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ORIGINAL RESEARCH PAPER

Assessment of Job Stress and Personal-Related Factors among the Workers of a Military Industry

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ABSTRACT: Health of organization's employees is dependent on psychosocial factors such as job stress, considerably. Job stress is related to the low quality of life, job burnout, increasing the risk of accidents and work–related injuries and cause job change and early retirement of employees. This study aimed to evaluate employees' job stress in an industry as well as to assess its relationship by personal (age, education, chronic disease, taking medication, and smoking) and job (type of occupation, work experience, type of employment, working hours per day, second jobs and accident) variables. This descriptive study was conducted in 2013 on all 149 employees of a manufacturing company. Data collection was done with HSE's Management Standards Indicator Tool. Information was gathered in Semi–supervised self–reported manner. Independent–sample T test, one–way ANOVA, and linear regression were used for data analysis. All statistical analysis performed in SPSS software version 16. The mean of participant's age and work experience was 39.8 and 15.43 years, respectively. Mean of job stress score was 3.59 ±0.45 and was in no stress range. Among the studied variables, type of employment, the permanent taking of medication and accident have a significant relationship with job stress (P<0.05). But, other variables did not have a significant relationship with job stress. Injured personnel and drug users have higher stress levels than others that need to be considered in these cases. Also, job stress in employees and contract staffs is more than conventional workers. Thus, more detailed examinations are needed for those employees.

KEYWORDS: *Job Stress, Personal Characteristics, Occupational Variables, Military Industry*

Introduction

Physical health and sense of well–being among employees of an organization are largely dependent on psychological factors which are the most important of them is job stress [1]. According to the definition of the National Institute for Occupational Safety and Health (NIOSH), 1999, Job stress occurs when there is no coordination between the job demands and human abilities, capabilities, and requirements [2]. Pressure and job stress is inevitable in order to cope with job demands and may be tolerable in the short term to human resources, but in the long–term will be caused degeneration of physical and mental strength of an organization and eventually leads to occupational burnout [3]. Statistics provided by different institutions expressed the importance of the issue about the damage caused by job stress. For instance, Health Safety Executive, HSE, in the England, during the years 2007 to 2009, has estimated more than 5.3 million working lost days and more than 4 billion pounds of annual compensation for damages from job stress. Job stressaffects on human health, quality of life and also reduces the likelihood of accidents and increases work–related injuries. In addition, studies have shown that occupational stress can be influenced on incidence symptoms of thedisease, more replacement between the workers and early retirement of employees [4]. The side effects of stress have been demonstrated in numerous studies.

For example, the study of Kiani et al., on all employees of Isfahan steel company, showed that job stress reduction can be effective in reducing the rate of accidents have been reported [5]. Also, the results of Mohammadfam et al. showed that job stress is significantly associated with unsafe acts and both of the job stress and unsafe acts have a significant direct correlation with occurred accidents [6]. The results of Lou et al. study, in 2008 showed that job stress is the only significant factor that has a direct effect on occupational burnout [7]. Similarly, Tsai et al., 2008 reached the same results [8]. In another study by Ozkan et al., results showed that job stress had a negative significant effect on life satisfaction, while the stress on all three dimensions of occupational burnout has a significant positive effect [9]. Khattak stated that workload, working hours, working technological problems, insufficient and changing working pattern, were the main sources of stress in staff and all work–related stress factors were significantly associated with occupational burnout [10]. Although several studies on job stress have been conducted in Iran and other countries, in many cases, the results have been achieved from the office environments such as hospitals and the important industrial sector was almost neglected. Considering the problems and damage caused by job stress and influence the outcome of the workforce, this study has been done focusing on the job stress and personal and occupational factors associated with it among the military industry workers.

