

# The relationship between Job Stress and Work-Related Quality of Life among Emergency Medical Technicians: A cross-sectional Study

**Hashemi Shima**

Lorestan University of Medical Sciences

**Merzah Mohammed**

Technical Institute of Karbala, AlFurat AlAwsat Technical University

**Rezaei Mehdi**

University of Birjand

**Astaraki Peyman**

Lorestan University of Medical Sciences

**Birjandi Mehdi**

Lorestan University of Medical Sciences

**Ghazanfari Firoozeh** (✉ [firoozeh.ghazanfari@yahoo.com](mailto:firoozeh.ghazanfari@yahoo.com))

Lorestan University

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## Research Article

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## Abstract

**Background and objectives:** This study was conducted to determine the relationship between job stress and WRQoL among emergency medical technicians (EMTs) in Lorestan Province, Western Iran.

**Methods:** This is a cross-sectional study using census method among 430 emergency medical technicians who had been engaged in their respective units for more than six months from all emergency facilities in Lorestan Province. Data were collected from April to July 2019 using two standard questionnaires: Job Stress (HSE) and Work-Related Quality of Life (WRQoL). The odd ratio with 95% Confidence Interval (CI) was used to declare the statistical association ( $p \leq 0.05$ ).

**Results:** All participants were exclusively males, with a mean age of  $32 \pm 6.87$  years. The overall average score of job stress using the HSE scale was  $2.69 \pm 0.43$ ; while the overall quality of working life score was  $2.48 \pm 1.01$ . The type of working shift was found to have a significant impact on the HSE-average score, ( $F(3,417) = 5.26, P = 0.01$ ); and on the WRQoL-average score, ( $F(3,417) = 6.89, P < 0.01$ ).

**Conclusion:** Two-thirds of EMTs working in governmental hospitals had job stress and a low quality of work-related life. Work shift was statistically significant associated with EMTs' job stress and WRQoL. To improve the WRQoL among EMTs, we suggest the urgent need for organizational intermissions that aim to diminish work-related stress. Furthermore, rescheduling should be explored as a strategy for reducing stress caused by shift work.

## Introduction

Working in emergency medicine can be challenging, and healthcare workers are subjected to a variety of pressures (1). Critical incident exposure, workplace aggression, unpredictability, workload, and time pressure are among them. Additional environmental stressors in the prehospital context include traffic safety concerns and unexpected accident scenes (2). Several studies have demonstrated the alarming prevalence of burnout syndrome, posttraumatic stress disorder (PTSD), and other related health difficulties among first responders and emergency medical service personnel (3)(4)(5)(6)(7). Furthermore, those stressors might cause hostility, aggression, absenteeism, and turnover among emergency medical technicians (EMTs).

Job stress refers to the psychological stress caused by the imbalance between the needs of the target and the individual's ability to adapt to specific job conditions (8). Job stress is one of the most important workplace health risks among employees worldwide (9). One of the complications of modern life is the presence of stress in the workplace (10). It is a common condition of the 21st century that affects people in a variety of conditions and is responsible for absenteeism among health-care workers (11). 137.3 million working days were lost due to sickness and injury as it is estimated by the UK national statistics (12). This is only the material dimension of the issue of stress; in addition, stress has a significant impact on employees, their families, and patients (9).

In 2021, job stress (new or long-standing) was the biggest work-related health issue in the UK, which accounted for 50% of all job-related illnesses with an incidence rate of 2,480 per 100,000 (13). The cost of sickness and stress-related absenteeism is estimated at 4 billion pounds a year (12). Numerous studies have shown that the job stress experienced by the pre-hospital emergency staff is significantly higher than that of other healthcare workers because they are the first people to be present in a variety of emergencies, from fatal accidents to minor injuries and illnesses (14)(15). Meanwhile, emergency medical technicians face stressful environments such as congested areas and critically ill patients where it is difficult to work (16).

Neglecting the ongoing stress that is inflicted on employees, particularly healthcare workers, would eventually result in a lack of motivation and morale in the staff (17). There is enormous capital lost annually due to the lack of physical and mental health of employees, impaired performance, quitting, and changing jobs due to job stress. Stress and its complications result in the loss of hundreds of working days each year. About 30% of the workforce in developed countries suffers from job stress. The International Labor Organization also estimates that the costs incurred by countries due to job stress are about 1 to 3.5% of GDP and are currently increasing (18)(19).

Work-related quality of life (WRQoL) is an organizational culture or management style in which employees feel ownership, self-reliance, responsibility, and self-esteem (20). WRQoL is a multidimensional structure that includes several concepts such as welfare measures, health services, incentive plans, job fit, job security, job design, importance to the role and position of the individual in the organization, providing growth and development, participation in decision making, reducing job conflicts and ambiguities and education (21). According to the research, companies that provide a better work quality of life for their employees are more successful in retaining their valuable employees and have higher profitability (22). However, job stress reduces the WRQoL and increases the risk of work-related injuries. The WRQoL is critical for organizations to be able to attract and retain human resources (23).

