The relationship between Work Engagement and Job Stress among Emergency Technicians of Markazi Province, Iran, in 2015

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ABSTRACT
Several factors influence the efficiency and effectiveness of organizations, one of them is work engagement. Nowadays job stress has become one of the most costly and a common problem in the workplace. United Nations introduced job stress as twentieth-century disease. Emergency unit in hospitals is stressful environments with high working pressure. This study is a cross-sectional study to determine the most common stress factors and assess work engagement among emergency center technicians in Markazi Province in 2015. Data were collected by using three questionnaires containing demographic questionnaire, job stressors questionnaire and job engagement questionnaire (UWES-9 Scale. SPSS version 19 software was used to analyze the data. The results showed that the patient care stressor had the maximum mean stress score (3.63±0.59) and physical stressors had the lowest mean stress score (3.26± 0.77). A significant relationship was observed between individual stressors and all aspects of work engagement and interpersonal stressors and vigour ($P \leq 0.05$). The results of this study showed that work engagement can have an effect on job stress or job pressure. There was a negative association between work engagement and job stress.

Keywords: Staff Engagement, Job-related Stress, Emergency Medicine Technician

INTRODUCTION
Several factors influence the efficiency and effectiveness of organizations, such as work engagement. People have different attitudes that affect their behaviour in organizations. Among these attitudes is "work engagement" term that has not long been into the organizational behaviour field. Being interested in and having a positive attitude to job result in more effort, and thus will reduce the costs [1]. Evans introduces job involvement as the degree a person is interested and engaged in his job in terms of cognitive aspect, and sees it as his pride and credit [2]. Other researchers suggest that job involvement is an ethical and interpersonal variable that indicates a person's responsibility [1].

Some studies had more focus on organizational features in the creation of work engagement, and believe that the organizations that prevent the growth and satisfaction of their employees decrease their work engagement [3,4]. although people's work engagement is influenced by the individual characteristics as well as the previous experiences, environmental and organizational situations are also important in the creation of work engagement [1].

People who work in safe and healthy workplaces attempt to have a more efficient and better working environment. According to previous studies, workers with high work engagement are more satisfied with their job, and their absence from work is lower than the others [5].

Enthusiastic employees often experience more positive affections and emotions such as happiness, enjoyment, ecstasy and rejoice, have better physical and mental health, and can transfer their work engagement to others [6].

Work engagement is argued to include three dimensions namely, vigour, absorption and self-dedication. Vigour consists of great energy levels and the ability of resilience of staff mind while working. Dedication can be conceived of as one's intense engagement with work, sense of significance, enthusiasm, and challenge. Absorption, finally, includes concentration on and satisfactory engagement

with the job such that time passes fast for the person and leaving the job is difficult for him/her [6,7].
Ability is defined as preparation and effort at work, providing a high level of vigour at work and willingness to remain steadfast in the face of difficulty or failure at work. Dedication to work refers to identifying the strong identity of the person by work. Moreover, attractiveness means totally focused and interested in work so that time passes quickly and separation from the work is difficult for the person [8]. Work engagement of employees may negatively affect from common sources of work-related stress.
Nowadays, job stress has become one of the most costly and common problems in the workplace. In 1992, the United Nations introduced job stress as twentieth-century disease, and later on, World Health Organization declared it as a world's common problem. In addition, the International Labor Organization has estimated the costs imposed on countries due to job stress between 1 to 5.3 percent of GDP [9].
Work-related stress is a chronic disease and refers to intense physical and emotional reactions of the individual against workplace conditions. This situation arises when the conditions and resources do not fit the expectations, needs and abilities of the individual, and pave the path for physical and mental failures and can affect person's physical and mental health and performance [10,11].
It is a tension that the person experiences it, and is an interaction between working conditions and characteristics of the employed person, in such a way that work demands are more than the individual's capacity [12].
Medical emergencies system is a part of the patient care chain that continues from the accident occurrence moment to the rehabilitation and discharge of the patient. Its staff is the first respondents to patients in an emergency situation. It is expected that individuals practising this profession perform their duty in a difficult, unpredictable, and changing situation regardless of any situation or type of organization in which they work. People working in this profession may work for long hours with limited information, surveillance, and resources to fulfil their work mission [13].
Emergency unit in hospitals is stressful environments. High working pressure, the requirement of use of too much information, the sensitivity of every second, high tension, unpredictability, and vitality of understanding problems as well as expectations of patients' companions to save patients life differentiate these departments from other hospital wards [14]. On the other hand, time restrictions in doing the job, limited decision-making power in critical conditions, emotional stress, fatigue, accidents, infectious agents, occupational injuries, high workloads, fear of incompetency in saving lives, patients critical situation and their companions' expectation along with the factors associated with human resources create tense and stressful condition among its staff [14].
Studies show that the most important factor of work-related stress among emergency medical staff is a witness of pain and death of the patient, high workload and conflicts with nurses and doctors [15].
Considering the above-mentioned issues and the importance of work-related stress, and considering that work-related stress may negatively influence employees' sense of well-being, and also given that emergency care technicians are occupational groups who face stressful situations, this study aimed to determine the amount of job stress, and work engagement among emergency care technicians of Markazi province in Iran.

