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Job Stress and Job Burnout Based on Personality Traits among Emergency Medical Technicians

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Abstract

Background: Emergency medical services employees, the first people providing pre-hospital services for critically ill or injured patients, are constantly exposed to many stressful factors that can lead to job burnout in the long run. The level of job burnout varies according to employees' personality traits.

Objectives: The present study aimed to investigate job stress and job burnout based on the personality traits of emergency medical service technicians of the Tehran Disaster and Emergency Medical Management Center.

Methods: This cross-sectional, descriptive study was conducted in 2018 on all operational staff of the Tehran Disaster and Emergency Medical Management Center (N = 1551). A sample of 308 personnel was selected using the stratified random sampling method proportional to size and simple random sampling method. The required data was collected using a four-part questionnaire which measured demographic characteristics and included the Health and Safety Executive Job Stress Questionnaire, the Maslach Burnout Questionnaire, and the revised Costa and McCrae NEO Five-Factor Inventory (NEO-FFI). The collected data was analyzed using SPSS 22.0.

Results: Reducing exhaustion, job stress, and neuroticism and strengthening conscientiousness and agreeableness among emergency medical services employees are very important issues. Reducing working hours, examining factors of dissatisfaction and stressors in the workplace, and improving welfare facilities can decrease job burnout among employees. Moreover, the heads and managers of pre-hospital emergency services should plan to provide continuous training in stress management skills at emergency bases in order to reduce job stress among employees.

Keywords: Job Stress, Job Burnout, Personality Traits, Emergency Medical Service Technicians.

Introduction

Pre-hospital emergency services form a vital component of medical services systems and play an important role in responding to the medical needs of the injured and patients with emergency complications outside of healthcare institutions (1). Pre-hospital emergencies are stressful events. Factors such as high pressure, the need for information, lack of time, sensitivity of seconds, extreme stress, unpredictability, the importance of identifying companions' problems and expectations, and maintaining patients' lives, create much stress for emergency medical services personnel (2). This stress is experienced when stabilizing patients, calming distressed patients and their companions, and ensuring proper pre-hospital care for patients. As a result, emergency medical services employees, as the front-line forces providing pre-hospital services, are constantly exposed to many stressful factors (3). They are often the first people present in emergency situations ranging from heavy vehicle accidents and natural disasters to minor injuries and illnesses (4). The nature of the profession requires medical personnel to be always in a state of readiness and present at patients' bedsides in the shortest possible time to start medical treatments for them (5). Therefore, working in such an unstable work environment full of physical and psychological injuries, death, severe damage, and exposure to violence and threats have caused the prevalence of stress to be about 40% among such staff members (6).

The results of a study conducted in Sweden showed that uncertain situations in pre-hospital emergency services can lead to increased stress among emergency medical services personnel (7). In a study conducted in the United States,

emergency medical service technicians reported that life-threatening clinical conditions such as respiratory, cardiovascular, and traumatic problems are accompanied by much stress and anxiety (8). The results of a study in Turkey showed that all of the stressful and negative conditions in pre-hospital emergency services caused physical and mental fatigue for ambulance staff and ultimately led to job burnout (9). According to the results of a study in India, emergency services personnel are exposed to many stresses during work (10). Some studies have been conducted in Iran on stress levels among pre-hospital emergency services personnel. The results of one study showed that 94% of pre-hospital emergency services employees had moderate post-traumatic stress disorders (11).

The issue of job stress and its consequences among emergency medical services staff is a common problem in the service sector and can lead to physical and psychological problems (12).

The term "burnout" was first used by Freudenberg. He defined job burnout as a product of long-term stress in the workplace. Job burnout is a type of mental exhaustion associated with mental stresses as well as job and workplace-related stresses. In other words, job burnout is a delayed response to chronic emotional and interpersonal stressors in the workplace and comprises the three dimensions of emotional exhaustion, depersonalization, and lack of personal accomplishment (13). Job burnout is a well-known psychological response among healthcare workers, and is also defined as a process in which the attitudes and behavior of employees toward their work become negative and pessimistic (14). Emotional exhaustion is expressed as mental pressure, stress, and loss of emotional resources in a person. Depersonalization is a negative and pessimistic attitude toward others and clients. Reduced personal accomplishment is a decrease in one's sense of worth and ability to successfully perform a task in carrying out a job or a responsibility in relation to others and having a negative evaluation of and attitude toward oneself (15).

