Research Article

The Relationship Between Occupational Stress And Burnout In The Pre-Hospital Staff

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Abstract:

Background: Occupational stress is an effective factor in the occurrence of physical and mental illnesses and can, in the long run, causes burnout syndrome among employees. Due to the nature of their occupation, pre-hospital emergency staff faces severe stresses at the workplace. Therefore, this study was designed and conducted to investigate the relationship between occupational stress and burnout among pre-hospital emergency staff in Izeh and Baghmalek counties.

Materials and methods: The present study had a descriptive correlational design in which 60 people including 15 senior technicians, 15 basic technicians, 15 driver-rescuer personnel, and 15 operators were included and selected as a study sample using stratified random sampling. The instruments used in this study include Hospital Stress Scales (HSS-35) questionnaire and Maslach Burnout Inventory (MBI) questionnaire, and Pearson simple correlation coefficient method was used to analyze the data.

Results: The results of the present study showed that there was a significant relationship between occupational stress and burnout in all pre-hospital emergency staff ($P < 0.01$, $r = 0.938$). Moreover, a significant relationship was found between occupational stress and burnout in senior technicians ($r = 0.638$ and $P < 0.03$), in basic technicians ($r = 0.603$ and $P < 0.03$), in driver-rescuer personnel ($r = 0.835$ and $P < 0.007$), and in operator personnel ($r = 0.523$ and $P < 0.05$), all of which were significant at the level of $P < 0.05$. Also, most subscales of occupational stress were correlated to job-related burnout both in the whole sample and in the four groups of studied personnel, which was significant at the level of $p < 0.05$.

Conclusion: Due to the stressful nature of the job of pre-hospital emergency staff, the incidence of physical and mental disorders, as well as job-related burnout, are very common among these staff, especially in younger and less experienced members. The strong relationship between occupational stress and burnout in these personnel calls for serious attention by pre-hospital emergency officials.

Keywords: Occupational stress, Job-related burnout, Pre-hospital emergency, Technician

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Background:

Stress means to pressure and force, and any stimulus that evokes a tension in human is called stress. Stressful jobs cause a phenomenon of mental and physical distress in employees and create burnout syndrome, which is associated with serious consequences. Employees suffering from this condition may not only quit their jobs, but also relinquish their profession and expertise. The consequences of burnout are more evident among those in certain occupations, especially assisting professions and specialties in the human services group, such as nurses and emergency medical technicians, paramedics, etc. Therefore, the prevalence of occupational stress among such valuable professionals puts a heavy burden on society (1).

Pre-hospital urgency staff work in a stressful and unstable environment. These personnel never know what events they face during their work shifts, and every day they face stressful situations arising from the structure of role ambiguity, role conflict and negative work pressures, and the lack of positive and stable conditions in the environment. Studies on occupational stress have primarily focused on role conflict and role ambiguity, two phenomena shown to have a strong correlation with burnout. Role conflict occurs when a person has to endure conflicting pressures in his/her job, and role ambiguity occurs in situations where there is little information about how to perform the job properly and job descriptions are unclear (2).

Since high occupational stress leads to job burnout, a syndrome with a significant role in reducing productivity of employees, a large body of studies have been devoted to this field in organizations and departments as well as in the health system among medical staff of hospitals, especially nurses, all of which indicated the existence of different levels of job burnout. For example, Darban et al. (3) found in their study that 7.4% of nurses leave their work every week due to burnout or disability from stress, which is 80% more than other jobs.

Although pre-hospital emergency staff work in a unhealthier and more unstable environment and experience more stress than nurses, little research and information about these staff has been published in the scientific literature. It is obvious that these professional and specialized staffs are constantly engaged in activities that are vital for patients and injured people in stressful situations. Therefore, working in such conditions causes excessive stress on these personnel. Moreover, other factors provide conditions for severe tension and stress in this personnel and cause them unable to perform their job duties in a timely and appropriate manner, such as time constraints in performing tasks and duties, critical condition of patients and injured in accidents, expectations of patients and injured companions, fear of inadequacy in saving the lives of patients and dying injured, decision-making in critical situations based on little information, and taking responsibility for their decisions, etc (1-4).