MATERIAL AND METHODS

This is a cross-sectional study aimed to determine the most common work-related stress factors and assess work engagement among emergency center technicians in Markazi Province in 2015. The number of participants with 95% confidence level and power of 80% and a 25% absolute error was randomly assigned 200. Qualified individuals in this study included:
-Individuals with an upper-diploma medical emergency degree who worked in emergency centers.
-Individuals working in medical emergency centers in the pre-hospital emergency ambulances (including rescuer, basic technicians, intermediate technicians, technicians working in administrative and communication centers) and those with at least one-year work experience in medical emergency ambulances.
After obtaining the informed consent and considering the inclusion criteria, all questionnaires were completed in person. Data were collected using three questionnaires including demographic information, job stressor factors in emergency technicians, and work engagement Scale (UWES-9) [14].
Demographic questionnaire included variables such as age, gender, marital status, education level, work experience, employment type and working hours.
Work engagement questionnaire (UWES-9) involved 17 questions with a Likert scale, ranging from 1(strongly agree) to 5 (strongly disagree). This questionnaire has three dimensions including vigour (6 questions), job sacrifices (5 questions), and attractiveness (6 questions). The minimum score of work engagement is 17 and the maximum is 85. The validity of the work engagement questionnaire was confirmed through consultation with specialists in

psychology, ergonomics, and occupational health, and Cronbach's alpha was determined 0.853.

Pre-hospital care stressor questionnaire includes 35 five-point Likert-scale questions (1= without tension, and 5= high tension). This questionnaire contains five dimensions including patient care (7 items), personal (7 questions), interpersonal (8 questions), physical environment (8 questions) as well as management stressors (5 items). Validity and reliability mentioned questionnaire was obtained from Motie and vali's studies [14,16].

Questions were scored in such a way that score one was given to "without tension" and score five for "too much tension" cases. Total score and percentage points were obtained from dividing the points to maximum possible score. Validity and reliability of the questionnaire were confirmed in studies by Moti *et al.* and Vali [14,16]. Furthermore, SPSS software version 19 along with descriptive statistics such as frequency and percentage were used for data analyzing, and Mann-Whitney, Kruskal-Wallis, Spearman correlation, and regression analysis were used for mean comparison.

RESULTS

The subjects of this study were 200 medical emergency centers personnel in Markazi University of Medical Sciences. Their academic degree varied from diploma, medical emergency technicians, to B.S in nursing, and worked as a rescuer, basic, intermediate technician, paramedical staff and driver. Their mean age was 32.16 (7.39) years. They had an average work experience of 8.97 (6.57) years. 182 (91%) of them were males and the rest were females. Moreover, with regards to their academic degree, 45 (22.5%) had a diploma, 77 (38.5%) with upper-diploma, 72 (36%) with bachelor's degree and 6 (3%) had master's degree. 128 (64%) were single and the rest were married. On average, they had 280 compulsory working hours per month. In addition, 40 (20%) of participants were official employees, 40 (20%) had contracts, 102 (52%) were contractual employees and 16 (8%) were apprentices.