Job stress in emergency medical technicians is typically higher than in other professionals, and since they are often the first healthcare team exposed to different stressful conditions and sick patients, the nature of the job and its contents are in a high level of stress. Research evidence related to job stress among EMTs is limited in the study area. Therefore, this study was conducted to determine the relationship between job stress and quality of work-life among Emergency Medical Technicians (EMT) in Lorestan Province, Western Iran in 2019.

## Material And Methods

A census approach was used to conduct a cross-sectional survey among 430 emergency medical technicians who had been engaged in their respective units for more than six months from all emergency facilities in Lorestan Province. The number of participants was 25, 37, 22, 38, 21, 19, 115, 61, 28, 54, and 10 from Alashtar, Aligoudarz, Azna, Broujerd, Doroud, Dooreh, Khorramabad, Kouhdasht, Nourabad, Poldokhtar, and Sepiddasht, respectively. This study was approved by the institutional review of Lorestan University of medical Sciences Verbal agreement was taken from all participants. The confidentiality principle

was maintained so that there was no need to mention the names of the individuals in the questionnaires, and it was assured that the information was just provided to the researcher and used in the study. Data were collected from April to July 2019 using two standard questionnaires: Job Stress (HSE) and Work-related quality of life (WRQoL).

**Job Stress Questionnaire:** The management standard was assessed using a 35-item indicator tool created by the Health and Safety Executive (HSE) to measure work-related stress among employees. The tool consists of seven items. These items are: (1) Demands (including such issues as workload, work patterns, and the working environment). (2) Control (how much say the person has in the way they do their work). (3 & 4) Manager and peers' support (including the encouragement, sponsorship, and resources provided by the organization, line management, and colleagues). (5) Relationships at work (including promoting positive working practices to avoid conflict and dealing with unacceptable behaviour). (6) Role (whether people understand their role within the organization and whether the organization ensures that the person does not have conflicting roles). (7) Change (how organizational change (large or small) is managed and communicated in the organization). The validity of the HSE-scale was 83% ( $\alpha = 0.83$ )(24).

**Work-Related Quality of Life Questionnaire (WRQoL):** This is a multidimensional concept that includes job and professional satisfaction factors, working conditions, general health status, home-work relationship, work stress, and work control. The questionnaire comprises a five-Likert scale from strongly disagree to strongly agree (25). The validity of the questionnaire was confirmed by experts, and its reliability was determined by the test-retest method. The questions had a 95% correlation value, while the alpha Cronbach coefficient for determining the internal relevance of the questions was 78%. The scale's reliability was 79% ( $\alpha = 0.79$ )(25).

**Statistical analysis:** Descriptive statistics were used to determine the characteristics of participants and the overall scores of job-stress and work-related quality of life. Pearson correlation was used to assess the correlation between the domains of the two questionnaires (HSE and WRQoL). The odd ratio at (95% CI,  $P$ -value  $\leq 0.05$ ) was used to declare the statistical association. All analyses were done using IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp (26).

## Results

All emergency medical technicians (EMTs) who participated in this study were exclusively male, with a mean age of  $32 \pm 6.87$  years. Based on their educational level, 18.1% held a diploma while the rest (81.9%) had an academic education degree. All other socio-demographic characteristics of the participant are provided in Table 1.

Table 1  
Demographic characteristics of the Emergency Medical Technicians (ETMs) (N = 430)

Variables [N*]	Categories	n (%)
Age (years) [427]	20–30	222 (51.5)
	30–40	146 (33.9)
	40–50	56 (13.0)
	50–60	3 (0.7)
Education level [406]	High school	78 (19.2)
	Diploma	235 (57.9)
	Bachelor	90 (22.2)
	Master	3 (0.7)
Marital Status [406]	Single	167 (38.7)
	Married	239 (55.5)
Length of Service (years) [410]	1–5	162(37.6)
	6–10	190(44.2)
	11–15	13(3.1)
	> 15	45(10.5)
Native Status [412]	Native to the city	225 (52.3)
	Native to the province	127 (29.5)
	Non-indigenous	60 (14.0)
Working Shift Status [421]	Constant morning shift	6 (1.4)
	Circulating shift	51 (11.9)
	24-hour shift	228(53.0)
	48-hour shift	136 (31.6)
*Number of responses for each variables.		

