

Job stress and its relationship with Job satisfaction in workers of a refinery control room

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Abstract: Introduction: Job stress can result from people's perceptions of an imbalance between job demands and their abilities to cope those demands. Stress can affect individuals and lead to job dissatisfaction. This study was conducted to assess job stress and the relationship between job satisfaction and different dimensions of job stress among refinery control room workers in a refinery located in the south of Iran. Method: In this descriptive-analytical research all 100 workers of an oil refinery control rooms were studied. Job stress and job satisfaction was measured using standard questionnaires provided by national institute of mental health (NIMH) and Robbins respectively. After collecting, data were analyzed using SPSS ver.16 software. In this regard Pearson correlation test was used to determine the probable relationship between different dimensions of stress and job satisfaction. Results: In this study 62.08 percent of workers were categorized as having high level of stress. In job satisfaction case, 9.2, 27.6, 28.7, 16.1 and 18.4 of workers were classified as totally dissatisfied, dissatisfied, not satisfied nor dissatisfied, satisfied and totally satisfied respectively. Pearson correlation test revealed a negative significant correlation between job satisfaction and all studied dimensions of job stress ($p= 0.01$). conclusion: As job satisfaction is related to different dimensions of job stress, job satisfaction of control room workers can be increased through improvement of different dimensions of job stress including interpersonal relationships, physical conditions of work and job interest. [Ali Meshkinian, Mehdi Zare, Ramazan Mirzaei, Ali Reza Ansari Moghadam. **Job stress and its relationship with Job satisfaction in workers of a refinery control room.** *Life Sci J* 2014;11(3):208-213]. (ISSN:1097-8135). <http://www.lifesciencesite.com>. 29

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Introduction:

Job stress can be defined as a psychological condition which results from an imbalance between job demands and the subject's ability for coping those demands (1). In the recent century, the importance of stress in the organizational behavior has been considered dramatically by researchers. But it should be noted that the stress is not intrinsically harmful and some degree of stress is necessary for motivating the people and it increases their work efficiency (2).

High stress levels impose costs for the subjects and their organizations. In the United States of America, 200 billion dollar, which accounts for 10% of gross national production, is spent annually for stress costs including compensation for diseases, job absenteeism, accidents, death from chronic diseases and reduced productivity (3). On the other hand, high stress levels results in the reduced job satisfaction in the workplaces. Job satisfaction is defined as the attitude and feelings of a person towards his/her job and has a determinant role in a satisfactory job. In their study, Sharif and Behjat showed that there is a relationship between stress dimensions and job satisfaction, wages, manager policy, job security, and social relations. In addition, many stress induced diseases may arise from harmful environmental factors such as noise, insufficient lighting, and low

level of ventilation, physiologic stressors, aggressive behaviors, and low level of job safety (4,5). As a preliminary stage for induction and promotion of job satisfaction, the factors which affect job satisfaction should be determined. In this regard, Herzberg believes there is not only one factor which determines job satisfaction or dissatisfaction. He suggests before implementing the plans for promoting the job satisfaction, factors which induce job dissatisfaction should be considered. On the other hand, although motivative factors result in job satisfaction, their lack doesn't result in job dissatisfaction. Factors which result in job dissatisfaction include physical conditions, wages, safety, security, social factors and inter-personal relationships. It can be concluded from Herzberg studies that if high levels of job satisfaction is going to be attained, as a prerequisite the factors which induce job dissatisfaction should be considered (1).

Kuei-Yun et al. study which investigated the relationship between job commitment, job satisfaction and job stress among Taiwan nurses revealed that high level of job stress decreases the level of job satisfaction(6).