Mean of vigour, sacrifice, and attractiveness dimensions, as well as job engagement, was obtained 2.92±0.86, 2.91±0.92, 2.61±0.83, and 47.7±12.8 respectively (Table 1). Patient care stressor had the maximum mean score, with mean of 3.63±0.59 and physical stressors with mean of 3.26± 0.77 had the lowest mean score. Mean score of other factors including management stressor, interpersonal stressors and individual stressors was 3.53±0.8, 3.34±0.74, 3.27± 0.7 in order (Table 2).

Table1: Distribution of work engagement factors in emergency technicians of Markazi province

Work engagement factors	Variable	Completely agree		Agree		Neutral		Disagree		Completely disagree		Mean (SD)
		%	Fre*.	%	Fre.*	%	Fre.*	%	Fre.*	%	Fre.*	
Vigor	Question 1	11.5	23	25.5	51	33	66	12.5	25	17.5	35	1.24±3.01
	Question 2	11	22	21.5	43	20	40	34	68	13.5	27	1.22±2.28
	Question 3	14	28	28	56	12	24	16.5	33	29.5	59	1.46±2.6
	Question 4	16.5	33	29.5	59	11.5	23	19	38	23.5	47	1.44±2.96
	Question 5	23.5	47	23.5	47	15.5	31	14.5	29	23	46	1.49±3.1
	Question 6	15	30	24.5	49	16.5	33	18.5	37	25.5	51	1.42±2.85
Dedication	Question 7	8.5	17	26.5	53	16.5	33	26	52	22.5	45	1.3±2.72
	Question 8	9	18	24	48	28.5	57	18	36	20.5	41	1.25±2.83
	Question 9	18	36	28	56	13.5	27	18.5	37	22	44	1.44±3
	Question 10	24.5	49	21.5	43	14	28	17.5	35	22.5	45	1.5±3.1
	Question 11	21.5	43	22	44	11	22	18.5	37	27	54	1.5±2.29
Attractiveness	Question 12	13.5	27	17	34	14	28	27	54	28.5	57	1.4±2.6
	Question 13	15.5	31	17.5	35	14.5	29	29	58	23.5	47	1.39±2.72
	Question 14	10	20	18.5	37	22.5	45	28.5	57	20.5	41	1.26±2.69
	Question 15	11.5	23	14	28	19	38	27.5	55	28	56	1.33±2.53
	Question 16	10.5	21	21.5	43	15.5	31	32.5	65	20	40	1.29±2.7
	Question 17	9	18	17	34	12	24	30	60	32	64	1.3±2.41

*Frequency

According to Table 3, using the Spearman coefficient, a significant inverse relationship was obtained between patient care stressors, vigour, attractiveness, and work engagement. Furthermore, a significant correlation was found between individual stressors with all domains of work engagement, and interpersonal stressors with a vigor dimension. On the contrary, there was no significant association between management stressor and work engagement domains.

Linear regression analysis was used to investigate the confounding effect of independent variables on stressful factors and aspects of work engagement. There was no significant relationship between patient care, interpersonal and management stressors with age, gender, marital status, education level and work experience.

Table 2: Frequency distribution of job stressors examined in the emergency care technicians