Job burnout leads to decreased feelings of goodness and well-being among healthcare staff, decreased quality of care, and increased absenteeism and costs associated with excessive absenteeism (16). Some studies have reported that burnout is associated with physical illness, mental health problems, cardiovascular diseases, musculoskeletal pain, insomnia, depression, and anxiety (17, 18). Job burnout not only endangers the health and well-being of individuals, but also affects the rate of medical errors and the level of quality of care (19). Another study concluded that job burnout is caused by stressors such as role incompatibility, shift work, and repetitive work (20). To prevent and combat burnout, factors affecting the frequency and severity of job burnout should be carefully identified (21).

Objectives

The present study aimed to investigate job stress and job burnout based on personality traits among emergency medical services technicians of the Tehran Disaster and Emergency Medical Management Center.

Materials and Methods

Study Design

This cross–sectional, descriptive study was conducted on emergency medical services technicians of the Tehran Disaster and Emergency Medical Management Center who carried out emergency medical missions in five areas covered by this center and provided 24-hour services during the second half of 2018.

Study Population

The study population comprised the emergency medical services personnel of the Tehran Disaster and Emergency Medical Management Center (N=1551). A sample of 308 technicians was determined using the formula, assuming $\alpha=0.05$, $p=q=0.5$, and $d=0.05$. The determined sample was selected using the stratified random sampling method proportional to size, so that each of the 5 areas was considered stratified, in which the number of the studied sample was determined based on the number of personnel working in that area and using simple random sampling method.

The inclusion criteria were attending missions and having at least 5 years of work experience in the Tehran Disaster and Emergency Medical Management Center. The exclusion criteria were dissatisfaction with participation in the study and refusal to answer questions during the research.

Data Gathering

The required data was collected using a four-part questionnaire. The first part of the questionnaire included items related to the studied employees' demographic characteristics, such as gender, age, level of education, field of study, and work experience. The second part was the Health and Safety Executive (HSE) Job Stress Questionnaire. This questionnaire consisted of 35 items in the seven dimensions of demand, control, administers' support,

colleagues' support, relationships, roles, and changes. It was made by the UK Institute of Health and Safety in the late 1990s to measure job stress among British workers and employees (22). A five-point Likert scale was used for this questionnaire in which 1 referred to "always" and 5 to "never". The scoring of the demand dimension, however, was reversed. The mean scores for each dimension ranged from 1 to 5, with 1 and 5 indicating a "desirable situation" and a "stressful and undesirable situation", respectively.

The third part of the questionnaire used in the present study was the Maslach Burnout Questionnaire (1981), which consisted of 22 items measuring employees' emotional exhaustion, depersonalization, and lack of personal accomplishment. A 7-point Likert Scale was used for this questionnaire in which 0 referred to "never" and 6 as "everyday". Maslach et al. (1896) reported the coefficient of internal consistency for emotional exhaustion as 0.9, depersonalization as 0.79, and lack of personal accomplishment as 0.71 (23).

The fourth part of the questionnaire included the revised Costa and McCrae NEO Five-Factor Inventory (NEO-FFI), which consisted of 60 items measuring the five personality traits of openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. In this questionnaire, a 5-point Likert scale was used; 0 referred to "strongly disagree" and 6 to "strongly agree". Costa and McCrae (1992) showed that the correlations between the five personality traits of its short form and long form ranged from 0.77 to 0.92. In their study of 1492 people, McCrae and Costa (2004) tested the reliability of this questionnaire using Cronbach's alpha for its five factors and reported the Cronbach's alphas for neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness to be 0.86, 0.80, 0.75, 0.69, and 0.79, respectively (25).

At the beginning of the current research, the researcher responsible for collecting data referred to the Tehran Disaster and Emergency Medical Management Center and coordinated with its head, and then, a meeting regarding the study objectives was held with the center's directors. Next, the questionnaires were distributed among the technicians, and their responses and comments were collected one week later. Data collection took three months.

Statistical Analysis

The collected data was analyzed using SPSS 22.0 through descriptive statistics such as frequency, mean and standard deviation, and statistical tests such as Pearson correlation coefficient and multiple linear regression. A p-value < 0.05 was considered statistically significant.

