



Evaluation of emotional intelligence and its relationship with job stress and the symptoms of post-traumatic stress disorder among Shiraz pre-hospital emergency technicians in 2020

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Abstract

Objectives: This study was conducted to investigate the emotional intelligence (EI) and its relationship with job stress and the symptoms of post-traumatic stress disorder (PTSD) among pre-hospital emergency technicians.

Methods: This is a descriptive cross-sectional study. The sample was selected from a population of about 400 technicians with at least one year of experience in emergency medical service centers. The sampling was done through a census method. The following questionnaires were used to collect the data: Demographic Characteristics, Siberia Schering's Emotional Intelligence Standard Questionnaire, Health and Safety Executive Questionnaire (HSE), and the Impact of Event Scale - Revised Questionnaire (IES-R). The data were analyzed using SPSS software version 22.

Results: The mean score of EI, job stress and PTSD were 110.18 ± 17.73 , 111.36 ± 15.31 and 32.15 ± 12.08 , respectively. The results of the study showed that people with high level of EI have lower level of job stress. Moreover, people with high level of EI have lower level of PTSD.

Conclusion: As EI predicts job stress and the symptoms of PTSD, the provision of EI training should be taken into consideration by officials as a factor in promoting mental health in medical staff, clinical competence, and the quality of patient care.

Keywords: Emergency medical technician, Job stress, Post-traumatic stress disorder, Emotional intelligence.

Introduction

Job stress has been reported to reduce efficiency and the ability to manage and change, and increase staff dissatisfaction.^[1] According to the American stress institute, stress in the US economy costs about \$ 300 billion a year. The American psychological association reported in 2017 that 61% of people experience significant stress in their workplace.^[2]

Pre-hospital emergency technicians are frequently exposed to stress due to their work conditions. If the stressors overwhelm the person, and they are unable to balance the feeling and logic, their performance is often resulted in negative consequences for the individual, the organization, and the client.^[3] In Moshtagh Eshgh et al.'s study, 61.9% of the participants had moderate to high level of stress.^[4]

The individual and organizational adverse effects caused by high level of job stress include alcohol and drug abuse, decreased productivity, fatigue, increased human error, decrease in the quality and quantity of work, absenteeism, decreased commitment and job satisfaction, impaired social and occupational performance, leaving the job, and increased mortality and morbidity.^[5-10] One of the psychological disorders associated with job stress is post-traumatic stress disorder (PTSD), which is caused by repeated exposure to significant stressors or the inability to cope effectively with traumatic experiences, especially when the emergency technicians are engaged in helping victims of mass casualties, brutal rape, and family members or a friend in threatening situations.^[8,11]

As working conditions in the pre-hospital emergency departments are such that the staff are constantly faced

with a wide range of traumatic events including patients in critical conditions, major injuries, physical and verbal aggression, conflict with patients' families and relatives, and a crowded work environment, they are prone to diverse occupational stress-related disorders, including PTSD, which can have a significant impact on their well-being and quality of patient care.^[8,12]

The prevalence of PTSD has been reported differently in studies on EMTs. The results of a study by Saberi et al., showed a prevalence of 36.4% PTSD in Kashan and Arak.^[13] In another study conducted in Germany, 5.4% of paramedics met the diagnostic criteria for PTSD, which was less than (11%) the prevalence in a systematic study performed on EMTs by Petri et al.^[12,14] Moreover, the results of a study by Luftmana et al. showed that 36% of EMTs had more than twice the criteria for PTSD compared to nurses working in the ICU and operating rooms.^[15]

In order to adapt to the incoming stressors, it is necessary to learn some psychological skills because people can use such skills to evaluate traumatic factors in a more positive way, deal with them in a more efficient way, and ultimately provide a higher level of well-being and psychological adjustment in people. There are various strategies that can be employed by health educators to reduce the adverse effects of job stress. One of these strategies is to provide the necessary educational arrangements and counseling to improve employees' emotional intelligence (EI) skills.^[16,17]

Using EI skills, we can strengthen the skills of self-awareness, self-management, interpersonal management, and the ability to make decisions and solve problems.^[18] In addition, by raising resilience levels, we can create psychological adjustment, increased stress management, and ultimately ensure the mental health and well-being of employees.^[19] In a study by Harley et al., that focused on the impact of EI as a mechanism for promoting resilience in undergraduate nurses doing clinical work, participants reported an improvement in their ability to manage stressors that they attributed to their EI learning.^[20]

Although EMTs are the first treatment team to face the critical condition of patients in crises and emergencies, and this condition can exert a high degree of psychological pressure on them, there is a paucity of research regarding the relationship between EI and PTSD among this group of health workers in Iran.

