

## Investigation of Job Stress and Related Factors in Firefighters in the Cities of Ahvaz and Yazd, Iran

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### ABSTRACT

**Objectives:** Although all jobs are stressful, professions contributing to human health are of utmost importance. Firefighting is a stressful and dangerous job where firefighters tend to have high levels of job stress. This study aims to explore occupational stress in firefighters.

**Methods:** This descriptive, cross-sectional study was performed in 2013. Participants comprised 244 firefighters from Yazd's and Ahvaz's fire departments. The data were collected using the HSE job stress questionnaire and analyzed using SPSS 21 software.

**Results:** The participants' age ranged from 25 to 54 years, with a mean of  $39.02 \pm 7.44$ . The working history of the participants was 1 to 28 years, with a mean of  $13.14 \pm 7.17$ . There was a significant difference between the education and working history of participants and their stress levels ( $p = 0.013$  and  $p = 0.001$ , respectively). Stress decreased with increasing age ( $p = 0.075$  and  $r = -0.114$ ) and working history ( $p = 0.071$  and  $r = 0.116$ ), but these variables were not statistically correlated.

**Conclusion:** According to this study, healthcare politicians should develop training programs that focus on communication skills and staff and administrative support for fire workers. It appears that, due to the stressful job of firefighters, training programs should be designed with an emphasis on the importance of communication skills and on support from colleagues and authorities, in order to foster better health and performance in employees.

**Keywords:** Job stress, Firefighters, Yazd and Ahvaz.

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**Introduction:** Job stress is an important phenomenon in social life and a serious threat to workers. The International Labor Organization found that job stress poses the greatest threat to workplaces [1]. Job stress can cause physical, psychological, and behavioral complications for the employees, endangering their health, threatening organizational goals, and decreasing individual performance quality [2].

The National Institute for Occupational Safety and Health defines job stress as the discrepancy between occupational demands and the abilities, capabilities, and wishes of an individual [3]. Stress and its complications cause a significant loss in working days; on a daily basis, an average of one million people skip work because of stress-related diseases and disorders [4]. Job stress is a major cause of mental disorders, particularly depression [5, 6].

Currently, occupational stress proves costly for a workplace; hence, most employees are faced with stress [7]. The American Medical Association estimates that two-thirds of those examined in work places will exhibit signs of anxiety or stress [8]. According to the International Council of Nurses, the annual cost of job stress in the US was approximately 200 to 300 billion dollars in 2002 [9]. Various studies demonstrate that about 30 percent of the workforce in developed countries suffers from occupational stress; this rate is higher in developing countries [10, 11]. Managing stress is costly for individuals, companies, and production units, manifesting as physical and mental fatigue, irritability, excitability, anxiety, hypertension, lack of confidence,

lack of job satisfaction, lack of motivation to work, and productivity [12]. The results of several studies suggest that occupational stressors play an essential role in 37 percent of injuries and accidents in workplaces [13]. In addition, stress is a leading cause of many diseases. In the present century, mental disorders, heart disease, cancer, and digestive and skin disorders have all been associated with stress; according to estimates by doctors, 75 percent of medical complaints are related to stress [14].

Studies show that chronic stress in the workplace can lead to frequent absenteeism, reduced energy, and operating efficiency [15], reduced creativity, incompatibility with colleagues, and a decrease in professional satisfaction [16]. Job stress is harmful for physical and emotional health, because of the conflict between the needs of the business and the needs and abilities of the individual [17]. Although job stress exists in all occupations, professionals dealing with health report a higher prevalence of stress [18]. Firefighting is a stressful and dangerous profession and these professionals are exposed to high levels of occupational stress [19]. Firefighting is ranked fifth in terms of occupational mortality in the United States [20]. The few studies that conducted on firefighters in Iran are indicate stress on employees [21-23].

Considering the ability of job stress to decrease productivity and organizational commitment, and since the incidence of occupational accidents has a background in environmental and personal behavior, the aim of this study was to explore and

determine factors influencing occupational stress in firefighters of Yazd and Ahvaz city.