Ethical Considerations

The present study followed fundamental principles of ethical considerations, including coordinating with the emergency medical services through an introduction letter, providing participants with the required explanations of the project and its objectives, offering voluntary participation and withdrawal from the study in any stage, maintaining anonymity for the responses to the questionnaire items, and maintaining confidentiality of data analysis.

Results

All participants were male and had a mean age of 30±5.43. The majority of participants (48%) had an associate degree in emergency medical aid, and 52% had less than 10 years of work experience (Table 1).

Among the job stress dimensions, relationships (3.52±0.88) and roles (1.86±0.37) had the highest and lowest means, respectively. The highest frequency and severity among the job burnout dimensions were related to the depersonalization (5.03±0.79) and lack of personal accomplishment (5.01±1.14), respectively. Among the five personality traits, the highest mean was related to conscientiousness (3.08±0.45) (Table 2).

Significant correlations were found between the five personality traits and relationships and roles. Neuroticism and extraversion also had significant correlations with demand, control, administrators' support, and changes (p-value<0.05) (Table 3).

Table 1. Demographic characteristics of participants (n=308)

Characteristics		Frequency (%)
Age group (years)	<30	135 (45)
	30-45	145 (48)
	>45	20 (7)
Education	Associate degree	145 (48)
	BSc degree	99 (33)
	MSc Degree	55 (18.5)
	Ph.D.	1 (0.5)
Field of study	Anesthesiology practice field (associate degree)	45 (15)
	Emergency medical aid (associate degree)	156 (52)
	Nursing	99 (33)
Work experience (years)	<10	164 (55)
	10-20	112 (37)
	>20	24 (8)

Table 2. Means and standard deviations of the studied participants' job stress, job burnout, and personality traits dimensions

Variables	Dimensions	Mean	Standard Deviation
Job Stress	Demand	3.02	0.38
	Control	2.72	0.45
	Administers' support	2.87	0.57
	Colleagues' support	2.59	0.65
	Relationships	3.52	0.88
	Roles	1.86	0.37
	Changes	2.96	0.99
Job Burnout	Emotional exhaustion (Frequency)	4.28	0.77
	Emotional exhaustion (Severity)	3.68	0.99
	Depersonalization (Frequency)	5.03	0.79
	Depersonalization (Severity)	4.50	1.43
	Lack of personal accomplishment (Frequency)	4.17	1.20
	Lack of personal accomplishment (Severity)	5.01	1.14
Personality traits	Neuroticism (N)	1.47	0.45
	Extraversion (E)	2.63	0.47
	Openness to experience (O)	2.02	0.34
	Agreeableness (A)	2.71	0.38
	Conscientiousness (C)	3.08	0.45

Table 3. Correlations between personality traits and job stress among the studied participants

Dimensions	Correlation Results	Neuroticism (N)	Extraversion (E)	Agreeableness (A)	Openness to experience (O)	Conscientiousness (C)
Demand	R	0.322**	-0.135*	-0.112	-0.284**	-0.176**
	p-value	<0.001	0.019	0.053	<0.001	0.002
Control	R	0.047	-0.149**	-0.128*	-0.078	-0.058
	p-value	0.415	0.010	0.026	0.176	0.314
Administrators' support	R	0.164**	-0.122*	-0.002	0.089	0.078
	p-value	0.005	0.035	0.968	0.125	0.180
Colleagues' support	R	-0.098	-0.100	0.163**	-0.086	0.007
	p-value	0.089	0.084	0.005	0.137	0.906
Relationships	R	-0.509**	0.243**	0.157**	0.448**	0.388**
	p-value	0	0	0.006	0	0
Roles	R	0.369**	-0.182**	-0.277**	-0.240**	-0.354**
	p-value	<0.001	0.002	<0.001	<0.001	<0.001
Changes	R	0.110	0.254**	-0.149**	0.020	0.067
	p-value	0.057	<0.001	0.010	0.732	0.246

The results showed significant correlations between neuroticism and all dimensions of job burnout except severity of depersonalization. Significant correlations were also seen between extraversion and emotional exhaustion and lack of personal accomplishment, between agreeableness and job burnout dimensions, between openness to experience and depersonalization and lack of personal accomplishment, and between conscientiousness and lack of personal accomplishment (*p*-value<0.05) (Table 4).