Objectives

This study was conducted to assess the level of EI and its

relationship with job stress and the prevalence of PTSD among Shiraz EMTs.

Methods

The total number of 334 EMTs in Shiraz participated in a descriptive cross-sectional study. The sample was selected from a population of about 400 technicians with at least one year of experience in emergency medical service centers. The inclusion criterion included minimum one year of work experience. An informed consent to participate in the study was obtained from all participants. The exclusion criterion was the experience of grief in the last 6 months. Four questionnaires of demographic characteristics, Siberia Schering's Emotional Intelligence Standard Questionnaire, Health and Safety Executive Questionnaire (HSE), and the Impact of Event Scale - Revised Questionnaire (IES-R) were used to collect the data.

The demographic characteristics questionnaire includes age, marital status, educational level, work experience, major, employment status, and average working hours.

The Siberia Schering's Emotional Intelligence Standard Questionnaire is a five-point Likert-based questionnaire consisting of 33 questions with five subscales of self-awareness, self-regulation, self-motivation, empathy and social skills. Scores between 33 and 55 indicate low EI, scores between 55 and 110 indicate moderate EI, and scores between 110 and 165 indicate good EI. The validity and reliability of this questionnaire were established in a study conducted by Akbarzadeh et al., using Cronbach's alpha method. The results were 0.78 and 0.82, respectively.^[21]

The HSE (job stress questionnaire) is a five-point Likert-based questionnaire consisting of 35 questions with seven subscales of role, relationships, management support, peer support, control, demands, and change. Scores between 35-58 indicate high stress levels, scores between 58-17 indicate moderate stress levels and scores between 117 - 175 indicate low stress levels. In Iran, the validity and reliability of the questionnaire were reviewed by Azad et al., and its Cronbach's alpha and split-half methods validity were 0.78 and 0.65, respectively.^[22]

The IES-R has a five-point Likert scale (0-4) comprising 22 questions with three subscales of avoidance, intrusive thoughts, and hyper-arousal. A score between 0 and 29 indicates a low level of PTSD, a score between 29 and 44 indicates a moderate level of PTSD, and a score above 44 indicates a high level of PTSD.

In Iran, in a study conducted by Panahi et al., to determine the validity of the Persian version of IES-R, its internal consistency was between 0.67 and 0.87 using Cronbach's alpha method, and its test-retest reliability was ($r = 0.86- 0.98$).^[23]

After receiving the code of ethics and obtaining permission from the security and pre-hospital emergency officials of Shiraz, we selected the technicians who were eligible to participate in the research based on the inclusion and exclusion criteria. After explaining the objectives and obtaining informed consent, the technicians were asked to freely choose their answers.

Statistical analysis

Data were analyzed using SPSS software (version 22.0, SPSS Inc, Chicago, IL, USA). Descriptive statistics was used to determine the mean and standard deviation, and inferential statistics was used to analyze the main variables. T-test and one-way analysis of variance (ANOVA) were used to assess the significance of differences, and Pearson correlation coefficient was employed to determine the relationship between the variables. A “P-value” less than 0.05 was considered significant.

Ethical considerations

The study was conducted in accordance with the Declaration of Helsinki. Institutional Review Board approval (code: IR.ABZUMS.REC.1399.126) was

obtained. The present study did not interfere with the process of diagnosis and treatment of patients and all participants signed an informed consent form.

Results

Demographic questionnaire results showed that 66.8% of participants were married, and 33.2% were single. Most of the participants in the study had a bachelor's degree (60.5%) and were medical emergency graduates (61.4%). The majority of participants, i.e. 29.9%, had contract employment status. The mean and standard deviation of working hours was 60.74 ± 272.51 , respectively. The mean and standard deviation of work experience and age of participants were 5.19 ± 9.01 and 5.92 ± 32.81 , respectively [Table 1].

The mean and standard deviation of the participants' EI score (total) and job stress were 18.110 ± 17.73 and 111.36 ± 15.31 , respectively. The mean and standard deviation of the PTSD score (total) among participants were 32.15 ± 12.08 [Table 2].

Pearson correlation coefficient showed that there is a positive relationship between job stress and EI ($P = 0.001$). Therefore, people having a higher job stress score (indicating low job stress) have a higher EI. Moreover, at the level of 0.01, there is a negative correlation between the level of EI and PTSD ($P = 0.002$). Therefore, the symptoms of PTSD were shown to decrease among participants by increasing EI [Table 3].

