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Psychological impacts of the COVID-19 on health care providers

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Abstract:

BACKGROUND: Psychological distress, functional impairment, reduced quality of life, and subjective well-being were the most common negative psychological effects during the COVID-19 outbreak. The present study was to investigate the impact of job stress, hospital resources, and fear of infection on job burnout of medical staff in Iran during the Covid-19 pandemic.

MATERIALS AND METHODS: In this cross-sectional study, 223 hospital staff from several public and private hospitals in Tehran and Mazandaran provinces, selected through convenience sampling. The questionnaire included the validated “Maslach Burnout Inventory (MBI)”, “job stress scale (Parker and DeCotiis, 1983)”, and the questions about “hospital resources”, and “fear of infection” developed by the researcher were used to collect data. Data were analyzed by correlation and regression methods using SPSS software.

RESULTS: The results revealed that there was a significant difference in the scores on the burnout scale, in the dimension of emotional exhaustion, but the differences were not significant in the dimensions of depersonalization and self-accomplishment. Also, job stress and fear of infection significantly correlated with job burnout in the dimensions of emotional exhaustion and personal-accomplishment. However, the correlation between the adequacy of hospital resources and job burnout in these two dimensions was not significant. None of the three variables of the study showed a significant correlation with the dimension of depersonalization.

CONCLUSION: It is essential to consider the package of psychological interventions which, primarily includes finding the sources of stress to resolve them through stress management programs, based on education and training in stress coping and management strategies.

Keywords:

COVID-19, health care providers, job burnout, psychological impacts

Introduction

In the end of December 2019, COVID-19 outbreak, caused by the novel coronavirus, was announced in China for the first time. In December 2019, the first case of the COVID-19 epidemic was discovered in China.

The fatal disease rapidly spread worldwide and became a pandemic which has affected millions of lives.^[1]

The Islamic Republic of Iran’s Ministry of Health, reported the first confirmed cases

of COVID-19 on 19 February 2020. The disease has since spread very rapidly to all 31 provinces of the country. With the hospitalization of thousands of Iranians in the designated hospitals, physicians and nurses who were at the forefront of the fight against the novel coronavirus disease were not only at high risk of infection but also have reported impacts of the pandemic on their psychological well-being.^[2]

A correlation between the outbreak of infectious diseases and a host of psychological consequences have been reported by many researchers. Psychological distress, depression, worry, anxiety about

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being infected, functional impairment, reduced quality of life, drug abuse and negative effects on subjective well-being are the most frequently reported negative psychological consequences.^[3-9]

Dealing with the unknown nature of the disease, increase in occupational demands including organizational and social demands leading to excessive work hours, inadequate PPE (personal protective equipment), over-enthusiastic media coverage, and feeling of being inadequately supported, as well as insufficient hospital resources put medical workers under enormous pressure.^[2,10]

Also, the challenge of caring for infected patients due to fear of infection transmission, preventing families of patients from visiting their dying relatives, as well as sense of empathy of health care professionals could make them experience trauma which can lead to post-traumatic stress disorder (PTSD) and burnout.^[11] According to the Job Demand Resource Model (JD-R), increase in occupational demands during poor resources availability can cause job burnout as a negative outcome, which was negatively associated with the stability of the frontline workforce.^[11,12] Burnout appeared in three dimensions which include: emotional exhaustion, depersonalization, and reduced personal accomplishment. The most important indicator of burnout among the three dimensions is emotional exhaustion, which is a state of feeling overextended and emotionally overwhelmed. In depersonalization, healthcare workers develop an indifferent attitude toward their patients, which is a direct consequence increased work pressure. A reduced sense of personal accomplishment is a state when an individual feels his/her goals are under achieved and perceives a lack of competence at work.^[13,14]

In our previous study, medical staff who were on the front lines of the fight against Covid-19 stated that the conditions caused by Covid-19 were completely different and surprising because they had never experienced such conditions before and the three factors of occupational stress, hospital resources and Job burnout was one of the effective factors introduced by medical staff.^[2] The conducted studies have only examined the relationship between job burnout and job stress. In this study, we want to know if the factors of fear of infection, hospital resources and job stress have a significant effect on job burnout levels or not? whether there is a significant difference between the three groups of participants with different levels and dimensions of burnout for the research variables (job stress, fear of virus and satisfaction with hospital resources). However, due to the lack of research resources in this field, researchers decided to design a study aimed at investigating these effects on employees.

Material and Methods

Study design

The present study is a cross-sectional study conducted to examine the role of job stress, fear of infection and hospital resources on job burnout of hospital staff who were at the forefront of the fight against Covid-19 during the outbreak in Tehran and Mazandaran hospitals between November 2020 and January 2021.