Materials and methods

This cross–sectional descriptive study was carried out in 2013 on all 149 employees of an industrial company. Data gathering tool in this study was a two–part questionnaire. The first part of the questionnaire related to demographic character-

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istics (age, education, disease, medication, and smoking) and job (job type, work experience, type of employment, hours of daily work, second jobs and accident). The second part, contained 35 questions, was the job stress HSE UK questionnaire. The reliability and validity of the Persian version of the questionnaire have been confirmed by Marzabadi et al., which was studied on 749 military personnel in Iran. The validity of the questionnaire was also obtained by Cronbach's alpha coefficient and split–half equals to 0.78 and 0.65, respectively. This questionnaire examines job stress in seven domains of demand, control, managers' support, peer support, relationships, roles, and changes. Demand domain includes topics such as workload and labor and environmental properties. It also contains control of the level of one's mastery of duties and tasks assigned to him. Managers' support is the managers' and institutional services that a person receives and colleague support is all support that a person receives from a colleague. Relationships related to features that help increase relationships and reduce conflict in the workplace and the role domain is the understanding of the personnel about their role in the organization. Finally, changes domain contains issues that how to organize and deal with changes of organization's personnel. Among the advantages of this questionnaire can be implied to many studies for obtaining the content validity of the questionnaire, as well as diverse areas and a small number of questions compared to other similar questionnaires [4]. In this tool, each scale scored from 1 to 5. The average of expressions scores in each domain is indicative of the measured values for each domain. In this questionnaire, the scoring is in such a way that the lower scores mean higher stress and the worse situation. On the other words, the lower score in each domain and the total score indicates more stress is job stress.

According to the proposed categorization, the scores of less than 1.5 considered as high stress, and scores of 1.5 to 2.5, 2.5 to 3.5, and more than 3.5 considered as moderate, low stress and without stress, respectively [11]. To gather information after coordination and ensure of voluntary consent to enter the study, explanations about the study and its purpose were given to the subjects and the questionnaire was made available to them. Then they were asked to complete questionnaires on their maximum duration of 20 minutes carefully and will respond to all questions. If the bug was introduced in questions to answer people's questions and ambiguities were resolved. We used SPSS 16 to analyze the gathered data. For data analysis, descriptive statistics, t–test, ANOVA and Tukey's test with a confidence level of 95% was used. To investigate the correlation between independent variables (age, Job, medication, type of employment, accident, and second job) with the areas of occupational stress (demand, control, managers' support, peer support, relationships, and roles) linear regression model was used.

Results and discussion

The demographic data showed that the mean and standard deviation for age was 39.8 ±6.31 years in the studied samples. 97.3% of subjects were married. The educational level of 9.4% of subjects was lower than the secondary education, 34.2% diploma, 18.8% associate degree, 28.2% bachelor and 9.4% MA and more. Of the total samples, 8.8% were accustomed to typical consumption of tobacco. The 8.7% of subjects suffered from at least a chronic disease and 6.7% of respondents said they regularly use some form of medication. Regarding the type of job, 41.4% of subjects were the blue –collar workers and the rest were white– collar workers. From the point of view of employment type, 27.5% were government employees (Forma|), 6% was contract employment, 57.7% was contractual employment and 8.7% have other types of employment. In addition, 12.8% of people said that they had a second job. The 22.6% of the subjects state that they have been at least one occupational accident during the past year. Other quantitative information on jobs is presented in Table 1.

Table 1. Demographic characteristics of participants in terms of career.

Variables	Mean	SD
Work experience (y)	15.43	6.61
Time on second job (h/d)	0.49	1.73
Daily working hours (h)	9.08	1.86
Working days per week	5.29	0.49
The total weekly working hours	48.2	12.2

The significant level of job stress and its domains related to individual variables is presented in Table 2.

Correlation between variables related to work (job, work experience, type of employment, hours of daily work, second jobs) and job stress are presented in Table 3.

The obtained results of table 4 shows the results of linear regression model for variables (including age, occupation, medication, type of employment, accident and second jobs) that in the previous step have been demonstrated significantly related to job stress and some of its domains (demand, control, colleague support, etc.).

Table 2. The correlation of occupational stress and its domains and personal parameters.

		p–value				
Personal parameters*		Age	Education	Having Chronic disease	Permanent medication	Smoking
Occupational stress domains	Demand	0.58	0.43	0.09	0.69	0.83
	Control	0.011	0.12	0.91	0. 82	0.62
	managers' support	0.609	0.66	0.62	0.07	0.12
	Peer support	0.97	0.80	0.66	0.02	0.091
	relationship	0.53	0.08	0.056	0.1	0.89
	Role	0.23	0.59	0.92	0.47	0.10
	Changes	0.10	0.191	0.82	0.08	0.84
Occupational stress		0.53	0.79	0.22	0.043	0.56

* The used statistical test for the age was Pearson, for the education level was one–way ANOVA, and independent T–test was used for other variables.

