

## Effective factors on occupational stress in military personnel

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### Abstract

**Aims:** Occupational stress is a common problem in modern societies. Military related jobs are among high stress occupations. This study was performed to identify factors influencing occupational stress in military personnel in Iran.

**Methods:** This cross-sectional study was performed on 749 official military personnel from different provinces of Iran, who were selected using two-stage cluster sampling, in year 2010. Occupational Descriptive Index (containing 35 questions) was used in order to collect data. Data was analyzed using descriptive statistics including mean and standard deviation, and inferential statistical methods including variance analysis and independent t-test by SPSS 16 software.

**Results:** The relationship between age and occupational stress shown to be as a broken curve in which the greatest amount of stress was observed in range of 26 to 40 years and after that the stress decreased as the age increased. Based on results, age had effect on all areas of occupational stress, except for Demand and Relationship. Results showed a reverse relationship between occupational satisfaction and occupational stress. Occupational satisfaction affected all areas of occupational stress.

**Conclusion:** Occupational stress decreases with age increase and age has impact on all areas of occupational stress. Work experience has a significant relationship with occupational stress.

**Keywords:** Occupational Stress, Military Personnel, HSE Questionnaire

### Introduction

In this century, psychological stress has influenced a huge part of people's life in different aspects including occupational, social, and family environments, etc. Stress is one of the most common problems of occupation and health in the present complex industrial world. Sufficient evidence in this field has shown that severe stress affects physical and psychological health, quantity and quality of performance, reduction of productivity, lack of job satisfaction; service quit, delay and absence of employees, etc. so that by studying the physical diseases, it can be concluded that 89% of causes of all diseases are stress and mental stress [1]. Studies have shown that occupational stress correlates with many diseases and problems of workplace [2]. This relationship has been confirmed about the cardiovascular diseases [3], musculoskeletal diseases [4, 5], hypertension and some other diseases [6, 7, 8]. Since occupational stress is today known as one of the most important problems of organizations, it accounts for a considerable rate of stress caused by relationships and conditions associated with each organization. Therefore, not only stress is a personal problem that a person can deal with it alone but also organizational thinking is needed to solve this problem [9]. Regarding the importance of the mentioned content, inhibition, control and management of stress

were posed as the most essential goals and programs of workplace in the Europe Union during 1992 to 1993 and attention to mental health of workers have been in the miniature of management objectives [10]. Stress is a kind of emotional or physical exhaustion that is caused by real or unreal problems [11]. In other definition, stress is a power when its pressure is compiled on a set, it will transform the set. In other words, the psychological and social powers and pressures are called stress when they disturb the balance of a person in the form of an "event" or a "special situation". Mental tension is also a kind of stress. In such cases, the stress-producing factors are called "stressor" [12].

It should be noted in the definition of occupational stress, that occupational stress is an interaction between working conditions and individual characteristics, so that the demands of the workplace (and therefore the work-related pressures) is more than the level that person can cope with. This definition points to the relationship of the individual and environment and provides this opportunity to study the role of personal characteristics of the employees, working conditions and their interaction in producing occupational stress [13]. Studies have shown that the job environment and occupational stress can cause disease in personnel or accelerate the process of mental illness. After experiencing occupational stress, the individual may suffer from mental illness and will

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be disabled [14]. Studies have also shown that many employees will start substance abuse in order to face the occupational stress [15, 16, 17]. Severe mental stress causes heavy costs on the organization and individuals with reducing productivity and motivation, goofing, strikes, absence, displacement of the employees and training the replaced forces instead of workers who leave their jobs due to the mental disorders. Occupational stress has the most relationship with the absence from work and it leads to absence from work in divorced or separated individuals [13].

Tasks which are related to control and protection affect the neurophysiologic rhythm of the individual such as temperature, blood sugar, metabolism and the mental efficiency and motivation towards the task. The study done on the guard employees of the transportation section indicated that these individuals are affected by diseases such as peptic ulcer, mild diabetes and hypertension four times more than the control group, i.e. the other employees of air transportation. Although researchers concluded that normal working conditions usually lead to the decrease of physical stress, but the employees who are responsible for control and protection are suffering from the loss of exceeding related tension [16].

Occupations which are associated with high stress are those related to military affairs. Since the unexpected risks which are the cause of occupational stress exist more in military jobs than other activities, the military personnel experience more occupational stress than the normal people. According to the previous content, although various studies are done on the occupational stress in general population, these studies are less performed on military occupations. On the other hand, different organizations have stressors proportionate with their activities due to their different structures, so that their identification, modification, elimination or reduction should be investigated.

Therefore, this study was performed to identify factors influencing occupational stress in military personnel, and ultimately to reduce or control these conditions in working environment and to increase the physical, psychological health, productivity, job satisfaction, and reduce service quit, delay and absence of employees.