Setting and sample

Participants were selected from hospitals designated for the treatment of Covid-19 patients by using the convenience sampling method. The study population included all male and female staff in governmental and private hospitals designated for the treatment of these patients in Tehran and Mazandaran provinces. Due to the point that the study is a correlation study, the formula $N \geq 50 + 8M$ was used to calculate the sample size, where M is the number of independent variables.^[15] In this study, we investigated three independent variables. Consequently, 74 people were considered as the sample size for the study. To increase the research power, questionnaires were distributed to 223 medical staff. Unanswered questionnaires were excluded. A total of 220 questionnaires were used as valid data in this study.

Ethical consideration

The Ethics Committee of the Aja University of Medical Sciences approved this study (IR.AJAUMS.REC.1399.209). All participants in the study filled the informed written consent. The information of the questionnaires was kept completely confidential.

Measurements

Job Burnout Maslach Burnout Inventory (MBI): The MBI contains 22 items classified into three different dimensions. The MBI burnout dimensions include Emotional Exhaustion (nine items), Depersonalization (five items), and Personal Accomplishment (eight items). The MBI items are scored on a six-point scale: zero (never) to six (every day). For both Emotional Exhaustion and Depersonalization subscales, higher mean scores are indicative of a higher degree of experienced burnout. Contrary, for the Personal Accomplishment subscale, lower mean scores correspond to higher degree of burnout.^[16]

Validity and reliability of the MBI have been confirmed in several studies in Iran. In a recent study, Cronbach's alpha was reported as 0.83 for the total inventory, 0.88 for EE, 0.76 for DP, and 0.79 for PA.^[17]

To match the questionnaire with the conditions of the coronavirus outbreak, we added the phrase "Since the outbreak of coronavirus" to the beginning of each item. The higher the overall score, the higher the burnout sign.

Job stress

Parker and DeCotiis (1983) scale measured two distinct pressures of job stress, which consists of 12 items scored on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). A high score shows a high level of stress. For limiting the study to job stress related to the coronavirus outbreak, we added the phrase "Since the outbreak of coronavirus" to the beginning of each item. Cronbach's alpha of the scale was 0.90 in the preliminary survey and 0.93 in the main survey^[18] (Kim and Choi, 2016), and in this study, the Cronbach coefficient was considered as 0.87.

Fear of coronavirus infection

The fear of infection scale was prepared previously in a study that investigated nurses' fear during the outbreak of H5N1 avian influenza and MERS-CoV infection, by answering a 10-point visual analogue item: "I am afraid of being infected with coronavirus", A high score means a high fear of coronavirus infection.^[18]

Hospital resources for the treatment of COVID-19

In the current study, the adequacy of hospital resources for the treatment of COVID-19 patients was measured by responding each item to a 4-point scale ranging from 1 (strongly disagree) to 4 (strongly agree), which satisfactory hospital resources indicated with a high score based on previous study. The three items of this scale are as follows: "My hospital is equipped with facilities sufficient for preventing the spread of COVID-19," "My hospital applies the best infection control guideline for preventing the spread of COVID-19," and "My hospital discusses how to prevent COVID-19 regularly". According to experts, this scale has good face and content validity Cronbach's Alpha of the scale was 0.81 in the main survey^[18] and in this study is 0/86.

Data collection

Data were collected from May 4 to July 31, 2020, at the time of coronavirus pandemic and when the disease has not yet been controlled. The researchers visited the four hospitals designated for treating Covid-19 patients. After obtaining permission from the appropriate authorities of each department, the researchers explained the

purpose of study to the participants. After obtaining consent from the participants, the questionnaires were distributed. The completed questionnaires were collected by the researchers. All personal information were kept strictly confidential. Data were analyzed correlation and regression methods using SPSS software.

Results

Among our study population, 140 (63.3%) were females and 79 (35.7%) were males, and the age average of the participants was 35.14 years. Regarding the level of education of the participants, 17 (7.7%) reported a Post-secondary (diploma), 177 (80.1%) had bachelor's degree, 23 (10.4%) had master's degree, and 2 (9%) reported a doctorate degree. Among the participants, 19 (6.8%) were nurse assistants, 165 were nurses, 20 (1.9%) were technicians, and 4 (8.1%) were head nurses.

Participants were divided into three categories: low, moderate and high based on the cut-off point of the burnout scale. The frequency and percentage of participants in these three categories are shown in Table 1.

The mean standard deviation of the job stress scale was 35.95 ± 9.70 , and it was 5.85 ± 3.18 and 6.62 ± 2.48 for the fear of coronavirus infection scale and adequacy of hospital resources for the treatment of coronavirus scale, respectively.