Table 1. Mean and standard deviation of EI, job stress and PTSD and their relationship with demographic characteristics

Variable	Group	N	Percent	EI		Job stress		PTSD	
				Mean±SD	P-value	Mean±SD	P-value	Mean± SD	P-value
Marital status	single	111	33.2	111.96±15.55	0.197	112.61±15.26	0.295	33.91±11.04	0.060
	married	223	66.8	109.30±18.69		110.74±15.33		31.27±12.50	
Educational level	Diploma	6	1.8	120.50±12.67	0.058	112±12.72	0.195	44.16±12.44	0.081
	associate	118	35.3	111.76±18.39		113.11±15.76		31.25±12.65	
	Bachelor's	202	60.5	108.54±17.42		110.05±14.84		32.37±11.75	
	Master's	8	2.4	120.62±11.77		118.37±20.13		31±7.25	
Major	Medical emergency	205	61.4	110.20±17.59	0.083	111.11±15.13	0.089	31.69±12.69	0.018
	nursing	80	24	108.47±19.53		110.25±15.89		30.38±10.80	
	Anesthesia	30	9	108.50±15		110.66±14.25		36.33±9.88	
	other	16	5.7	119.84±12.53		119.94±14.88		37.94±11.15	
Employment Status	Permanent employee	72	21.6	109.56±17.97	0.050	111.34±15.38	0.020	31.81±11.70	0.234
	Fixed-term	100	29.9	106.83±17.87		108.22±13.31		31.82±13.04	
	Contract employee	56	16.8	114.94±13.78		114.58±15.07		34.75±12.49	
	Project employee	16	4.8	117.56±18.27		119.62±19.51		31.25±10.69	

	Corporate employee	78	23.4	109.60±18.13		110.53±16.06		32.29±10.94	
	Temporary employee	12	3.6	113.58±23.23		117.08±15.22		25.16±11.88	
Working experience	<10	220	65.9	109.93±17.86	0.533	110.90±15.55	0.544	31.82±12.24	0.109
	10-20	108	32.3	110.25±17.41		111.99±14.68		32.25±11.48	
	>20	6	1.8	118.16±20.01		117±18.76		42.33±14.44	
Working hours	<200	62	18.6	108.82±16.77	0.300	110.61±16.51	0.325	31.16±10.14	0.748
	200-350	245	73.3	109.99±18.46		111.98±15.16		32.31±12.71	
	>350	27	8.1	115.03±11.86		107.51±13.62		32.96±10.39	
Age	<28	97	29	108/97±17/13	0.620	110/86±15/36	0.52	32/84±10/05	0.103
	28-34	126	37.7	109/69±18/91		110/44±14/63		30/79±13/56	
	34-40	71	21.3	111/84±17/53		111/46±15/92		31/63±11/21	
	40-46	35	10.5	110/57±15/28		115/25±14/87		34/62±11/91	
	>46	5	1.5	119/80±19/53		115/80±25/57		43/20±17/19	

Table 2. Possible suffering, observed suffering, mean and standard deviation of EI, job stress and PTSD, and their dimensions

Variable	Dimension	Possible range	Observed range	Mean±SD
EI	Self-motivation	7-35	10-32	22.72±3.69
	Self-awareness	8-40	10-39	28.43±5.88
	Self-regulation	7-53	10-32	22.58±3.97
	Social intelligence	6-30	8-30	19.70±3.82
	Social skills	5-25	5-20	13.33±2.87
Total score		33-165	52-149	110.18±17.73
Job Stress	Role	5-25	5-25	18.16±4.48
	Relationships	4-20	4-20	12.70±2.76
	Management support	5-25	7-25	14.51±3.73
	Peer support	4-20	5-20	13.21±3.01
	Control	6-30	9-29	19.18±3.71
	Demands	8-40	9-38	24.21±4.51
	Change	3-5	3-15	9.35±2.33
Total score		35-175	76-168	111.36±15.31
PTSD	Avoidance	0-32	0-23	12.66±4.64
	Intrusive thoughts	0-28	0-22	10.23±4.20
	Hyperarousal	0-28	0-26	9.26±4.68
Total score		0-88	0-66	32.15±12.08

Table 3. Relationship between mean scores of EI, job stress and PTSD based on Pearson correlation coefficient

Variable	EI	Job stress	PTSD
EI	-	r = 0.185 P = 0.001	r = -0.169 P = 0.002
Job stress	r = 0.185 P = 0.001	-	r = -0.248 P = 0.000
PTSD	r = -0.169 P = 0.002	r = -0.248 P = 0.000	-

Discussion

This study was conducted to investigate EI and its relationship with job stress and the prevalence of PTSD among EMTs. Based on the results, the level of EI of the participants is rated good.