## Methods

This cross-sectional study was performed on 749 official military personnel in 2010. For sampling, first the provinces were divided into five regions of northwest, northeast, southeast, southwest and central

and then provinces and centers were sampled using two-stage cluster sampling and subjects were selected. Sample size was measured by Kejcic and Morgan sample size tables and according to the population size [18]. All subjects who had at least one official year of experience and were not pensioned at the time of study entered the study in terms of lacking obvious physical or mental illness.

Occupational Descriptive Index containing 35 questions was used to measure occupational stress (Health and Safety Executive) with 7 domains of application, control, official support, partner support, contact, role and changes. This questionnaire included 5 options (never, rarely, sometimes, often, and always). High scores indicated greater health and safety in terms of stress and lower scores indicated more stress of subjects. This questionnaire had been designed in 1990 with the supervision and guidance of the UK Department for Work Safety and to identify the work related stress factors [19]. The mentioned questionnaire was first implemented by the Standardization researcher (Standardization article of this questionnaire is being published by the researcher) and then by appending the questionnaire containing a descriptive profile such as gender, age, marital status, number of children, education, and ultimately job experience on the total samples. Score of lower than 1.5 as "high stress", 1.5 to 2.5 as "average stress", 2.5 to 3.5 as "low stress" and scores above 3.5 as "no stress" were classified. Body Mass Index (BMI) was used to measure obesity. Weighing lower than 18.5 was considered as low weight, 18.5 to 24.9 as normal weight, 25 to 29.9 as high weight, and 30 to 39.9 as obesity and above 40 as morbid obesity. The subjects' job satisfaction was questioned with five-option Likert scale.

Data was analyzed using SPSS 16 and descriptive statistics (mean, standard deviation and correlation coefficient) and inferential statistical methods (ANOVA and T-test).

## Results

The studied subjects included 54 women (7.3%) and 685 men (92.7%). 175 subjects (23.6%) were single and 566 subjects (76.4%) were married. 60 subjects (9.3%) had education below diploma, 202 subjects (31.3%) had diploma, 178 patients (27.6%) had associate degree and 205 subjects (31.8%) had B.A and higher. 187 subjects (27.8%) had under 5 years of experience, 150 subjects (22.3%) had 5 to 10 years of experience, 112 subjects (16%) had between 11 to 15 years of experience and 224 subjects (33.3%) had experience of more than 15 years. 133 subjects

(33.4%) had one child, 130 subjects (32.7%) had two children and 135 subjects (33.9%) had more than two children. 163 subjects (22.1%) were under 25 years old, 402 subjects (54.4%) were between 26 to 40 years old and 174 subjects (23.5%) were over 40 years old. 47 subjects (6.4%) were smokers and 687 subjects

(6.93%) were non-smokers. 138 subjects (18.8%) were very satisfied with their jobs, 412 subjects (56%) were satisfied, 64 subjects (8.7%) were indifferent to their jobs, 82 subjects (11.1%) were dissatisfied with their jobs and 40 subjects (5.4%) were very dissatisfied.

**Table 1-** Frequency of subjects in stress levels in the studied domain

Stress rate→ Domain↓	No stress		Low-stress		Moderate stress		High stress		Stress ratio	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
<b>Demand</b>	%33.9	253	%53.2	397	%12.3	92	%0.5	4	%12.9	96
<b>Control</b>	%35.5	265	%49.6	37	%14.3	107	%0.5	4	%14.9	111
<b>Officials' support</b>	%34.2	255	%47.6	355	%16.6	124	%1.6	12	%18.2	136
<b>Partners' support</b>	%41.7	312	%41.3	39	%15.3	114	%1.5	11	%16.8	125
<b>Contact</b>	%27.7	207	%50.4	376	%20.4	152	%1.5	11	%21.8	163
<b>Role</b>	%84.2	628	%13.7	102	%2.1	16	Zero	Zero	%2.1	16
<b>Changes</b>	%42.3	314	%39.4	293	%17	126	%1.3	10	%18.3	136
<b>HSE occupational stress</b>	%43	321	%53.6	400	%3.4	25	Zero	Zero	%3.4	25