Multivariate analysis of variance was used to examine the research question; whether there is a significant difference between the three groups of participants with different levels and dimensions of burnout for the research variables (job stress, fear of virus and satisfaction with hospital resources). The results of the multivariate tests are shown in Table 2. Based on this table, there was a significant difference in the scores of the scale between the different levels of burnout in the dimension of emotional exhaustion, but the differences were not significant in the dimensions of depersonalization and self-accomplishment.

Table 1: The frequency and percentage of participants in three dimensions of burnout

Variable	Range	Frequency	Percent	Valid percent	Cumulative percent
Emotional exhaustion	Low	92	41.8	41.8	41.8
	Moderate	60	27.3	27.3	69.1
	High	68	30.9	30.9	100.0
Depersonalization	Low	173	78.6	78.6	78.6
	Moderate	37	16.8	16.8	95.5
	High	10	4.5	4.5	100.0
Self-accomplishment	Low	153	69.5	69.5	69.5
	Moderate	46	20.9	20.9	90.5
	High	20	9.1	9.1	99.5

The results of Tests of Between-Subjects Effects show that job stress and fear of infection significantly correlated with job burnout in the dimensions of emotional burnout and Self-accomplishment; however, there was no significant correlation between adequacy of hospital resources and job burnout in the two dimensions. None of the three variables of the study showed a significant correlation with job burnout in the dimension of depersonalization [Table 3].

The estimated marginal means are shown in Table 4. According to this table, the mean scores of the participants with high emotional exhaustion and low efficiency were significantly different in the variables "fear of infection" and "job stress", but the difference was not significant in variable "hospital resources". Also, in the dimension of depersonalization, the differences between the mean scores were not significant.

Discussion

The aim of this study was to investigate the effects of fear of infection, job stress and hospital resources in people with high emotional exhaustion and depersonalization as well as low personal accomplishment as consequences of hospital staff at the Covid-19 forefront. In our study, job stress and fear of infection showed a significant correlation with job burnout in emotional exhaustion and personal accomplishment, however,

there was no significant correlation between adequacy of hospital resources and burnout in these two aspects. None of the three variables of the study showed a significant correlation with job burnout in the aspect of depersonalization.

Emotional exhaustion said to the feeling of tiredness caused by tasks and duties in the workplace. Previous studies have identified stress is a significant contributor to job burnout. work-related Stressors, including poor supervision, interpersonal conflicts in workplace, increased job demands and overload are all associated with the burnout dimensions. According to the Burnout Model, chronic exposure to stress due to position and environment can lead to work stress, which in turn, creates burnout.^[18,19] In our study, job stress was the most important contributor to high emotional burnout and low personal accomplishment.

Dimple Dsouza and colleagues (2020) investigated the factors that contributed suicide among COVID-19 cases. In this study, the most important factor causing suicide was the fear or anticipation of COVID-19 infection, although the autopsy results of the victims showed that most of them had COVID-19 negative test.

Therefore, the issue of suicide due to the fear of COVID-19 infection is considered as a significant concern for the society and health care professionals.^[20] The

Table 2: Three dimensions of burnout's Multivariate Tests

Variable	Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta squared
Emotional exhaustion	Pillai's Trace	0.496	23.728	6.000	432.000	0.000	0.248
	Wilks' Lambda	0.516	28.119 ^p	6.000	430.000	0.000	0.282
	Hotelling's Trace	0.916	32.679	6.000	428.000	0.000	0.314
	Roy's Largest Root	0.891	64.159 ^p	3.000	216.000	0.000	0.471
Depersonalization	Pillai's Trace	0.034	1.240	6.000	432.000	0.284	0.017
	Wilks' Lambda	0.966	1.235 ^b	6.000	430.000	0.287	0.017
	Hotelling's Trace	0.034	1.229	6.000	428.000	0.290	0.017
	Roy's Largest Root	0.020	1.448 ^c	3.000	216.000	0.230	0.020
Personal-accomplishment	Pillai's Trace	0.034	1.240	6.000	432.000	0.284	0.017
	Wilks' Lambda	0.966	1.235 ^b	6.000	430.000	0.287	0.017
	Hotelling's Trace	0.034	1.229	6.000	428.000	0.290	0.017
	Roy's Largest Root	0.020	1.448 ^c	3.000	216.000	0.230	0.020

Table 3: Tests of Between-Subjects Effects

Source	Dependent variable	Type III sum of squares	Df	Mean square	F	Sig.	Partial Eta squared
Emotional exhaustion	Fear of infection	458.442	2	229.221	28.323	0.000	0.207
	Job stress	8963.478	2	4481.739	83.314	0.000	0.434
	Hospital resources	20.708	2	10.354	1.683	0.188	0.015
Depersonalization	Fear of infection	11.640	2	5.820	0.573	0.565	0.005
	Job stress	320.352	2	160.176	1.711	0.183	0.016
	Hospital resources	24.035	2	12.017	1.958	0.144	0.018
Personal-accomplishment	Fear of infection	95.371	3	31.790	3.240	0.023	0.043
	Job stress	2022.812	3	674.271	7.824	0.000	0.098
	Hospital resources	19.084	3	6.361	1.028	0.381	0.014

