could play an important role in this finding was that other known risk factors for stress and occupational burnout such as years of work experience and marital status were not significantly different between the two groups (17).

After having studied frontline and general ward staff - oncologists and nurses, occupational burnout was lower among the frontline staff. The reason for the lower incidence of burnout among frontline staff, which is an unconventional finding, has been interpreted as that personnel working in the frontline at the time of COVID-19 pandemic have come to believe that the problem is very serious, so they need to devote all their energy into fighting this virus. Besides new goals and strategies are quite clear-cut and understandable to them. In contrast, general ward personnel has no control over new strategies and new decisions, and at the same time they are not justified, therefore a change in working conditions will expose them to more occupational burnout. On the other hand, cancer patients are prone to infections and their routine attending general wards are more, consequently, job stress and occupational burnout among the staff in these wards grow (17).

The findings of the current study showed that job stress had a negative predictive effect on a total score of occupational burnout, and subscales of emotional exhaustion and depersonalization but not personal accomplishment.

The results of the present study are in line with another study that demonstrated there existed a significant correlation between job stress and occupational burnout. On the other hand, as in the study of university staff, we did not find a significant relationship between job stress and personal accomplishment (17, 18). This conclusion may be in line with some previous research and theories introduced emotional exhaustion and depersonalization as the main dimensions and personal accomplishment as a sub-dimension of occupational burnout. In fact, according to this research, personal accomplishment is not a reaction to stressful situations. On the contrary, it is a personal resource to deal with occupational burnout and job stress, and since it is considered as an outcome, it acts independently (19, 20). Moreover, Lopez-Nunez MI in their study of investigating the relationship between workload and burnout and psychological capacity discovered a stronger association between personal accomplishment and self-efficacy compared to other dimensions of occupational burnout. These researchers introduced personal accomplishment as a personality construct with an independent role and they held this belief that people with higher degrees of personal accomplishment have better ability coping with work stress (21). However, more research is needed to clarify this aspect of occupational burnout.

Conclusion

Hospital staff's levels of stress and occupational burnout regardless of where they worked (COVID-19 wards or general wards) were not significantly different and existed among the members of both groups. On the other hand, job stress and its dimensions (time pressure and anxiety) had a significant relationship with the main dimensions of occupational burnout. This means

that with an increase in the level of job stress, occupational burnout has also risen among medical staff.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Conflict of interest

The authors declare that there is no conflict of interests.

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