According to the results obtained from the subjects, 78 patients (54.2%) than those without job stress, 65 patients (45.1%) than those with low job stress and only 1 patient (0.7%) had job stress in the range of moderate. In addition, on the results of this study, no one had severe job stress (Fig. 1). The mean of the job stress in studied subjectswas 3.59 ±0.45 which is adopted in accordance with the classification provided in the no stress region based on job stress scores. The obtained results in this study agree with the results of several similar studies. In a study conducted by Marzabadi on 749 of military personnel, HSE questionnaire was used and observed job stress was not high. So that, the 3.4% of the subjects had

average job stress, 53.6%of them low stress and 43% of them were without any occupational job stress [11]. In other study carried out using HSE questionnaire among personnel development projects similar results were obtained [12].

Table 3. The correlation of occupational stress and its domains and occupational parameters

		p–value					
	Occupational parameters	Occupational group	Type of employment	Second job	Accident	Work experience	Daily working hours
Occupational stress domains	Demand	0.61	0.018	0.83	0.001	0.242	0.274
	Control	0.008	0.1	0.80	0.38	0.113	0.446
	managers' support	0.25	0.195	0.45	0.56	0.224	0.537
	Peer support	0.86	0.06	0.2	0.21	0.846	0.680
	relationship	0.64	0.007	0.78	0.001	0.349	0.324
	Role	0.49	0.28	0.045	0.25	0.573	0.476
	Changes	0.15	0.67	0.63	0.64	0.180	0.110
Occupational stress		0.488	0.047	0.36	0.008	0.970	0.255

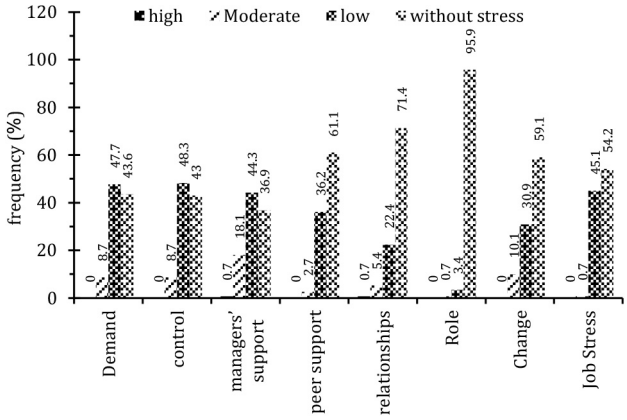

Fig. 1. The percentage of individuals at different levels of occupational stress.

In spite of several agreements were observed between this study and others, but the conflict was also observed among some studies. For example, Aminian in the study on 240 public transport drivers, found that 0.4% of patients with mild job stress, 17% mild to moderate, 78% of patients with moderate to severe occupational stress and 4.5% had severe occupational stress [2]. Khatooni in the other study which is done on 242 employees of Saderat Bank, revealed that 76.25% of the subjects experienced moderate to severe occupational stress [13]. Rahmani et al. (2010) conducted an investigation on 59 nurses of Tabriz teaching hospitals and revealed that the 49.2% of the studied persons had experienced high levels of occupational stress [14].

Another study on 155 nurses indicated that 57.4% of patients have experienced high occupational stress, 40% moderate and only 2.6% had low–level amounts of occupational stress [15]. Shiraz University of medical sciences showed that the majority of cases reported high occupational stress level and in such a situation can be predicted the probability of high mental and physical injuries[16].

The deviations in the results of the present study with other mentioned studies may be due to reasons such as differences in the study groups. As mentioned above, most of the studies were related to nursing and administrative jobs which may be different in terms of stress levels in industrial environments. Moreover, the research tools used to measure the psychological stress of the mentioned studies have been different. The results of this study showed no significant relationship between age and occupational stress scores. Gharibi et al., in their study on 145 employees of the tunnel, did not achieve a significant relationship between age and occupational stress [12]. The similar results were also obtained in other studies [15, 17, 18]. In the present study only in the control domain, there was a significant inverse relationship between age and level of occupational stress. This means that the occupational stress level was reduced with increasing age in the control domain. This indicates that the increase of age and experience will increase one's control over business affairs. In this study, no significant relationship was observed between occupational stress and level of education. The result is consistent with [12] and [19, 20]. In addition, the findings revealed that the relation between suffering from a chronic disease and occupational stress was not significant. However, a significant direct relationship was observed between taking the drug and permanent occupational stress. Also, in the peer support domain, this relation was significant such that people who consume drugs had a higher stress level in the peer support domain. In other domains of occupational stress, no significant differences were observed between the two groups. Gharibi et al. also achieved no significant relationship between chronic disease and occupational stress [12]. Based on obtained results, the relation between smoking and occupational stress was not significant. Previous studies have shown different results. For example, Gharibi and Yadegarfar in separate studies, rejected significant relation between smoking and occupational stress [12, 21], while, Marzabadi and Kouvonen reported opposite results [11, 22].