Stressor factors	Variable	Very high		High		Somewhat		Low		Very low		Mean (SD)
		N	%	N	%	N	%	N	%	N	%	
Patient care stressor	Driving at a high speed in an emergency situation	42	21	69	34.5	54	27	24	12	11	5.5	3.53±1.11
	Intensive missions	38	19	77	38.5	54	27	24	12	7	3.5	3.57±1
	Care of patients who do not cooperate	38	19	74	28	63	31.5	21	10.5	4	2	3.6±0.97
	Pain and suffering of patients	41	20.5	74	37	59	29.5	20	10	6	3	3.62±1
	Contact with contaminated instruments	43	21.5	87	43.5	31	15.5	30	15	9	4.5	3.62±1.11
	Care of critically ill patients	61	30.5	76	38	41	20.5	15	7.5	7	3.5	3.84±1
	Self-blame in the event of being late and death of patient	45	22.5	75	37.5	51	25.5	21	10.5	8	4	3.64±1
Individual stressors	Responsibility about consequences of decisions	36	18	80	40	54	27	26	13	4	2	3.59±1
	Lack of interest in work in pre-hospital ambulance	28	14	43	21.5	60	30	34	17	35	17.5	2.97±1.28
	Need to high skills	31	15.5	71	35.5	57	28.5	28	14	13	6.5	3.39±1
	Unable to make decisions in critical situations	23	11.5	55	27.5	59	29.5	42	21	21	10.5	3±1.16
	Fear of failure in performing duties	30	15	65	32.5	47	23.5	38	19	20	10	3.23±1.21
	Fear of late in clinical services to critically ill patient	33	16.5	66	33	47	23.5	40	20	14	7	3.32±1.17
	Incompatibility of work plan with living conditions	41	20.5	50	25	59	29.5	31	15.5	19	9.5	3.31±1.23
Interpersonal stressor	Communicating with several physicians	22	11	63	31.5	57	28.5	34	17	24	12	3.12±1.18
	Unavailability of physicians in emergency situation	33	11.5	70	35	36	18	42	21	19	9.5	3.28±1.23
	Lack of coordination between technicians and physician	26	13	60	30	51	25.5	39	19.5	24	12	3.12±1.2
	Lack of attention to patient's needs by destination hospital's medical staff	31	15.5	82	41	39	19.5	32	16	16	8	3.39±1.61
	Misjudgment of patients relatives about the medical actions	47	23.5	66	33	44	22	30	15	13	6.5	3.52±1.19
	Interference of patients relatives in emergency services	40	20	65	32.5	56	28	28	14	11	5.5	3.47±1.12
	Fear of physical encounters with patients family	38	19	67	33.5	50	25	27	13.5	18	9	3.4±1.19
	Disrespect of patients and their relatives	40	20	61	30.5	52	26	32	16	15	7.5	3.39±1.18
Physical environment stressors	The complexity and variety of instruments	26	13	53	26.5	43	21.5	50	25	28	14	2.99±1.26
	Noises from wireless communication systems and alarms	26	13	59	29.5	44	22	47	23.5	27	13.5	3±1.23
	Insufficient lighting of work area, especially at night missions	28	14	69	34.5	52	26	36	18	15	7.5	3.3±1.14
	Patients relatives' noise	23	11.5	66	33	72	36	27	13.5	12	6	3.3±1
	Limited space for ambulance	26	13	70	35	54	27	36	18	14	7	3.3±1.11
	Lake of a perfect place to relax	44	22	60	30	40	20	35	17.5	21	10.5	3.35±1.28
	Lack of opportunity for rest	31	15.5	80	40	45	22.5	29	14.5	15	7.5	3.4±1.13
	Shortages and unavailability of equipment and facilities	36	18	60	30	60	30	29	14.5	15	7.5	3.36±1.13
Management stressor	Lack of technicians in the ambulance	36	18	67	33.5	49	24.5	33	16.5	15	7.5	3.38±1.17
	Use of new and lazy employees	34	17	63	31.5	54	27	37	18.5	12	6	3.35±1.14
	Lack of attention to personnel's opinion in decision making	41	20.5	72	36	47	23.5	31	15.5	9	4.5	3.52±1.11
	Absence of a detailed assessment of work and efforts	47	23.5	64	32	51	25.5	28	14	10	5	3.55±1.14
	Lack of technicians in proportion to the missions	66	33	68	34	44	22	17	8.5	5	2.5	3.86±1

Table 3: Relationship between work engagement and job stressors in emergency technicians

Work engagement dimensions / Job stressors	Correlation	Vigour	Dedication	Attractiveness	Work engagement
Patient care stressor	R	-0.140	-0.030	-0.147	-0.143
	value p-	0.046	0.67	0.038	0.041
Personal stressor	R	-0.218	-0.168	-0.255	-0.279
	value p-	0.002	0.017	0.0001	0.0001
Inter-personal stressor	R	-0.222	-0.081	-0.094	-0.102
	value p-	0.001	0.256	0.186	0.150
Physical environment stressor	R	-0.115	-0.001	-0.071	-0.073
	value p-	0.104	0.987	0.320	0.301
Management stressor	R	-0.129	-0.038	-0.013	-0.067
	value p-	0.069	0.593	0.854	0.347

According to Table 4, regression analysis showed that there was no significant association between physical environment stressor and demographic variables, except for education level. Meaning that the more the education level of the participants, the less the physical environment stressors, therefore, education level was considered as a predictor of the physical stressor. According to the results of Table 4, regression analysis revealed that there was no significant relationship between the interpersonal stressor and demographic variables, except for the gender variable. Thus, the gender variable was considered as a predictor of interpersonal stressors.