The purpose of pre-hospital emergency services is to prevent the loss of critical time from the moment of illness and accidents, etc. until the patient or injured person arrives at the equipped medical center and to start caring from the very beginning of the accident or from the patient's bedside to prevent the death during this golden time. Therefore, the decline in the quality of care for patients and the injured at this golden time is one of the worst consequences of job burnout of pre-hospital emergency staff. In this regard, any negligence in recognizing and coping with stress in these personnel has irreparable consequences and a wide reflection within society. Considering the importance of pre-hospital emergency staff jobs, this study was designed and conducted to investigate the relationship between occupational stress and burnout in these staff to take a step, however small, in increasing productivity in the pre-hospital emergency system.

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Methods:

The statistical population of this study includes all pre-hospital emergency personnel including senior technicians, basic technicians, driver-rescuer personnel, and operator personnel in urban and road pre-hospital emergency centers of Izeh, Baghmalek, and Dehdez during 2019-2020. The total number of these personnel includes 120 people. The statistical sample of the study includes 60 personnel consisting of 15 senior technicians, 15 basic technicians, 15 driver-rescuer personnel, and 15 operator personnel who were selected by stratified random sampling.

The present study had a descriptive correlational design in which data collection tools included demographic information, e.g., age, work experience and field of education, Hospital Stress Scales (HSS-35) questionnaire, and Maslach Burnout Inventory (MBI) questionnaire. The researchers distributed the questionnaires among the studied samples and collected them after completion.

The hospital stress questionnaire has been developed to assess stressors in the workplace (especially in hospital and therapeutic settings). This questionnaire consists of 35 items that exam 10 subscales, including overload (role overload, 5 items), incompetence (role underload, 4 items), incompatibility (role conflict, 4 items), role ambiguity (4 items), relationships with colleagues (6 items), shift work (2 questions), physical factors (3 questions), chemical factors (2 items), biological factors (2 items), and ergonomic factors (3 items). This questionnaire has been frequently used by researchers and its reliability has been well proven. The reliability of this questionnaire has been calculated using the test-retest method at a satisfactory level with a Cronbach's alpha of 84% (5). In the present study, the reliability of this test through Cronbach's alpha was 54%.

Scoring to each subscale of this questionnaire is as follows:

Never = 1, rarely = 2, sometimes = 3, often = 4, and always = 5. Phrases marked with an asterisk (*) are scored in reverse (Never = 5, ..., and always = 1). The mean score measured for each subscale indicates the amount of stress related to that subscale. The scores range from 1 to 5, with 1 showing an optimal state (negligible stress) and 5 undesirable states (severe stress). The lowest score is 35 and the highest score is 175. A higher score indicates more stress.

Maslach Burnout Inventory (MBI) questionnaire:

MBI questionnaire is the most common tool for measuring burnout, which consists of 22 items and covers all three dimensions of burnout, i.e., 9 items related to emotional exhaustion (allows respondents to express feelings of extreme weakness and emotional exhaustion towards clients and the work environment), 5 items related to depersonalization (allows respondents to express their attitudes in the form of apathy and indifference towards help-seekers), and 8 items related to personal accomplishment (allows respondents to express their sense of competence and achievement in caring for help-seekers). The sub-scores obtained in each of the three aspects are classified into low, medium, or high categories based on the reference score (6). Maslach and Jackson calculated the internal reliability for each of the subscales. They reported the internal reliability of the questionnaire with a Cronbach's alpha coefficient of 0.71-0.90 and a test-retest reliability coefficient of 0.60-0.80. The internal reliability for each of the subscales was as follows: r = 0.90 for emotional exhaustion, r = 0.79 for depersonalization, and r = 0.71 for personal accomplishment. These scholars also evaluated the validity of this test during various examinations. Zolghadr et al. (2006) reported the reliability of this questionnaire using the test-retest method = 0.88 and using Cronbach's alpha method = 0.90 (7). In this study, the reliability of this questionnaire was obtained through Cronbach's alpha = 0.58.

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Results

Descriptive findings related to the research variables include calculating the mean frequency, standard deviation, and maximum and minimum scores obtained for the variables of occupational stress and burnout of pre-hospital emergency staff in Izeh, Baghmalek, and Dehdez. Mean age and work experience of this personnel are also included.