Table 4. The results of regression analysis variables related to occupational stress and its domains

		Individual and occupational variables	**B**	**Std. Error**	**Sig.**
Occupational stress domains	Control	Job type	0.302	0.101	0.003
		Age	0.022	0.008	0.005
	Demand	Accident	0.471	0.122	0.001
		Type of employment	0.154	0.052	0.004
	relationship	Accident	0.629	0.147	0.001
		Type of employment	0.141	0.061	0.023
	Peer support	Permanent medication	0.352	0.241	0.028
	Occupational stress	Accident	0.223	0.089	0.007
		Permanent medication	0.185	0.144	0.005
		Type of employment	0.079	0.037	0.023

In regard to occupational variables, only the control domain showed a significant relation between occupational stress and type of Job (worker–employee) such that the level of occupational stress among workers was higher than employees. However, based on the total score of occupational stress, no significant difference was observed in both groups. Similar finding obtained in another study [12]. The results also showed a statistically significant relation between total score of occupational stress and type of employment. This

correlation was significant in the domains of demand and relationships. Also, it was revealed that levels of stress among contractual workers were significantly lower than formal employees in the domain of relationships.

The relationship between job experience and occupational stress and its domains was not statistically significant. Several studies have had different results. Soori et al. [20], Mortaghi [15], Zeighami [18] and Yadegarfar [21] did not achieve any significant relation between occupational stress and job experience. Also, Tsai et al. showed that there is no statistically significant relation between job experience and occupational stress [23]. However, the studies of Marzabadi et al. and Khatooni et al. [13] showed that there was a significant inverse correlation between occupational stress and job experience [11]. On the other hand, Gharibi et al. found that the more increase in job experience, the more job stress [12].

It was seen that having a second job does not have a significant effect on occupational stress. This result is consistent with the results of Yadegarfar et al. [21]. In addition, there was not statistically significant relationship between the daily working hours and job stress as well as its domains. Similar results were found in the studies of Soori et al. [19], Mortaqhi et al. [15] and Zeighami et al. [18], Tsai et al. [23]. Conversely, Khaqanyzade et al. concluded that increase in the daily working hours significantly increased occupational stress [24].

The total score of occupational stress in people, who had experienced at least one accident in the past year, the level of occupational stress was higher than those who had not any accident. The mean scores of demand and the relationships domains between the two groups were significantly different. The conflicting results were obtained in performed studies on this topic. It was found that occupational stress had significant direct and indirect positive effect on the incidence of accidents [5]. A statistically significant relationship was observed between occupational stress and the incidence of unsafe acts [6]. In addition, among the groups who had higher occupational stress, unsafe acts and the rate of accidents had grown [6]. However, Soori et al. showed that the correlation between occupational stress and accidents was not statistically significant [20]. Results of regression analysis revealed that occupational stress among the patients who consumed a type of medication was 0.408 units more than those who did not use any drug. Moreover, in the people with an accident history, the occupational stress level was 0.085 units more than those without any accident history. Occupational stress among workers was as much as 0.302 units more than employees in control domains.

In the case of demand, the stress amount in those who experienced an accident was 0.471 units more than those who did not have any accident.

In the field of relationships, people injured in accidents had as much as 0.629 units more stress than people who had not experienced any accident. So, the mean score of occupational stress in the study group was in the range of stress–free region and therefore favorable conditions can be evaluated. It was also found that personal and occupational variables such as the type of employment, accident history, and drug consumption had an effect on occupational stress. Therefore, it is suggested that measures such as paying more attention to injured workers, young people, new workers, and those who are working in labor (workers), should be done.

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