Based on the results of Table 5, the test showed a significant relationship between the vigour and marital status, marital status with dedication, and job attractiveness with marital status.

Table 4: Regression results of dependent variables of job stressors in emergency technicians

Personal characteristic / Job stressors	Correlation	Age	Gender	Marital situation	Education level	Work experience
Patient care stressor	Beta	.030	0.056	0.036	0.073	0.028
	value p-	0.753	0. 466	0.68	0.355	0.723
Personal stressor	Beta	-0.051	0.130	-0.057	-0.120	0.070
	value p-	0.59	0.094	0.507	0.129	0.375
Inter-personal stressor	Beta	-0.045	0.159	0.006	-0.038	0.073
	value p-	0.634	0.040	0.948	0.627	0.355
Physical environment stressor	Beta	-0.132	0.092	-0.025	-0.153	0.076
	value p-	0.166	0.235	0.744	0.047	0.340
Management stressor	Beta	-0.031	0.032	0.014	-0.081	0.036
	value p-	0.748	0.684	0.869	0.308	0.652

Table 5: Regression results of dependent variables in work engagement in emergency technicians

Personal characteristic / Work engagement dimension	Correlation	Age	Gender	Marital situation	Education level	Work experience
Vigor	Beta	-0.063	-0.043	0.210	0.048	-0.012
	value p-	0.507	0.575	0.015	0.538	0.876
Dedication	Beta	-0.155	0.110	0.185	-0.056	-0.018
	value p-	0.102	0.151	0.031	0.471	0.819
Attractiveness	Beta	-0.201	0.009	0.257	-0.036	0.027
	value p-	0.034	0.904	0.003	0.646	0.731

DISCUSSION

This study intended to identify the most common work-related stress factors and assess work engagement among emergency technicians of Markazi Province in 2015. In the present study, stress factors in order of their importance were patient care, management, interpersonal, personal and physical stressors. Vali *et al.* listed the stress factors, with regards to their importance, as patient care, interpersonal, management, individual and physical stressors. According to the findings of this study, taking care of critically ill patients, self-blaming in the event of being late and death of patient, pain and suffering of patients were the main causes of stress in

patient care domain. Understanding potentially modifiable factors that are associated with work engagement represents an important goal and can inform managerial efforts and research aimed at developing effective workplace interventions to increase the resilience of hospital workers [17].

Patients care and physical stressors had the highest and the lowest mean score. In a study by Vali *et al.* among Kerman emergency technicians, the results displayed that patient care stressors and physical stressors received the highest and the lowest score. Unavailability of a physician during the shift, taking care of critically ill patients, heavy workload, shortage of a number of staff to patients and patient relatives' reactions bring more stress to individuals working in this department [14].

Findings of the present study indicated that patient care along with management stressors were respectively the most important stressors, as pointed out by Vali *et al.* and Navidian. On the contrary, in a study carried out by Motei *et al.* they reported management and interpersonal factors as the most and the least important factors. Since physical stressors can be modified through external factors, therefore, they have the least effect in comparison to other stressors [14,16,18].

Another important factor related to stress is management stressors. It seems that medical emergency managers face a variety of administrative duties and encounter with staff having different personal, and personality characteristics in pre-hospital emergency centers. In order to deliver services in emergency centers, they have to hire unskilled workers with non-related education, which it would have a lot of tension for technicians and staff who work with such people. According to this study, the most important factor in management stressors was lack of technicians in proportion to the workload, absence of accurate assessment of work and effort, lack of consideration of personnel's opinion in decisions making and a shortage of technicians in the ambulance.

Furthermore, Saberi Nia *et al.* listed the most important management and organizational problems of the emergency technicians as an inappropriate incentive system, rescue teams' structure, educational problems, reward systems problems, uncertain workload, indefinite working time, and unfair compensation system. Due to the fact that the emergency ambulance system is a new system and has a variety of administrative duties, emergency managers can bring about creativity and innovation to the organization through increasing the number of technicians in proportion to the workload, involving employees in decision-making, encouraging and praising the employees, which all can improve emergency management and reduce the management stressors [11].