Nakata et al. study which conducted to assess the effect of job stress on sleep related breathing disturbances showed that job stress can result in sleep related berating disturbances. Potential job stress

effects may include DNA damage. As Akiomiet al. indicated oxidative DNA damage can be related to job stress. Hannah et al. showed that job stress and high work load are related to poor sleep quality. High levels of job stress in organization can result in absenteeism inefficient use of working time increasing the turnover low productivity and resistance against changes in the organization. in addition, studies indicate that high level or prolonged stress can induce physiological changes which may lead to impaired health or even death. Moreover relationship has been found between high levels of stress and cardiovascular diseases, immune system complication, depression and musculoskeletal disorders (10). Regarding the tasks being performed one of the occupational groups which may have high level of job stress and low level of job satisfaction are control room workers. in refinery control rooms many tasks are performed including monitoring and control of reactors, temperature, modification of the products characteristics according to the analysis performed in the laboratory and making critical decisions at certain times like when the power, air, vapour, or water flow is interrupted. since job stress and job dissatisfaction can have effects on performing such critical tasks this study was conducted to evaluate job stress, job satisfaction and probable relationships between different dimensions of job stress and job satisfaction.

Methods:

This descriptive- analytical study was performed in the control rooms of a refinery in the south of Iran. The study population were all 100 workers in control rooms. All participations were male and their educating degree was diploma or high degrees. The average age of the participants was 26 years and they were working in three shifts (morning, after noon and night). For evaluation of job stress and job satisfaction relevant questionnaires were prepared and after necessary descriptions completed by the participants. Out of 100 distributed questionnaire 87 uses were completed and analyzed. For determination of job stress level American Mental Health Institution job stress questionnaire was used. This questionnaire consists of 57 questions for evaluation of three dimensions of job stress including interpersonal relations (26 questions) physical conditions (22 questions) and job interest. Each question should be responded in a 5 point likert scale. According to this job stress questionnaire, job stress will be expressed in three levels as low stress, normal stress and high stress. For allocation of job stress level according to the obtained score from the questionnaire table 1 was used (11). For evaluation of job satisfaction, Robins standard questionnaire was used. This questionnaire

consists of 18 five point scale question this questioner is based on the theory that the feeling of a person towards the job can reveal the level of his/her job satisfaction (12). In this questionnaire each question obtains a score ranging from 1 to 5 and the level of job satisfaction will be determined by averaging the score of 18 questions according to table 2. Reliability and validity of the used questionnaires had been considered previously by Hamidi et al. and Mohammad Fam et al. Hamidi et al. reported reliability of job satisfaction questionnaire to be 0.8 and Mohammad Fam et al. reported the reliability of job stress questionnaire to be 0.92 (13, 14).

After obtaining the necessary data from questionnaires statistical analysis was performed using SPSS ver. 16 software. Pearson correlation coefficient was used for evaluating the probable relationship between different job stress dimensions and job satisfaction.

Results

The results of assessing the job stress in different dimensions (physical conditions, interpersonal relations and job interest) is presented in Table 3. According to these results the average of interpersonal relations score is 64.18. According to table 1 this level of stress is considered high and it is between 70th and 80th percentiles. The average of the scores in the physical conditions dimension is 64.4 and the related stress level according to the table 1 is more than that of 90th percentile. The average of the scores in the job interest dimension is 26.21 and the related stress level according to table 1 is high which is between percentiles 80th and 90th.

Mean job stress score in general was 157.8 which is considered high stress level and it is between 80th and 90th percentiles. Considering the distribution of participants in different stress levels it can be seen that in all dimensions most of the participants have high level of job stress. The percent of the participants with high level of job stress in interpersonal relations, physical conditions and job stress dimensions respectively is 45.98%, 66.67% and 57.47% (figures 1 to 3). In general 62.07% of the studied population had a high job stress level.

Regarding the job satisfaction the average of the all participants score was 3.29. According to the Table 2, people with this score are considered to be satisfied by their job. Analysis of the distribution of participants in different levels of the job satisfaction showed that most of them are in not satisfied nor dissatisfied level(28.7%) and in the next order are participants who belong to satisfied (27.6%), strongly satisfied (18.4%) and strongly dissatisfied (9.2%) levels.

Pearson correlation coefficient test showed that there is a negative and significant correlation between job satisfaction and all stress dimensions and total job stress score ($p=0.01$). In addition, Pearson correlation coefficient revealed that there is a positive and significant correlation between different dimensions of job stress ($p=0.01$).