**Material and Methods:** This was a descriptive, cross-sectional study. It was conducted in 2013 on the 244 employees of the fire department of Yazd and Ahvaz. The study was conducted after necessary coordination with the fire department officials and Municipality of Yazd and Ahvaz. We enrolled all the firefighters. Data was collected using a questionnaire with two sections. The first section consisted of six demographic questions of sex, level of education, marriage, work experience, employment status and type of shift. The second was a standardised questionnaire about job stress (HSE), widely used in the field of occupational stress [24, 25], and consisting of 35 questions with seven domains: demands, control, support of authorities, peer support, communication, role, and changes. The domains are measured using a 5-point Likert scale, with never = 5, seldom = 4, sometimes = 3, often = 2, and always = 1. Area of demand was graded in the reverse order, with never = 1, seldom = 2, sometimes = 3, often = 4, and always = 5. Minimum and maximum scores for each domain were: demands (5-40), control (6-30), support of authorities (5-25), peer support (4-20), communication (4-20), role (5-25), and changes (3-15). Higher scores indicate better health and safety; lower scores indicate higher stress and less safety.

All participants in the project were assured of the confidentiality of the information they provided, and all of them volunteered. Data was analyzed using SPSS 21. Descriptive and inferential statistics are presented: correlation, analysis of variance, t-test, and regression analysis, with a significance level of 0.05.

**Results:** The age range of participants was 25 to 54 years with a mean age of  $39.02 \pm 7.44$ . In terms of work experience, the range was one to 28 years, with a mean age of  $13.14 \pm 7.17$ . Demographic variables are presented in Table 1.

Results presented in Table 2 reveal a significant difference between education level and employee status with job stress ( $p = 0.013$  and  $0.001$ , respectively). With increasing age and work experience, the average score of job stress decreased, but was not statistically significantly correlated. The average job stress scores of married samples was less than those of single participants, but this relationship was not significant. Data in Table 3 illustrate the correlation between total score of occupational stress and its sub-areas, which were all significantly related with one another. Results presented in Table 4 showed a significant difference between demand ( $p = 0.002$ ), role ( $p = 0.026$ ) and the cities of Yazd and Ahvas.

**Table 1.** Evaluation of the demographic variables at firefighters

<b>Variables</b>	<b>Number</b>	<b>percent</b>
<b>Age</b>		
20–29	22	9
30–39	104	42.7
4. –49	94	38.5
50+	24	9.8
<b>work experience</b>		
1–5	34	13.9
6–10	75	30.9
11–15	39	16
16–20	39	16
21–25	49	20.9
26–30	8	3.3
<b>Place of service</b>		
Ahvaz	139	57
Yazd	105	43
<b>Employment Status</b>		
Official	77	31.6
Contractual	16	6.6
Contract	141	57.8
Wage	10	4.1
<b>Marriage</b>		
Married	235	96.3
single	9	3.7
<b>Education</b>		
Primary	22	9
Guidance	52	21.3
Diploma	124	50.8
Advanced diploma	27	11.1
License	19	7.8

**Table 2.** The relationship between education, employment status, and job stress among study groups

Variables	Mean	SD	F	P
<b>Education</b>				
Primary	102.77	23.72	3.23	
Guidance	97.01	16.26		0.013
Diploma	95.85	12.97		
Advanced diploma	91.11	12.76		
License	88.26	9.66		
<b>Employment Status</b>				
Official	91.46	11.49	13.94	
Contractual	116.12	21.61		
Contract	95.36	14.25		0.001
Wage	98.10	6.02		

**Table 3.** Correlation between total score of occupational stress and its sub-areas

Variables	Demand	Control	Management support	Staff Support	Communication	Role	Changes
<b>Demand</b>	1						
<b>Control</b>	0.210 **	1					
<b>Management support</b>	-0.155* -0.162*		1				
<b>Staff Support</b>	-0.244** -0.131 *		0.601**	1			
<b>Communication</b>	0.494 **	0.184 **	0.60	0.075	1		
<b>Role</b>	0.235**	0.354 ** -0.274** -0.176** -0.186**				1	
<b>Changes</b>	0.190 **	0.429 ** -0.053		-0.065	-0.155*	0.457 **	1
<b>Total score of stress</b>	0.496 **	0.704** -0.162 *	-0.137* -0.164*	0.688 **	0.723**		