Another factor involved in employee's stress is physical stressors, which had the lowest effect in the present study. In Vali's study, this factor also gained the lowest score. Conversely, Moti *et al.* reported this factor to be the third most effective factor among five factors. Perhaps this contradiction comes from the fact that Markazi Province emergency has more proper centers in comparison to Mashhad.

The results of this study disclosed that patient care stressor was not significantly correlated with any of the independent variables. This is similar to the findings of Vali's and Moti's study. Regression analysis showed that there was no significant relationship between the physical stressor and demographic variables, except for education level. Meaning that by increasing the education level of the participants, physical stressors would reduce, and education level was considered as a predictor of the physical stressor. However, in studies done by Vali, Moti, and Rezaeee, age was an affecting factor on the physical stressor, and physical stressors would shrink with increasing the age. According to the regression analysis, there was no significant relationship between inter-personal stressor with demographic variables, except for the "gender" variable. Therefore, gender was considered as a predictor for inter-personal stressors. In Vali's study, management stressors had increased with increasing the education level. Meaning that emergency technicians who had a master's degree and worked alongside emergency technicians had more tension due to lack of attention to their opinion in decision-making and absence of a detailed assessment of work and effort. This could be due to a lack of job promotion for staff with an academic degree higher than B.S. Moti *et al.* found no significant relationship between the level of education and job stressor [15,16,19].

Based on the results of the present study, the most important stressor was the shortage of technicians in proportion to the workload and taking care of critically ill patients. Considering the shortage of technicians, managers should increase the number of staff with adequate skills to be able to reduce the workload of the emergency technicians and, as a result, reduce job stress and burnout. Moreover, the use of unskilled staff and staff with insufficient experience in emergency medical centers cause tension when taking care of critically ill patients.

Mean score for vigour, sacrifice, job attractiveness, as well as work engagement, indicates that work engagement and its dimensions are very low in emergency staff. Between all dimensions of work engagement, attractiveness had the lowest score;

meaning that working in an emergency medical center does not have enough attractiveness to them.

Having the data analyzed by Spearman coefficient, a significant inverse relationship was found between patient care stressors and vigour stressors, attractiveness and work engagement. In addition, there was a significant relationship between the personal stressor and all dimensions of work engagement and vigour dimension. In this study, a significant relationship was not found between management stressor and work engagement. The study of Leiter and Keshtkar confirmed the existence of a direct and statistically significant relationship between organizational support and work engagement in nurses [20,21]. Also in a study by Cho *et al.* and Laschinger, a significant relationship was revealed between work engagement and organizational commitment [22,23].

Hakanen *et al.* found that there was a direct and statistically significant relationship between the work engagement components (vigour and dedication) and organizational commitment [24]. Additionally, Laschinger pointed out that there exists a statistically significant inverse relationship between work engagement and the desire to leave the organization in nurses [23]. Also, the results of the Orgambídez study showed that role stressors were related negatively to work engagement and job satisfaction [25].

Regression results showed that there was a significant relationship between the vigour and marital status, marital status with dedication, and attractiveness with marital status. However, Brown reported a very low correlation between age, organizational history, gender, marital status, and education level with work engagement. Work engagement is an ethical and intrapersonal variable that indicates the amount of individual responsibility, therefore in each person that this variable is internalized; they probably have more work engagement. Situational factors of the job such as the amount of challenge in the job, the ambiguity of role, management behaviour, a delegation of authority and training can affect the employee's work engagement [26]. Work engagement has desirable organizational benefits, including being associated with having positive attitudes towards work, high job performance and low turnover [17].

In other words, work engagement increases when the job is appropriate for the staff's abilities, attitudes and other characteristics. In addition, work engagement is influenced by both individual characteristics such as age and job experience as well as organizational characteristics such as the freedom of staff, their involvement in decision-making, and feeling of job security.

CONCLUSION

The results of this study showed that work engagement can have an effect on job stress or job pressure. There was a negative association between work engagement and job stress (or pressure). The results of this study are important for hospital administrators and staff. Because by reducing job stress or increasing work engagement, improve working conditions could improve.

ETHICAL ISSUES

They voluntarily approved a consent form before enrolling in the study

CONFLICT OF INTEREST

There are no conflicts of interest.

AUTHORS' CONTRIBUTIONS

All authors equally help to write this manuscript

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