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**IDENTIFICATION OF OCCUPATIONAL STRESS FACTORS IN MALE MEDICAL
TECHNICIANS RENDERING PRE-HOSPITAL EMERGENCY CARE AT ZABOL
UNIVERSITY OF MEDICAL SCIENCES**

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Abstract

Introduction: within one business day, medical technicians rendering pre-hospital emergency care may face many physical and psychological pressures that can affect their health and work quality. This study aimed to identify the most common occupational stress factors in male medical technicians who render pre-hospital emergency care and to find solutions to reduce the effects of those stress factors.

Materials and Methods: For the identification of personal, interpersonal, managerial, environmental and patient care stress factors among male medical technicians who render pre-hospital emergency care, this descriptive analysis was conducted on 60 male medical technicians working at Zabol University of Medical Sciences (2011). The data were collected through a standardized questionnaire assessing stress factors for the nurses. They were analyzed using descriptive and inferential statistics through SPSS Software version 20.0.

Results: Regarding critically ill or dying patients, the results showed that the most important stress factors for the examined technicians were blaming oneself when coming late, patient's death, contact with contaminated objects, ignorance of hospital about patient's needs, patient's pain and suffering, and caregivers' misjudgments about the quality of provided pre-hospital emergency care.

Conclusions: the identification of occupational stress factors can lead to the development of practical approaches to reduce the effects of stressors on the performance of employees. Regarding pre-hospital emergency care providers, it is very important to identify occupational stress factors and reduce their effects on medical technicians' performance.

Keywords: Pre-hospital Emergency Care, Occupational Stress.

Statement of the problem

Stress is a phenomenon known in all human communities. Negative and positive effects of stress are obvious at different levels and stages of human life. Moderate levels of stress are natural states of mind necessary for life and growth (for coping with changing conditions); while high levels of stress have destructive effects on human health and well-being (1).

In most modern societies, human life has been dramatically changed. Today, in most parts of the world, especially in industrialized countries and societies in which economic and social crises have disrupted normal human life, social stress factors are more prevalent than ever (2); so that, stress is called 'black plague' in the current era (3). Stress is a global phenomenon experienced by almost every human being. Stress, caused by an interaction between an individual and his/her environment, is a way to understand unique physical and psychological reactions to changing conditions in life (4 & 5). Occupational stress is among the most important types of stress (6) that includes destructive emotional and physical reactions to a task beyond one's capabilities (7).

Occupational stress adversely affects people's physical and psychological health (8). In fact, occupational stress is a chronic disease, caused by harsh working conditions, that affects people's physical and mental well-being (9). In the early stages, when an individual is always emphasizing that: "I have to do my duties better and better", occupational stress can increase work efficiency. However, if an individual's efforts to do her/his duties better and better are ignored, s/he will be leaved in an state of emergency leading to health-related problems and decreased work efficiency (10 & 11). Symptoms of occupational stress are different in different people. These symptoms are related to different factors such as the location and working conditions, the duration of exposure to stressful situations and the level of pressure exerted on an individual. Nevertheless, the most obvious symptoms of occupational stress are insomnia, distraction, anxiety, absenteeism, depression, fatigue, extreme frustration and anger, family problems, physical ailments such as heart disease, migraine, headache, indigestion, hernia and spinal disc herniation (12).

Occupational stress may arise from different problems including job insecurity, high rates of dismissal, technology training, workplace culture and personal or family issues.

Occupational burnout is defined as 'a lack of compatibility with stressors' or 'a syndrome consisting of physical and emotional exhaustion' that leads to negative attitudes toward a job and a lack of enthusiasm for interacting with clients

(13). The first problem of burnout victims is physical exhaustion manifested through long-term fatigue, decreased energy and multiple physical pains. These pains can range from a continuous headache, nausea or sleep problems to severe gastrointestinal or immune system disorders (13). Several studies have been conducted to identify factors affecting occupational burnout. People experiencing burnout are less emotionally involved in their jobs. These people feel discomfort when interacting with their clients and think that they are doing too much work (14).

Pre-hospital care providers face with a variety of stress factors, including exposure to acute and infectious diseases, dealing with trauma or mentally ill patients, patients' death, 24/7 service and patients' and their caregivers' conducts, that all affect their performances. Today, there is no doubt that occupational stresses have many physiological (e.g. cardiovascular diseases, musculoskeletal diseases, gastrointestinal diseases, etc.), psychological (e.g. post-traumatic stress, burnout, etc.) and behavioral (absenteeism, sleep disorders, drug abuse, etc.) consequences that impose an enormous cost upon the organizations (15).