Findings related to research hypotheses: that is, the relationship between occupational stress and burnout of pre-hospital emergency staff in Izeh, Baghmalek, and Dehdez, studied by Pearson simple correlation coefficient. The results of Table 1 show that the operator personnel had the lowest mean age and work experience among the four groups, followed by the driver-rescuer personnel. As seen in Table 2, the mean and standard deviation obtained for the variables of occupational stress in pre-hospital emergency staff is 136.25 and 33.06, overload variable is 19.75 and 2.72, role incompetency is 16.25 and 4.93, role incompatibility is 17.5 and 4.78, role ambiguity is 18.5 and 6.76, relationships with superiors and colleagues is 24.5 and 1.07, work shift is 7.5 and 3.03, physical factors are 9.75 and 3.07, chemical factors is 9.5 and 3.13, biological factors is 9.5 and 2.58, and ergonomic factors is 4 and 0.89, respectively.

According to the results of Table 2, the subscales of overload, incompetence, incompatibility, and role ambiguity along with biological and chemical factors have the highest scores, indicating their great impact on occupational stress of this personnel.

Table 1. Average age and work experience of four groups of pre-hospital emergency staff in Izeh, Baghmalek, and Dehdez

Sample groups	No.	Mean age	Mean work experience
Senior technicians	15	31	16.5
Basic technicians	15	35.25	7.13
Driver-rescuer personnel	15	29.86	6.73
Operator personnel	15	29	4.5
Total	60	31.27	8.71

Table 2. Frequency, mean, standard deviation, minimum and maximum scores of occupational stress variables and its subscales in the pre-hospital emergency staff of Izeh, Baghmalek, and Dehdez.

Variables	n	Mean	SD	Min. score	Max. score
Overload	60	19.75	2.72	13	25
Incompetence	60	16.25	4.93	10	20
Role incompatibility	60	17.5	4.78	12	20
Role ambiguity	60	18.5	6.76	14	20
Relationships with superiors and colleagues	60	24.5	1.07	18	30
Shift work	60	7.5	3.03	2	10
Physical factors	60	9.75	3.07	4	15
Chemical agents	60	9.5	3.13	5	10
Biological factors	60	9.5	2.58	4	10
Ergonomic factors	60	4	0.89	2	8
Total occupational stress	60	136.25	33.06	113	157

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Table 3. Result for mean, standard deviation, minimum and maximum scores of four sample groups of pre-hospital emergency staff in Izeh, Baghmalek, and Dehdez

Occupational stress variable	Frequency	Mean	SD	Min. score	Max. score
Occupational stress of senior technicians	15	124	9.05	113	134
Occupational stress of basic technicians	15	133	9.70	116	139
Occupational stress of driver-rescuer personnel	15	152	1.09	142	157
Occupational stress of operator personnel	15	136	9.92	130	143
Occupational stress of total group	60	136.25	33.06	113	157

The results of this table show that driver-rescuer personnel has the highest level of occupational stress among all groups, followed by operator personnel. Therefore, comparing the results of this table with Table 1 shows that the less work experience and age of staff, the more job stress they feel. Moreover, the results of this table show that the entire pre-hospital emergency staff experience relatively high levels of job stress.

The results of Table 4 show that the driver-rescuer personnel has the highest score of burnout followed by the operator personnel. Comparing the results of this table with Tables 1 and 3 indicates that the lower the age and work experience of this personnel, the more they are affected by job stress and the more they suffer from burnout syndrome. The results of this table also show that burnout scores of all pre-hospital emergency staff are above average based on the normal or reference scores set by Maslach and Jackson, indicating that these personnel suffer from burnout syndrome.

Findings related to research hypotheses:

According to the research hypothesis, that is, there is a significant relationship between occupational stress and its ten subscales and job burnout in all pre-hospital emergency staff in Izeh, Baghmalek, and Dehdez, and based on the results of the following table, the findings of this study are expressed.