**Table 4.** Comparison of the different categories on the basis of job stress and place of service

Variables	Place of service	Mean	SD	T	P
<b>Demand</b>	Ahvaz	23.82	6.30	3.182	0.002
	Yazd	21.50	4.62		
<b>Control</b>	Ahvaz	19.21	4.67	1.865	0.063
	Yazd	18.04	4.03		
<b>Management support</b>	Ahvaz	9.93	4.06	-1.405	0.161
	Yazd	10.65	3.85		
<b>Staff Support</b>	Ahvaz	7.69	3.08	-0.713	0.476
	Yazd	7.97	2.80		
<b>Communication</b>	Ahvaz	13.00	3.02	-1.294	0.197
	Yazd	13.47	2.58		
<b>Role</b>	Ahvaz	9.84	4.57	2.241	0.026
	Yazd	8.66	3.30		
<b>Changes</b>	Ahvaz	7.84	2.77	-1.215	0.226
	Yazd	8.26	2.60		
<b>Total score of stress</b>	Ahvaz	96.92	16.67	1.547	0.117
	Yazd	93.87	12.32		

**Discussion and Conclusion:** The results demonstrate that, with increasing age and work experience, the average scores of job stress decrease; however, this relationship was not statistically significant. These results are similar to those of Yazdi and Sharifian [21], who reported that older and more experienced firefighters are less stressed. Soori [26] and Abdi [6] reported a significant relationship between age and job stress. However, findings reported by Gharibi [27], Spector [28], and Lotfizadeh (1) did not find a significant relationship between these variables. In studies by Soori [26] and Lotfizadeh [1], the stress of participants was related to management and workplace factors; however, Gharibi [27] argued that people who are more experienced are less stressed when confronted with difficulties in the workplace and in interactions with colleagues. Given the anxiety that firefighters are exposed to, including incidents of fire, work experience can be effective in reducing their stress.

The results of our study showed that the relationship between job stress and marital status of firefighters was not statistically

significant, although married participants reported less stress. These results support those of Azad-Marzabadi [25], Soori [26], Gharibi [27], Lotfizadeh [1], Spector [28], and Abdi [6]. However, these results were contrary to those of Etemadi [29] and Kabirzadeh [12]. This may have been due to the type of work or the study population.

The data presented here indicate a significant association between level of education of participants and job stress: higher levels of education protect against job stress. These data are similar to those reported by Azad-Marzabadi [25], Enjezab [30], Soori [26], and Gharibi [27]; the authors propose this might be due to greater awareness in the workplace and to a better understanding of duties.

The findings showed a significant relationship between employment status and job stress, with officials experiencing less stress. This data is similar to that reported by Molaie [31]. It appears that official employees have greater job security, and that this reduces job stress.

Examining the relationship between job stress and domain of job stress using the questionnaire, job changes, control, role, and demand were demonstrated the highest positive correlations. Being familiar with the duties and role of employees appears important in reducing occupational stress. The same was shown by Gharibi [27] and Azad-Marabadi [25]. Job description may therefore effectively increase efficiency and reduce job stress. Thus all the jobs, especially those involving stressful duties and role in well-established organizations contribute significantly to the health of employees.

Another notable findings was that the support of firefighter colleagues was least correlated with job stress. This might mean that the relationship among firefighters requires

further investigation. These results are consistent with studies by Gharibi [27] and Azad-Marzabadi [25]. Individual differences, such as age, level of education, and work experience may inhibit or enhance communication skills. As is clear from the results, there was no significant difference between the scores of job stress and place of employment. There have as yet been no studies on the relationship between place of employment and job stress.

It appears that, due to the stressful job of firefighters, training programs should be designed with an emphasis on the importance of communication skills and on support from colleagues and authorities, in order to foster better health and performance in employees.

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