Emergency Medical Technicians (EMTs) with a master's degree had the highest HSE ( $3.5 \pm 0.01$ ) and WRQoL ( $4.0 \pm 0.01$ ) average scores. Regarding marital status, native status, and length of service, there were no significant differences of them, neither with HSE nor with WRQoL average scores. However, the type of working shift had a significant impact on the HSE-average score,  $F(3,417) = 5.26, P = 0.01$ ; and on the WRQoL-average score,  $F(3,417) = 6.89, P < 0.01$ , as the highest average scores were reported among those who worked on the 48-hour shift ( $2.79 \pm 0.46$ ) of the HSE, and the fixed morning shift ( $2.87 \pm 0.01$ ) of the WRQoL.

The overall average score of job stress using the HSE scale was ( $2.69 \pm 0.43$ ), with peer support as the highest stressor domain among EMTs ( $2.89 \pm 0.63$ ). While the overall quality of working life score was ( $2.48 \pm 1.01$ ), with control at work as the highest factor that might impact the quality of working life ( $2.47 \pm 0.90$ ). (See Table 2 for more details) Generally, 73.5% of respondents reported having work-related stress, with 46% having a low work-related quality of life (lower than the overall mean). The response rate for each specific question of the HES and WRQoL standards was provided in supplementary tables 1 and 2.

Table 2  
Stressor domain scores and work related quality of life scores by factors among the EMTs (N = 430)

Domains and Factors		n	Score Mean (SD)	95% CI
<b>Stressor domains</b>	Demand	405	2.11 (0.56)	1.93–2.08
	Control	402	2.54 (0.60)	2.44–2.59
	Manager's support	410	2.58 (0.82)	2.48–2.67
	Peer's support	413	2.89 (0.63)	2.82–2.98
	Relationship	414	1.75 (0.81)	1.58–1.78
	Role	415	3.12(0.64)	3.00-3.16
	Change	411	2.61 (0.80)	2.62–2.71
	<b>Overall HSE (N)</b>	<b>430</b>	<b>2.69 (0.43)</b>	<b>2.65–2.73</b>
<b>WRQoL- factors</b>	Job career satisfaction	410	2.39 (0.77)	2.30–2.48
	Control at work	413	2.47 (0.90)	2.37–2.58
	General well-being	393	2.45 (0.54)	2.38–2.51
	Home-work interface	422	2.44 (1.01)	2.32–2.55
	Stress at work	420	1.96(1.00)	1.84–2.08
	Working conditions	423	2.12 (0.98)	2.00-2.23
	<b>Overall quality of working life</b>	<b>424</b>	<b>2.48 (1.01)</b>	<b>2.35–2.60</b>

To assess the linear relationship between stressor domains and WRQoL factors, Pearson correlation was used (Table 3). There were a strong positive relationship between two domains of HSE, which are peer support and the change ( $r = 0.72$ ,  $N = 394$ ,  $p < 0.001$ ). In other words, increasing the peers' support in work environment the higher the change might apply. Regarding the WRQoL factors, however, job career satisfaction was found to have a significant positive impact on control at work ( $r = 0.72$ ,  $N = 395$ ,  $P < 0.001$ ), general well-being ( $r = 0.72$ ,  $N = 379$ ,  $P < 0.001$ ), home-work interference ( $r = 0.77$ ,  $N = 407$ ,  $P < 0.001$ ), and working conditions ( $r = 0.77$ ,  $N = 407$ ,  $P < 0.001$ ).

Table 3  
Correlation between HSE-domains and WRQoL factors.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Demand	(0.80)													
2 Control	0.03	(0.74)												
3 Manager support	-0.11*	0.55**	(0.72)											
4 Peer support	-0.20**	0.56**	0.67**	(0.74)										
5 Relationship	0.50**	-0.03	-0.16**	-0.26**	(0.81)									
6 Role	-0.17**	0.34**	0.28**	0.47**	-0.24**	(0.76)								
7 Change	-0.11*	0.54**	<b>0.72**</b>	0.64**	-0.17**	0.35**	(0.73)							
8 Job career satisfaction	-0.25**	0.31**	0.52**	0.41**	-0.25**	0.25**	0.48**	(0.71)						
9 Control at work	-0.13*	0.40**	0.60**	0.42**	-0.11*	0.22**	0.55**	<b>0.72**</b>	(0.71)					
10 General well-being	-0.30**	0.45**	0.43**	0.44**	-0.25**	0.34**	0.41**	<b>0.73**</b>	0.64**	(0.73)				
11 Home-work interface	-0.25**	0.30**	0.50**	0.38**	-0.18**	0.24**	0.41**	<b>0.77**</b>	0.65**	0.62**	(0.72)			
12 Stress at work	0.38**	-0.02	-0.18**	-0.23**	0.40**	-0.20**	-0.19**	-0.23**	-0.11*	-0.26**	-0.25**	(0.83)		
13 Working conditions	-0.24**	0.24**	0.48**	0.37**	-0.19**	0.30**	0.47**	<b>0.77**</b>	0.63**	0.64**	<b>0.72**</b>	-0.28**	(0.72)	
14 Overall quality of working life	-0.30**	0.20**	0.39**	0.30**	-0.18**	0.28**	0.32**	0.66**	0.52**	0.59**	0.52**	-0.29**	0.64**	(0.74)

Note: Pearson's correlation coefficient was used. Alpha reliability coefficients are given in parenthesis.  
\* P value < 0.05, \*\* P value < 0.01.