Due to issues such as time constraints, critical conditions of the patients, caregivers' expectations, open work environment, fear of incompetency in saving patients' lives, decision-making in critical conditions and factors related to human resources, working in medical emergency units causes many tensions for the employees. Within one business day, medical technicians rendering pre-hospital emergency care may face many physical and psychological pressures that can negatively affect their performance. These tensions can also be considered as a threat to the health and lives of these technicians. Accordingly, in order to identify and reduce the adverse effects of these stress factors on medical technicians' performance, it is important to conduct studies.

Materials and Methods

The present cross-sectional descriptive study was conducted in late summer and autumn 2011. The population consisted of all pre-hospital emergency technicians in the city of Zabol (80 subjects).

The inclusion criteria were as follows:

- ✓ Working in pre-hospital emergency ambulance as one of the technician ranks (paramedic, Emergency Medical Technician-Basic, Emergency Medical Technician-Intermediate and Advanced Emergency Medical Technician); medical technicians working at administrative and communication sections were not included.

- ✓ The main profession of the included medical technicians was working in pre-hospital emergency ambulance; technicians working in ambulance for overtime were not included.
- ✓ Working in medical emergency ambulance for at least one year.

To collect data, a standardized questionnaire assessing nurses' occupational stress was used. The used questionnaire in the present study had already been used by Motiei and colleagues. The mentioned questionnaire was revised for being used to assess occupational stress among pre-hospital emergency technicians (i.e. titles and terms used by nurses were replaced by parallel terms used by pre-hospital emergency technicians) (16). The first part of the questionnaire contained five items covering demographic characteristics of the participants (without mentioning name or any other personally identifiable characteristic) and the second part of the questionnaire included 35 items related to stress factors in medical emergency (35 items for interpersonal stress factors; 5 items for managerial stress factors; 7 items for personal stress factors; and 8 items for environmental stress factors). Items in the second part of the questionnaire were scored on a 5-point Likert scale ranging from 0 (no stress) to 4 (very stressful).

Given that no name was mentioned and that the participants took part in the study voluntarily, ethical considerations were completely observed.

The reliability and validity of the questionnaire, used in this study, had been confirmed in several previous studies, including a study conducted by Motiei and colleagues (16).

After explaining the study's objectives and obtaining the participants' informed consent, copies of the questionnaire were distributed among them. The collected data were analyzed using the SPSS Software version 20.0. To investigate the relationships between severity of factors and personal/social characteristics, independent samples t-test and one-way ANOVA were used.

Results

According to the results, the average age of the participants was 31.9 ± 7.6 years (minimum age: 23 years; maximum age: 49 years); the participants were mostly in the age range of 23-31 years (%63.2); %76.7 of the participants were medical technicians and %23.3 were paramedics; %51.7 of the participants had high school diploma, %38.3 had an associate degree and %10 had BS in nursing; %38.3 of the participants were contract employees; the average work experience of the participants was 8.58 years (SD=7.68) (minimum work experience: 1 year; maximum work experience: 25 years);

%60 of the participants were working at roadside medical emergency stations; %33.3 of the participants stated that they have at least 1 to 2 missions every 24 hours.

The results showed that the most important stress factors for the examined technicians were blaming themselves when coming late, patient’s death, contact with contaminated objects, indifference of hospital personnel about patients’ needs, patient’s pain due to a disease or a trauma, caregivers’ misjudgments about the quality of provided pre-hospital emergency care, limited number of technicians in the ambulance, fear of late arrival, small number of technicians for a huge number of emergency situations, fear of failure when performing their duties, driving at high speed when necessary, caring of patients with no caregiver, unavailability of doctors in emergency situations, lack of facilities and fear of physical encounter with patients’ caregivers (table 1).

Based on the results, no significant relationship was observed between stress factors and occupation, education level, type of employment, type of service and number of missions per day.

Table-1: The overall ranking of stress factors in pre-hospital emergency technicians.