Discussion:

The average of job satisfaction score in the studied population was 3.29. According to the categorization in table 2, this score belongs to satisfied level. However another issue which should be considered is distribution of the studied population in different levels of job satisfaction. Figure 5 indicates that the distribution of the studied population in different levels of job satisfaction follows a normal distribution model. According to this figure, 54% of the workers are in a level that is not considered as satisfied from the job. It means 54% of the workers are in not satisfied nor dissatisfied (28.7%), dissatisfied (16.1%) and strong dissatisfied (9.2%) level. Since only 18.4% of the workers are in strongly satisfied level, it can be inferred that 81.6% of the workers are in need for a program to promote their job satisfaction level.

Studies show that job satisfaction is related with organizational citizenship behavior, turnover, and absenteeism (15). In addition, occupational injuries and absenteeism are related with job dissatisfaction (16). These findings highlight the importance of job satisfaction and the need for its promotion in the organizations.

The results of job stress assessment showed that the average of job stress score is 157.8. According to table 1 this level of stress is considered to be high and it is between 80th and 90th percentiles.

Analysis of the correlation between job stress and job satisfaction revealed that there is a negative and significant correlation between job satisfaction and all dimensions of job stress and total job stress ($p=0.01$). In this study the correlation coefficient between job satisfaction and different dimensions of stress including interpersonal relations, physical conditions and job interest and total job stress respectively was -0.68, -0.72, -0.86 and -0.8. As it can be seen, in all dimensions, specially in job interest dimension, the correlation coefficient is high. It means by increasing the job stress in all dimensions, the level of job satisfaction decreases. These findings are in agreement with Kuei-Yun Lu et al. study. Hamidi et al. study in a glassware industry also showed that there is a significant relationship

between job stress dimension, specially physical conditions, and job satisfaction. In Hamidi et al. Study the correlation coefficient between job stress and physical conditions was 0.834. According to these findings, it seems that by adopting policies towards decreasing the job stress, job satisfaction can be increased in control room workers. High levels of job stress in on organization can result in absenteeism, inefficient use of working time, increasing the turnover, low productivity, and resistance against changes in the organization(1). Rashmi Shahv et al. Study in an industrial unit which was performed on 100 subjects also showed that there is significant relationship between job stress, performance of the workers and job satisfaction which supports the results of our study (17). Mohammad Fam et al. Study in a car manufacturing industry showed that physical conditions of the workplace has the highest impact on the job stress. In addition, Johnson et al. study in 20 industrial units reported physical and ergonomic factors as the most important factors in induction of job stress(14,18). The study of Phil Leather on 120 subjects in a governmental industrial workplace showed that the noise pressure level, has a direct effect on job satisfaction (19). In our study, also the highest correlation coefficient was revealed to be between job satisfaction and physical conditions. This finding is in line with Mohammad Fam et al., Johnson et al and Phil Leather et al. Studies (14, 18, 19). Hence it can be concluded that the most important factor which affects job stress and in turn job satisfaction is physical conditions of the workplace. According to the results of this study the factors in physical conditions dimension which assisted in increasing the level of job stress in the studied control rooms are the need for quick reaction in some tasks, the need for emergency responses, boresome of the work and workplace, high job demands, and busy and noisy workplace. The results of this study highlights the need for considering job stress in the studied control rooms. Since this study has determined critical factors which play role in inducing job stress, the results of this study can be used as a guideline by managers towards reduction of job stress and increment of job satisfaction. in this regard Herzberg believes that before taking actions for increasing job satisfaction level, factors which play role in job dissatisfaction should be considered. In Herzberg's opinion, factors which may cause job dissatisfaction include physical conditions, salary, safety, security, social factors, and interpersonal relations(1).