As shown in Table 5, the relationship between job stress and burnout is significant at 0.05 significant level in all pre-hospital emergency staff of Izeh, Baghmalek, and Dehdez ($r = 0.983$ and $P < 0.02$). These results show that there is a significant relationship between job stress and burnout in all pre-hospital emergency staff in Izeh, Baghmalek, and Dehdez. Therefore, null hypothesis (H0) is rejected in favor of the research hypothesis. According to the results of Tables 1-5, all subscales of job stress have a significant relationship with a burnout in all pre-hospital emergency staff of Izeh, Baghmalek and Dehdez. Moreover, there was a significant relationship between job stress and burnout in senior technicians ($r = 0.628$ and $P < 0.03$), in basic technicians ($r = 0.603$ and $P < 0.03$), in operator personnel ($r = 0.523$ and $P < 0.05$), and driver-rescuer personnel ($r = 0.835$ and $P < 0.007$), all of which were significant at the level of $P < 0.05$. In terms of the relationship between job stress subscales and burnout in senior technicians, role inefficiency ($r = 0.251$

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and P <0.08), physical factors (r = 0.284 and P <0.20), and ergonomic factors (r = 0.380 and P <0.08) were the only subscales with no significant relationship with burnout, but other subscales had significant relationships with burnout.

In basic technicians, a significant relationship was observed between all subscales of job stress and burnout.

In driver-rescuer personnel, all job stress subscales were significantly associated with burnout, except for role overload and physical factors.

Finally, in operator personnel, only role incompatibility and biological factors were not significantly related to job burnout and all other subscales of job stress were significantly associated with burnout.

Table 4. Results for mean, standard deviation, minimum, and maximum burnout scores of pre-hospital emergency staff (four sample groups) in Izeh, Baghmalek and Dehdez

Burnout of the whole sample	Frequency	Mean	SD	Min. score	Max. score
Burnout of senior technicians	60	89.25	19.57	62	109
Burnout of basic technicians	15	80	5.84	62	92
Burnout of driver-rescuer personnel	15	83	6.06	72	95
Burnout of operator personnel	15	97	7.08	86	109
Occupational stress of total group	15	85	6.21	73	92

Table 5. Correlation between occupational stress and burnout of all pre-hospital emergency staff in Izeh, Baghmalek, and Dehdez using Pearson simple correlation coefficient.

Variables	Job burnout		
	Frequency	correlation coefficient	Significance level
Occupational stress	60	0.938	P<0.01
Overload	60	0.558	P<0.025
Role Incompetency	60	0.857	P<0.03
Role incompatibility	60	0.918	P<0.02
Role ambiguity	60	0.918	P<0.02
Relationships with superiors and colleagues	60	0.977	P<0.001
Shift work	60	0.917	P<0.03
Physical factors	60	0.975	P<0.002
Chemical agents	60	0.657	P<0.04
Biological factors	60	0.921	P<0.01
Ergonomic factors	60	0.657	P<0.05

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Discussion

The results of this study indicate that all pre-hospital emergency staff in Izeh, Baghmalek, and Dehdez suffer from severe job stress and burnout syndrome. In brief, among the four sample groups with 60 participants, driver and rescuer personnel received the highest scores of job stress and burnout, followed by operator personnel, basic technicians, and senior technicians, respectively. It seems that the less the work experience and age of the staff, the more they are affected by job stress and burnout syndrome. Another important point to note is that driver-rescuer personnel have less trained than other groups and their level of scientific knowledge is lower. In addition, to participate in the treatment, these personnel must maintain the equipment in the ambulance and drive. All these factors cause these personnel to experience more stress than other staff and become more vulnerable to burnout syndrome.

Among the four groups of pre-hospital emergency staff, operator personnel is ranked second in terms of job stress and burnout experience. They are also exposed to a high level of stress due to confronting role ambiguity and role conflict when telephone counseling with help-seekers before sending an ambulance to the scene. It has been frequently observed that help-seekers, consciously or not, provide wrong information to the pre-hospital emergency operators, putting them in a state of conflict orientation and imposing them a great psychological burden. Conflict orientation is a situation where the staff is hesitant to respond to the requests of help-seekers. Moreover, due to time constraints and the little information that help-seekers receive when requesting an ambulance by calling 115, operators should provide telephone consultations to the help-seekers before the ambulance arrives at the desired location, and they are responsible for such consultations. Because operators are skeptical about the accuracy of the information provided by the help-seeker, they experience a sense of conflict, fearing that the help-seeker may mistakenly take an action that would further harm the patient, and thus, the operators experience a high level of stress. Accordingly, the results of this study showed that this personnel are under high-stress levels and suffer from burnout syndrome, despite the low work experience and young age. Moreover, due to the nature of their job and dealing with people's health and lives, these personnels are not subject to social support or legal protection.