The results are consistent with Rakhshani et al.'s study in which the relationship between EI and job stress in nurses working in Shiraz hospitals was assessed, while the outcomes are not consistent with the findings from the study by Samaei et al., aimed to determine the effect of EI and job stress on job burnout. Moreover, the results are not in line with the findings from Kheirmand et al.'s study, which was conducted to investigate the relationship between EI and job stress among nurses in Alzahra Hospital, Isfahan. Meanwhile, the results of the present study are not in line with the outcomes of the study by Strickland et al., which was carried out to measure the level of EI of nursing students enrolled in undergraduate courses.^[1, 24, 25, 26]

In this study, no relationship was found between EI and demographic characteristics, while Rakhshani et al.'s study found a significant relationship between EI and employment status and marital status.^[25]

The results showed that the level of job stress among participants is moderate. The findings are consistent with those of the study by Rakhshani et al., in Shiraz hospitals, and the study by Samai et al. On the other hand, the results are not in line with the study by Kheirmand et al.^[1,24,25]

The results of this study confirmed previous research showing that there is a positive and significant relationship between job stress of EMTs and their EI. The results were consistent with a cross-sectional study by Rakhshani et al. Moreover, the studies conducted by Jami et al., Samaei et al., and Khairmand et al., in hospitals affiliated to Kerman university of medical sciences reported almost the same results. Based on the findings of the above studies, it can be concluded that people who have higher levels of EI and make use of emotional-cognitive abilities tend to be more competent in recognizing potentially stressful situations, are more flexible, and are more likely to avoid negative emotions by recognizing their own emotions.^[1,18,25,27]

In this study, the only significant relationship was found to exist between job stress and demographic characteristics in different employment situations, which is consistent with the study by Rakhshani et al. They also found a negative relationship between income growth and job stress, which is not consistent with our study.^[25]

As the results show, the symptoms of PTSD were

moderate among the participants of the present study. Results of the present study were consistent with those of Kerai et al., but different from those of Iranmanesh et al., which aimed to assess PTSD among hospital emergency personnel and technicians working in emergency medical service centers. Iranmanesh et al.'s study demonstrated a high level of PTSD in EMTs and hospital emergency staff.^[28,29]

In this study, there was a significant inverse relationship between PTSD and EI, in other words, the symptoms of PTSD decreased with the increase of EI, which was consistent with the study by Ghazali et al. Meanwhile, the findings indicated that EMTs are frequently exposed to stressful situations. Therefore, EMTs will experience higher levels of stress in their work environment if they are unable to manage their emotions in the face of stressors.^[30]

The results of this study showed no relationship between PTSD and age, educational level, financial income, working hours, and working years, which are in line with those of Iranmanesh et al. On the other hand, our findings are not in line with the results from Kerai et al., which showed an inverse relationship between PTSD and age and level of education. In addition, the findings of the present study are not in line with the findings from the study of Saberi et al., in which a significant relationship between the incidence of PTSD and marital status and gender was found.^[13,28,29]

Moreover, findings from a study by Rybojad et al., revealed a significant relationship between the incidence of PTSD in paramedics and gender, educational level and type of employment. In a study conducted by Adriaenssens, years of work also played a role in PTSD occurrence in addition to the above variables.^[8,31]

Finally, in a cross-sectional study by Eiche et al., older employees demonstrated significantly higher rate of PTSD than the younger staff. However, the difference between employees with more than 15 years of service and the staff with less than 5 years of service was not statistically significant, which is consistent with the results of our study.^[11]

Conclusions

As EMTs in Shiraz have a relatively high level of EI, they seem to experience just moderate job stress and PTSD. As shown above, this study revealed a positive significant relationship between EI and job stress, and an inverse and significant relationship between PTSD and EI. Therefore, by improving psychological indicators, particularly EI

skill as a factor in promoting mental health, quality of patient care, and clinical competence, we can minimize the level of job stress, and thereby reduce the prevalence of PTSD in EMTs.

Acknowledgment

None.

Competing interests

The authors declare that they have no competing interests.

Abbreviations

emergency medical technicians: EMTs;

emotional intelligence: EI;

post-traumatic stress disorder: PTSD;

Health and Safety Executive Questionnaire: HSE;

Impact of Event Scale - Revised Questionnaire: IES-R.

Authors' contributions

All authors read and approved the final manuscript. All authors take responsibility for the integrity of the data and the accuracy of the data analysis.

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Availability of data and materials

The data used in this study are available from the corresponding author on request.

Ethics approval and consent to participate

The study was conducted in accordance with the Declaration of Helsinki. Institutional Review Board approval (code: IR.ABZUMS.REC.1399.126) was obtained. All participants signed an informed consent form.

Consent for publication

By submitting this document, the authors declare their consent for the final accepted version of the manuscript to be considered for publication.

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