**Table 2-** Investigating the relationship of variables with stress rate in different domains

Domain→ Role↓	Demand		Control		Officials' support		Partners' support		Contact		Role		Changes		HSE occupational stress		
	Num.	Perc.	Num.	Perc.	Num.	Perc.	Num.	Perc.	Num.	Perc.	Num.	Perc.	Num.	Perc.	Num.	Perc.	
<b>Weight</b>	Low weight	5	20	1	20	Zero	Zero	2	40	1	20	Zero	Zero	1	20	Zero	Zero
	Normal weight	354	13.3	60	16.9	69	19.5	62	17.5	78	22	11	3.1	73	20.7	16	4.5
	Overweight	255	10.2	37	14.5	46	18	42	16.5	52	20.4	2	0.8	41	16.1	6	2.4
	Obesity	41	7.3	4	9.8	3	7.3	2	4.9	8	19.5	Zero	Zero	4	9.8	Zero	Zero
	Morbid obesity	5	40	1	20	2	40	2	40	Zero	Zero	Zero	Zero	1	20	1	20
Signif. level	0.547		0.263		0.541		0.624		0.766		0.646		0.102		0.263		
<b>Occupational satisfaction</b>	Very satisfied	9	6.5	14	10.1	16	11.6	9	6.5	22	15.9	2	1.4	14	10.2	2	1.4
	Satisfied	43	10.4	42	10.2	55	13.3	60	14.6	69	16.7	7	1.7	68	16.5	4	1
	Indifferent	6	9.4	24	37.5	20	31.2	18	28.1	18	28.1	4	6.2	19	29.7	4	6.2
	Dissatisfied	20	24.4	14	17.1	26	31.7	21	25.6	30	36.6	1	1.2	18	22	5	6.1
	Very dissatisfied	16	40	16	40	17	42.5	16	40	21	52.5	2	5	16	40	9	22.5
Signif. level	<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		
<b>Work experience</b>	<5	28	15	28	15	39	20.9	33	17.6	35	18.7	4	2.1	39	21.1	8	4.3
	5-10	17	11.4	25	16.8	33	22.1	30	20.1	28	18.8	4	2.7	29	19.6	6	4
	11-15	9	8	25	22.3	29	25.9	30	26.8	26	23.2	3	2.7	30	26.8	4	3.6
	15<	29	12.9	23	10.3	23	10.3	20	8.9	50	22.3	2	0.9	24	10.7	2	0.9
	Signif. level	0.541		0.001		<0.001		0.868		0.031		<0.001		<0.001		<0.001	
<b>Education</b>	Below diploma	10	16.9	6	10.2	14	23.7	15	25.4	25	42.4	1	1.7	17	29.3	2	5.1
	Diploma	28	13.9	36	17.9	46	22.9	39	19.4	46	22.9	5	2.5	44	21.9	9	4.5
	Associate degree	18	10.1	27	15.2	35	19.7	33	18.5	35	19.7	5	2.8	26	14.6	5	2.48
	B.A and above	25	12.2	27	13.2	26	12.7	25	12.2	35	17.1	3	1.5	37	18.1	6	2.9
	Signif. level	0.262		0.787		0.018		0.098		0.005		0.634		0.028		0.026	
<b>Age</b>	<25	21	13	27	16.7	29	17.9	34	21	37	22.8	5	3.1	39	24.4	10	6.2
	25-40	51	12.7	66	16.5	85	21.2	73	18.2	87	21.7	9	2.2	79	19.8	11	2.7
	41<	22	12.7	17	9.8	20	11.6	15	8.7	37	21.4	2	1.2	16	9.2	3	1.7
	Signif. level	0.274		0.004		<0.0001		<0.0001		0.730		0.005		<0.0001		<0.0001	
	<b>Gender</b>	Male	86	12.6	100	14.7	121	17.7	113	16.6	144	21.1	15	2.2	122	18	24
Female		8	14.8	10	18.5	14	29.9	11	20.4	16	29.6	1	1.9	14	29.9	1	3.5
Signif. level		0.034		0.219		0.337		0.631		0.007		0.045		0.399		0.152	
<b>Marital status</b>	Single	24	13.7	37	21.1	34	19.4	33	18.9	40	22.9	9	5.1	42	24.3	13	7.4
	Married	70	12.4	74	13.1	100	17.8	90	16	121	21.5	7	1.2	92	16.4	11	2
	Signif. level	0.769		0.005		0.174		0.200		0.676		<0.001		0.01		0.01	
<b>Smoking</b>	Yes	10	21.3	13	27.7	11	23.4	14	29.8	17	36.2	3	6.4	13	27.7	4	8.5
	No	83	12.1	96	14	122	17.8	107	15.6	158	20.6	13	1.9	117	17.2	20	2.9
	Signif. level	0.029		0.032		0.044		0.010		0.632		<0.0001		0.007		0.001	

Regarding the index of obesity, 5 subjects (0.8%) had low weight, 354 subjects (53.5%) had normal weight, 257 subjects (38.8%) were overweight, 41 subjects (6.2%) had obesity and 5 subjects (0.8%) had morbid obesity.