Categories of stress factors		Mean	Overall mean	SD	Rate
Stress factors related to patient care	Driving at high speed when necessary	2.6	2.75	1.04	11
	Missions’ density	2.2		1.1	28
	Caring of patients with no caregivers	2.58		1.12	12
	Patient’s pain due to a disease or a trauma	2.78		0.922	5
	Touching contaminated objects	2.95		1.11	3
	Caring of a critically ill or dying patient	3.07		1.04	1
	Blaming oneself when coming late or when patient is already dead	3.07		1.05	2
	Accountability for consequences of decisions	2.27	2.35	1.12	25

Personal stress factors	Lack of interest in working as a pre-hospital emergency care provider	1.85	2.47	1.27	33
	Need for high levels of professional knowledge and skills	2.31		1.21	23
	Inability to make decisions in emergency situations	2.34		1.19	21
	Fear of failure when performing the duties	2.63		1.15	10
	Fear of late arrival	1.65		1.13	8
	Lack of work-life balance	2.41		1.22	17
Interpersonal stress factors	Connections with numerous doctors at the guidance center	1.87	2.3	1.41	32
	Unavailability of doctors in emergency situations	2.52		1.14	13
	Lack of coordination between technicians and physicians	2.45		1.18	16
	Indifference of hospital personnel about patients' needs	2.88		1.12	4
	Caregivers' misjudgments about the provided pre-hospital care	2.73		1.02	6
	Fear of physical encounter with patients' caregivers	2.48		1.21	15
	Patients'/caregivers' disrespect for the technicians	2.35		1.31	20
	Complexity and diversity of medical	1.8		1.29	34

Environmental stress factors	equipment				
	Noises arising from wireless devices and sirens	1.98		1.27	31
	Well-lit workplaces	2.02		1.32	30
	Caregivers' noise	2.23		1.27	27
	Limited space to perform necessary medical actions in the ambulance	2.18		1.05	29
	Lack of a perfect place to relax	2.25		1.34	26
	Lack of opportunity for rest	2.33		1.31	22
	Shortage and unavailability of facilities	2.5		1.08	14
Managerial stress factors	Limited number of technicians in the ambulance	2.7	2.48	1.15	7
	Employment of novice staff	2.4		1.06	18
	Disregarding the staff in making decisions	2.7		0.86	24
	Absence of accurate assessment of staff's performance	2.37		1.01	19
	Small number of technicians for a huge number of emergency situations	2.65		1.09	9

Discussion

The results showed no significant relationship was observed between stress factors and occupation, education level, type of employment, type of service and number of missions per day. Motiei and colleagues also showed that there is no significant relationship between level of tension and variables of work experience, marital status and shift work. In the present study, the lowest level of occupational stress was observed in technicians with an associate degree. Working at roadside medical emergency stations, small number of ambulance, type of station structure, lack of a perfect place to relax and lack of facilities were the most environmental stress factors (16).

In similar studies conducted on nurses working at non-emergency medical settings, the most important stress factors were unavailability of doctors when necessary, small number of staff for a huge number of medical situations and caring of critically ill or dying patients. Among the examined stress factors, managerial and interpersonal factors had respectively the highest and the lowest severity (17 & 18).

According to the results of this study, the most important stress factors for the examined technicians were blaming themselves when coming late, patient's death, contact with contaminated objects, indifference of hospital personnel about patients' needs, patient's pain due to a disease or a trauma, caregivers' misjudgments about the quality of provided pre-hospital emergency care, limited number of technicians in the ambulance, fear of late arrival, small number of technicians for a huge number of emergency situations, fear of failure when performing their duties, driving at high speed when necessary, caring of patients with no caregiver, unavailability of doctors in emergency situations, lack of facilities and fear of physical encounter with patients' caregivers.

In similar studies conducted on nurses working at emergency settings, the most important causes of stress were patients' pain and suffering, the presence of patients' family members and friends, small number of staff for a huge number of emergency situations, caregivers' reactions and time constraints. Fear of caregivers' or colleagues' reactions in case of mistake or delay in making critical decisions are among the most important personal stress factors in medical emergency technicians (18 & 19). Some occupational stress factors have environmental and managerial origins that can be modified. Some of the environmental and managerial stress factors for the examined medical emergency technicians included lack of a perfect place to relax, lack of opportunity for rest, Shortage and unavailability of facilities, small number of technicians for a huge number of emergency situations and absence of accurate assessment of staff's performance. Among the most important factors affecting pre-hospital emergency technicians' quality of life, dissatisfaction with the available amenities, noise pollution in the resting places, lack of a perfect place to relax and opportunity for rest, workload and contact with contaminated objects can be mentioned. The mentioned results were compatible with results of other studies conducted on emergency nurses in Australia (19 & 20). We have develop key skill for stress management including: planning, time management and energy(21). Since they try to save the lives of people who are in critical health conditions, pre-hospital emergency technicians are considered as one of the most important human resources in every society. Self-care education is emphasized because it leads in active role in treatment process and accepting responsibility

for individual health (22). Social networks are used for behavior improvement, educational performance and other self-care education(23).It is obvious that lower levels of occupational stress can lead to better performance of these technicians. Accordingly, their occupational stress can be reduced by restructuring patterns of employment and making appropriate protection laws.

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