Based on multiple linear regression models at the significance level of 0.05 and df=299, linear relationships were found between the variables. The results showed that 13% and 32% of the variances of job stress and job burnout (the dependent variables), respectively, were explained by these models, which included the personality trait dimensions, whereas the rest of the variance in the personality trait dimensions could be explained by other variables (Tables 5, 6).

Table 4. Correlations between personality traits and job burnout among the studied participants

Dimensions	Correlation Results	Neuroticism (N)	Extraversion (E)	Agreeableness (A)	Openness to experience (O)	Conscientiousness (C)
Emotional exhaustion (Frequency)	R	-0.380**	-0.162**	0.162**	0.067	-0.059
	p-value	0	0.005	0.005	0.250	0.308
Emotional exhaustion (Severity)	R	-0.321**	-0.086	0.129*	0.083	-0.073
	p-value	0	0.139	0.025	0.149	0.204
Depersonalization (Frequency)	R	-0.126*	0.085	-0.045	0.185**	0.092
	p-value	0.029	0.143	0.433	0.001	0.114
Depersonalization (Severity)	R	0.079	-0.026	-0.265**	-0.025	-0.029
	p-value	0.175	0.660	<0.001	0.664	0.621
Lack of personal accomplishment (Frequency)	R	-0.370**	0.246**	0.119*	0.162**	0.162**
	p-value	<0.001	000	0.040	0.005	0.005
Lack of personal accomplishment (Severity)	R	-0.428**	0.490**	0.073	0.326**	0.394**
	p-value	<0.001	<0.001	0.209	<0.001	<0.001

Table 5. Results of evaluation of the models

Models	R	Standard Error	R2	R2 Adjusted
Job Stress	0.359	3.90	0.129	0.114
Job Burnout	0.565	5.78	0.320	5.78

Table 6. Results of multiple linear regression

Variables	Personality Traits	B	Standard Error	β	T	*p*-value
Job Stress	N	0.216	0.05	0.28	3.88	<0.001
	E	0.021	0.05	0.02	0.41	0.68
	O	0.009	0.05	0.009	0.15	0.87
	A	-0.19	0.06	0.216-	-2.90	<0.001
	C	0.081	0.06	0.10	1.30	0.19
Job Burnout	N	-0.856	0.08	-0.66	-10.36	<0.001
	E	-0.389	0.07	-0.31	-5.21	<0.001
	O	-0.030	0.08	-0.01	-0.344	0.731
	A	0.059	0.09	0.039	0.592	0.554
	C	-0.365	0.09	-0.284	-3.986	<0.001

Among the personality trait dimensions, neuroticism and conscientiousness had significant associations with and contributed significantly to the prediction of job stress, such that higher neuroticism and conscientiousness could result in the greater probability of job stress in the studied staff. On the other hand, neuroticism, conscientiousness, and extraversion could significantly predict job burnout.

The determined regression equations for job stress and job burnout were as follow:

Y1=0.28(N) +0.02(E) +0.09(O)-0.21(A)+0.10(C)

Y2=0.66(N) -0.31(E) -0.01(O) +0.039 (A) -0.28(C)

where Y1=job stress and Y2=job burnout.

Discussion

The present study revealed a high level of depersonalization among the studied technicians. Leiter and Maslach (2008) stated that depersonalization is a reaction to emotional exhaustion occurring when a person produces negative responses to the service recipients and treats them indifferently and as an object. In fact, depersonalization reflects the service provider's attitude towards the recipients (26). The high level of lack of personal accomplishment in the current study also indicated a negative attitude toward self and career; a lack of willingness to, interest in, and satisfaction with the job; and decreased self-esteem. In

explaining the findings of this research, it can be said that the feeling of lack of personal accomplishment can be due to the lack of positive conditions improving motivation as well as the lack of appreciation of the efforts of staff and lack of their participation in decision making, all of which lead to a decrease in their self-esteem in the workplace. Patrick and Lavery (2007) stated that a sense of personal accomplishment and mastery of performing tasks arises when a person can influence his/her organization's policies and is able to display his/her abilities. In this way, s/he will feel more confident, have more power and mastery over performing duties, and will be more satisfied with his/her work (27).