Relationships between variables in the study and also stress percentage in levels of each auxiliary variable were shown in tables 1 and 2. The stress percentage in Table 2 shows the percentage of subjects who had stress. The stress ratio shows the number and percentage of subjects who had stress in the certain areas. The highest and lowest occupational stress of employees was related to contact domain (21.8%) and role domain (2.1%), respectively (Table 1). Negative relationship was observed between occupational satisfaction, age, education and job experience with occupational stress ( $p < 0.05$ ; Table 2). By the increase of satisfaction levels, age, education and experience of employees, decrease was observed in all domains of job stress.

Smokers and singles had experienced significantly more job stress than nonsmokers and married individuals. There was also no relationship between obesity ( $p = 0.263$ ) and gender ( $p = 0.152$ ) and occupational stress (Table 2).

## Discussion

As it is identified in Table 2, the relationship between age and occupational stress is similar to a shattered curve in which the highest amount of stress is within the range of 26 to 40 years and after that occupational stress decreases with age. Age is influential in all domains of occupational stress except for demand and communication. Relationship between age and occupational stress has been confirmed in several studies [20, 21, 22]. However, in some studies, significant relationship between age and occupational stress has been observed [23].

Experience also showed a relationship with occupational stress. The progress of changes of this variable with occupational stress is the same as the observed progress in the age variable with occupational stress. This relationship has been observed in other studies [24]. However, given the high correlation between age and work experience in this study ( $r = 0.9$ ), the observation of the identical progress of these two variables with stress was normal.

Education reduced by increase in occupational stress. With further study of subareas of stress it was observed that increased education increases official supports, communication and job changes among

employees and this in turn increases their confidence and job satisfaction (official support), respect and job status (communication) and the fear of unwanted changes (changes) in the workplace and thus reduces occupational stress. This result was consistent with the results of previous studies [22, 23, 25, 26].

In this study, marital status showed a significant relationship with occupational stress. Stress was less in married than single individuals. Married and single individuals were different in the domains of function, changes, and control. Regarding the effect of marital status, contradictory relations have been reported. Some studies have not shown any significant relationship between marital status and occupational stress [23, 24, 27], while the results of some other studies was similar to the current study [25].

Male and female subjects did not show any difference in terms of occupational stress. This relationship was the same as the relationship observed in the study of Rahimi et al. [24]. Women had better performance than men in the areas of demand, function and communication. In some studies the relationship between gender and occupational stress has been confirmed [20, 21].

This study demonstrated that stress is less observed in nonsmokers compared to smokers. However, as smoking in military environment is prohibited, it is possible that respondents have not expressed correctly their consumption or lack of consumption, and then deciding about the relationship of smoking and occupational stress in this study, is not error and altered-free. Various studies also have been reported contradictory relations about the relationship between occupational stress and smoking. Some studies have not achieved any significant relationship between occupational stress and smoking [25, 28] and in some others; this relationship has been observed [29, 30, 31].

In present study, an inverse relationship between job satisfaction and occupational stress were observed. Job satisfaction was effective over all areas of occupational stress. With increasing dissatisfaction of individuals, their occupational stress level also increases. This result was similar to previous studies [22, 23, 32].

Also in this study no relation was seen study between obesity and level of occupational stress. This result was not consistent with previous studies [33, 34, 35] that can be due to the method of registering height and weight in the form. In this study, because of limitations, there was no possibility to measure the height and weight of individuals at the place by accurate tools and body mass index was calculated

solely based on told height and weight (which was not such a good approximate for height and weight of subjects at the time of study), that it in turn caused inaccurate calculation of BMI and lack of observed relationship between obesity and occupational stress.

Given the findings of this study it can be concluded that the satisfaction of individuals with their jobs is one of the important factors in reducing occupational stress of employees. Also, officials' and colleagues' support and that a person be able to establish intimate relationships with his colleagues in his working environment and always be sure of their superiors' protection, reduces occupational stress. Fear of unwanted changes in the workplace is one of the important factors in the incidence of occupational stress in military personnel and measures should be taken in order to reduce it.

At the end, the appropriate sample size and well statistical distribution should be noted as the strong points of this study, and lack of some subareas of occupational stress such as "proper environment", "duality of the function" and "family originated stressors", as weaknesses of this study. Conducting more complex analyses such as structural equation in order to evaluate the performance and the relationship between measured subareas of occupational stress and also further assess and comparison of determinant factors of occupational stress, especially on the non arbitrary and industrial activities are recommended to be considered in future studies.

## Conclusion

Occupational stress decreases in all domains by increasing of satisfaction level, age, education and work experience of military personnel. Occupational stress is experienced more in smoker and single individuals. Meanwhile, there is no significant relationship between obesity or gender and occupational stress.

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