Table 4: Estimated marginal means in three dimensions of burnout

	Dependent variable	Emotion burnout (Binned)	Mean	Std. Error	Lower bound	Upper bound
Emotional exhaustion	Fear of infection	Low	4.163	0.297	3.578	4.748
		Moderate	6.900	0.367	6.176	7.624
		High	7.235	0.345	6.555	7.915
	Job stress	Low	28.989	0.765	27.482	30.496
		Moderate	37.600	0.947	35.734	39.466
		High	43.941	0.889	42.188	45.694
	Hospital resources	Low	6.891	0.259	6.382	7.401
		Moderate	6.717	0.320	6.086	7.348
		High	6.176	0.301	5.584	6.769
Depersonalization	Fear of infection	Low	5.740	0.242	5.262	6.217
		Moderate	6.270	0.524	5.238	7.303
		High	6.400	1.008	4.414	8.386
	Job stress	Low	35.439	0.736	33.989	36.889
		Moderate	37.108	1.591	33.973	40.243
		High	40.700	3.060	34.669	46.731
	Hospital resources	Low	6.740	0.188	6.369	7.111
		Moderate	5.919	0.407	5.116	6.722
		High	7.200	0.783	5.656	8.744
personal-accomplishment	Fear of infection	Low	6.255	0.253	5.756	6.754
		Moderate	4.913	0.462	4.003	5.823
		High	4.850	0.700	3.469	6.231
	Job stress	Low	37.863	0.750	36.384	39.342
		Moderate	32.413	1.369	29.715	35.111
		High	29.350	2.076	25.259	33.441
	Hospital resources	Low	6.471	0.201	6.074	6.867
		Moderate	6.848	0.367	6.125	7.571
		High	7.350	0.556	6.254	8.446

adequacy of hospital resources had no significant effect on all the dimensions of burnout. This finding is different from previous findings. Low hospital resources lead to increased burnout.^[21] This difference in the findings may be due to the fact that job stress and fear of the virus are internal factors and can directly lead to emotional exhaustion and low efficiency, whereas adequacy of hospital resources is an external factor. Moderating factors such as personality and social support can reduce the effects of hospital resources on burnout.

Personal resources are positive self-evaluations related to resiliency and individual's sense of control ability and successful environmental effects such as self-efficacy, self-esteem and optimism.^[22] In a qualitative study examining the factors causing psychological distress in health workers of COVID-19 patients, results the researchers identified individual resources as an important factor which can improve distress.^[2] High demands in the absence of individual resources can easily led to depression, job stress and PTSD or signs associated with them.^[23]

There is a positive correlation between neuroticism and "Emotional exhaustion" and "depersonalization", but these dimensions are negatively associated with agreeableness, conscientiousness, extraversion and

openness. Personal accomplishment has been found to correlate negatively with neuroticism, agreeableness, conscientiousness, extraversion and openness.^[24]

In the present study, none of the variables had an effect on depersonalization. Depersonalization is a negative and insensitive answer to the person receiving the service. This dimension is called to the negative understanding perceived by others. Contrary to our finding, many previous studies have indicated that job stress is related to negative behaviors such as deviant and counterproductive behaviors.^[25] The difference between our finding and that of previous studies can be explained by the concept of compassion satisfaction. Compassion satisfaction is associated with empathetic feelings with the patient, Pleasant feelings of patient recovery and Feeling of interest and commitment to people Which can be considered as one of the individual resources.^[2] Compassionate Satisfaction by emphasizing the positive aspects, it can protect caregivers from the negative aspects of helping others. Higher levels of compassion satisfaction can increase feelings of self-efficacy, sense of community, constructive strategies, positive individual and organizational outcomes, and significantly reduce job stress.^[23]

In the present study, personality traits and other personal resources were not examined. Stress coping strategy is

an individual level strategy that provides support for staff dealing with stress related outcomes. Thus, training programs on stress coping strategies seem valuable. In order to manage staff burnout, efforts should be made to find the sources of stress and to resolve them.

Based on the present findings, it is essential to consider stress management programs, which focus on the education and training of stress coping and management strategies. This will provide support for staff dealing with stress related outcomes. In order to manage staff burnout, efforts should be made to find the sources of stress and to resolve them.

Declaration of patient consent

All participants in the study filled the informed written consent.

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Conflicts of interest

There are no conflicts of interest.

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