## Discussion

Considering that the work environment for emergency medical personnel is very stressful since they are often the first healthcare team exposed to different stressful conditions and sick patients, the nature of the job and its contents are subject to a high level of stress. Research evidence related to job stress among EMTs is limited in the study area. Hence, this study was conducted to determine the relationship between job stress and the quality of work-life among EMT personnel in Lorestan province.

The results of the present study showed that the overall stress was a little more than the average among all participants (M, 2.69; IC, 2.65–2.73). This finding is in a harmony with the Ashgh et al. study, in which the male employees of emergencies in Golestan province were found to experience moderate work stress(27). Another study shows that emergency physicians experience a subclinical level of anxiety due to repetitive exposure to serious incidents like the death of an adolescent or a child (7). In regards to WRQoL, the overall quality of working life was a little less than the moderate range (M, 2.48; IC, 2.35–2.60). A cross-sectional analysis of 908 health employees from 15 hospitals shows that the majority of employees were dissatisfied with occupational health and safety and also indicated that their work was not interesting and satisfying (21). High WRQoL seems to have a protective factor. All of these, high stress and low WRQoL, not only affect the EMTs themselves, but can also have an adverse impact on patient care (7).

In the present study, a significant association was found between work shift and work-related stress. Rotating shift EMTs were more stressed than fixed-shift EMTs. This finding was consistent with research reported in Ethiopia (28) and Jordan(29), which indicated that employees working on rotating shifts were more stressed than their counterparts who worked on fixed shifts; however, those studies were done on nurses. Therefore, working on a fixed shift might be beneficial in improving the WRQoL, as the current study reported.

Change in the work environment to be suited to the employee, by their choice, was found to be related to the peers' and managers' support. A lack of social support among emergency care personnel is a well-known predictor of occupational stress (7). A study found that facilitating social support from coworkers can help in the rehabilitation process after being confronted with traumatic experiences and occupational dangers among those who work in EM(7).

This study has some limitations, including the fact that the cross-sectional study design utilized in this investigation could not determine a temporal association between stress and WRQoL. Given that stress is mainly subjective and psychological, the qualitative method would give rich and reliable information on the EMTs' experiences with stress and related concepts. Furthermore, since the sampling method in the present study was a census, some of the technicians were reluctant and were not satisfied to participate in the study.

## Conclusion

This study determined the level of job stress and its relation to the WRQoL among EMT personnel working in government hospitals in Lorestan, Iran. Two-third of EMTs working in governmental hospitals had work-related stress. Work shift was statistically significantly associated with EMTs' work-related stress and WRQoL. Peer support was found to be the most stressful domain among EMTs; while the control domain at work was the highest factor that might impact the quality of working life. EMT personnel have a tremendous role in the health care delivery system world-wide, especially in emergency situations. Critical incident exposure, workplace aggression, unpredictability, workload, and time pressure are among the challenges that EMTs face during their work. In the mean time, EMTs' experienced work-related stress and low WRQoL may affect not only the health care services but also might increase medical errors and resource expenditure. To improve the quality of work among EMTs, we suggest the urgent need for organizational interventions that aim to diminish work-related stress. Moreover, rescheduling should be explored as a strategy for reducing stress caused by shift work. To demonstrate a true cause-and-effect link, more research employing a mixed-method and analytical design in government and commercial health institutions is recommended.

## Declarations

### Ethical Approval and Consent to participate:

This study was approved and funded by the institutional review of Lorestan University of medical Sciences. Written informed consent and verbal agreement was taken from all participants. All experimental protocols were approved by Lorestan University of Medical Sciences and the ethical approval is: IR.LUMS.REC.1397-1-99-1254.

### Consent for publication:

Not applicable.

### Availability of supporting data:

All data generated or analyzed during this study are included in this published article.

### Competing interests

Not applicable.

### Funding:

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### Author's contributions:

H.Sh, Gh.F, A.P, conceptualized and designed the main idea of this study. H.Sh, and R.M. designed the data extraction file, extracted data, and interpreted data. M.M, and B.M. analysed the data. H.Sh, and M.M, wrote the initial draft of the manuscript. All authors approved the final manuscript as submitted and agreed to be accountable for all aspects of the work.

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