The current results showed that job burnout was high among the studied staff in all its three dimensions. In a study by Popa et al. (2010) conducted in Romania, high levels of job burnout and its dimensions in emergency medical services personnel were reported (28). In situations such as emergencies in which patients need urgent care, it is more likely that emergency medical services personnel will suffer from tension and subsequent job burnout (29). Paying attention to the development of interpersonal relationships and controlling and changing factors such as work hours and work shifts can decrease employees' emotional exhaustion, because high emotional exhaustion is a result of working under stressful conditions and experiencing chronic stress (30). Considering that job burnout leads to a decrease in feelings of goodness and health in the staff a decrease in the quality of care, and an increase in absenteeism and the costs associated with it (16), taking measures to reduce job burnout and strengthen the resources of coping with job burnout is important.

Periodic surveys must be conducted to determine the status of the staff in terms of job burnout and to decrease it by changing the workplace and moving to less stressful positions. Contrary to the results of the present study, Xie et al. (2011) showed that the employees investigated in their study had a moderate level of depersonalization and a low level of lack of personal accomplishment (31). In a study conducted by Harkin and Melby (2014), the studied nurses reported moderate levels of all three dimensions of burnout (32). Differences between the results of the present study and those of other studies can be attributed to the cultural, gender, and job differences among the studied employees. In fact, job burnout depends on various organizational, interpersonal, and intrapersonal factors (33). Differences in culture, individual responses to self-declaration questionnaires, and how individuals evaluate their personal accomplishments can also lead to differences in self-reports of burnout by employees in different countries and even at the national level (34).

The results of the current study further showed that neuroticism had significant correlations with all dimensions of burnout except severity of depersonalization, which is similar to the results of Dyrbye and Shanafelt (2016) (35), van der Wal et al. (2016) (36), and Lue et al. (2010) (37). Significant correlations were also found between extraversion and emotional exhaustion and lack of personal accomplishment, between agreeableness and job burnout dimensions, between openness to experience and depersonalization and lack of personal accomplishment, and between conscientiousness and lack of personal accomplishment. These results are consistent with those of van der Wal et al. (2016) (36), Scheepers et al. (2014) (38), and Lue et al. (2010) (37).

The current results also showed significant correlations between personality trait dimensions and the two dimensions of roles and relationships, between the dimensions of extraversion and neuroticism and the dimensions of demand, control, administrators' support, and changes. These results are in line with those of Lee (2017) (39), Srivastava et al. (2015) (40), and Sur and Ng (2014) (41).

Neurotic people are subject to anxiety, irritability, and anger toward others and have little ability to control their impulses and manage their stress. As a result, these people face a number of problems in medical emergency services conditions with many stressful stimuli, such as providing care for critically ill patients. According to the association between extroversion and job stress, given that extraverts experience more pleasant events, feel more positive emotions, and use active coping mechanisms and social support, they can communicate warmly and sincerely with others. Having this trait is necessary for emergency medical services employees, because they must be able to communicate appropriately with patients and their families, and they should be able to increase people's cooperation in their missions through appropriate interactions.

Based on the association between conscientiousness and job stress, it can be said that conscientious people have the ability to make effective decisions; they organize their work well and think about each action before taking it. Such individuals are very suitable for working in the Disaster and Emergency Medical Management Center, because emergency medical missions are full of situations requiring conscious and clever decisions, and the employees should take into account all aspects of such situations. According to the results of the present study, demand had significant correlations with conscientiousness and neuroticism. It may be because individuals who are more conscientious have more job stress, because in this profession, demand is far greater than the ability of a technician, and the more conscientious employee will suffer more from job stress. Moreover, neurotic employees are prone to depression and have more job stress because of the high demands of their job, job pressure, their

inability to communicate effectively, and their lack of appropriate coping styles for dealing with job stress.

The present study had some limitations, including the cross-sectional design of the study, the use of self-report questionnaires, and the inability to control all confounding variables.

Conclusions

According to the present results, job stress and job burnout had significant correlations with personality traits. In order to decrease job burnout and job stress, reducing the neuroticism and strengthening the conscientiousness and agreeableness among the emergency medical services staff are very important issues. Moreover, reducing working hours, examining dissatisfaction factors and stressors in the workplace, and improving welfare facilities can decrease employees' job burnout. The heads and managers of pre-hospital emergency services should plan to provide continuous training in stress management skills at emergency bases in order to reduce employees' job stress.

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Authors' Contribution

All authors pass the four criteria for authorship contribution based on the International Committee of Medical Journal Editors (ICMJE) recommendations.

Conflict of Interests

The authors declared no potential conflict of interests with respect to the research, authorship, and/or publication of this article.

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