The findings of this study are consistent with the results of Payami Bousari (8) who investigated the status of social support and its relationship with a burnout in intensive care nurses of Tehran hospitals. The results of her research indicated that 1.3% of nurses had moderate levels of burnout and 75% experienced moderate levels of job stress, which is consistent with the results of our study.

Kamali et al. (9) also investigated the relationship between job stress and burnout in NAJA managers. The results of their study showed that there is a significant relationship between job stress and burnout in NAJA managers ($p<0.0001$, $r = 0.580$). The results of their research are consistent with ours.

In a study by Shakerinia and Mohammadpour (10) on the relationship between job stress and resilience with occupational burnout among nurses in Rasht, it was shown that there is a significant relationship between occupational stress and job burnout of nurses. Moreover, occupational stress and burnout were negatively related to the resilience of nurses, and the variables of age, resilience, and work experience were possible predictors of burnout in the nurses, which is consistent with the results of the present study.

Salahian et al. (11) investigated the predictors of burnout in nurses in Isfahan. The results of their study showed that the variables of job stress, role transparency, and role overload

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have a significant relationship with burnout that is consistent with the results of our study. Stress, if left unplanned, can turn into a crisis among emergency personnel, reduce their productivity and ultimately lead to burnout.

Wain stat (12) performed a study on 54 members of the emergency medical technicians department and found a high score of stress, tension, and burnout among the study sample. Moreover, burnout, stress, and tension were significantly associated with job satisfaction, fear of contracting infectious diseases, and perceptions of cheerful treatment by emergency personnel. Job dissatisfaction was related to the attitude that their job puts adverse effects on their family, technicians' dwelling is not comfortable, and the managers are unaware of the demands and skills of the technicians. The results of this research are in line with our findings, and some of the stressors in pre-hospital emergency personnel are also mentioned in the results of Mr. Wain stat research.

The findings of our study are also consistent with the results of Rolf. j. Kleberg's (13) research studied the issue of acute and chronic stressors among emergency personnel (ambulance personnel). He found that most emergency workers experienced acute stressors at work, and more work-related chronic stressors were reported in these personnel than in the reference group. According to this study, more than 10 percent of participants reported a clinical level of post-traumatic stress, more than 10 percent reported a level of fatigue that put them at higher risks of illness and disability, and nearly 10 percent suffered from burnout, which is in line with the results of this study. He showed that the best predictors of cognitive symptoms are the lack of social support at work and poor communication, e.g., ignorance of important decisions in the organization.

Conclusion:

The findings of this study may be very important. As mentioned before, pre-hospital emergency personnel faces several stressors at the workplace, and the severe and long-term stress causes mental and physical fatigue in this personnel and ultimately leads to burnout. Job burnout has serious consequences and many costs for both the organization and the physical and mental health of the staff.

Occupational burnout has adverse consequences on the medical staff, especially those working in pre-hospital emergencies, because their work is related to people's health and lives and has a wide reflection within society. The impact of burnout on pre-hospital emergency personnel is such that sometimes the best and most experienced hospital emergency personnel are forced to leave the emergency system due to high job pressures.

The effect of job stress is more evident on younger and less experienced staff and causes them to experience burnout syndrome upon entering the pre-hospital emergency system. Prevention of such a situation requires special organizational and individual interventions through short-term and long-term planning. Undoubtedly, effective management is not possible regardless of the mental and physical condition of staff, and departments and organizations should study the factors affecting the mental and physical health of their staff to increase work efficiency and productivity. This study can provide a basis for the interventions by pre-hospital emergency managers and planners to pay more attention to the mental and physical health of personnel to increase their effectiveness and reduce the causes of burnout in these employees.

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