Table 1: stress levels according to the score from the used questionnaire

	Low stress		Normal stress				High stress		
Interpersonal relations	39	43	46	51	54	57	62	68	75
Physical conditions	35	40	44	48	52	55	58	62	67
Job interest	13	15	17	18	19	21	23	25	27
Total	91	101	111	117	123	134	141	151	167
Percentile	10	20	30	40	50	60	70	80	90

Table2: job satisfaction levels according to the score from the used questionnaire

job satisfaction status	Score
Strongly dissatisfied	1-1.8
Dissatisfied	1.8-2.6
Neighther satisfied nor dissatisfied	2.6-3.4
satisfied	3.4-4.2
Strongly satisfied	4.2-5

Table3: results from evaluation of job stress and job satisfaction

	Means	Standard deviation
job satisfaction	3.29	0.93
Interpersonal relations	64.18	19.71
Physical conditions	67.40	18.65
Job interest	26.21	10.50
Total stress	157.80	44.39

Table 4: Results of the Pearson correlation between different aspects of stress and job satisfaction

		Job satisfaction	Interpersonal relations	Physical conditions	Job interest	Total stress	Barriers to work
Job satisfaction	Pearson Correlation	1	-.677	-.677	-.715	-.805	-.373(**)
	Sig. (2-tailed)	-	.000	.000	.000	.000	.000
Interpersonal relations	Pearson Correlation	-.677(**)	1	1	.769(**)	.926(**)	.596(**)
	Sig. (2-tailed)	.000	-	-	.000	.000	.000
Physical conditions	Pearson Correlation	-.715(**)	.769(**)	.769(**)	1	.931(**)	.546(**)
	Sig. (2-tailed)	.000	.000	.000	-	.000	.000
Job interest	Pearson Correlation	-.864(**)	.671(**)	.671(**)	.716(**)	.835(**)	.453(**)
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
Total stress	Pearson Correlation	-.805(**)	.926(**)	.926(**)	.931(**)	1	.601(**)
	Sig. (2-tailed)	.000	.000	.000	.000	-	.000
Barriers to work	Pearson Correlation	-.373(**)	.596(**)	.596(**)	.546(**)	.601(**)	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	-

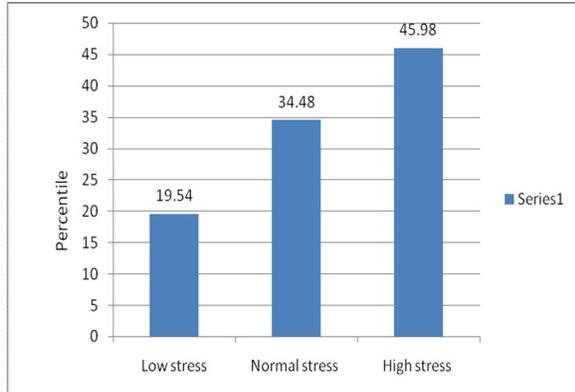


Fig 1: Distribution of subjects in different levels of stress in interpersonal dimension

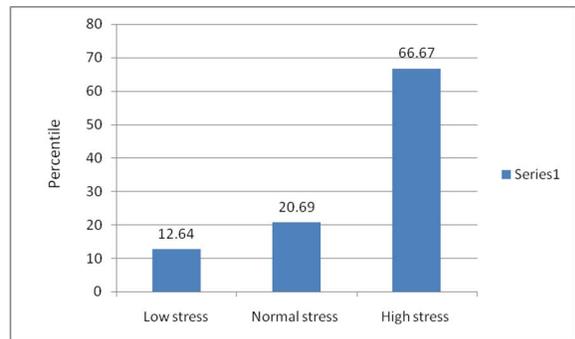


Fig2 Distribution of subjects in different levels of stress in Physical conditions dimension

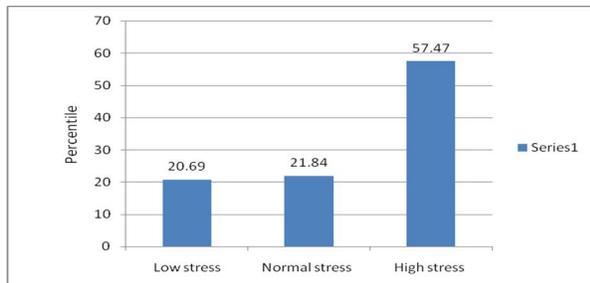


Fig 3: Distribution of subjects stress levels in job interest dimension

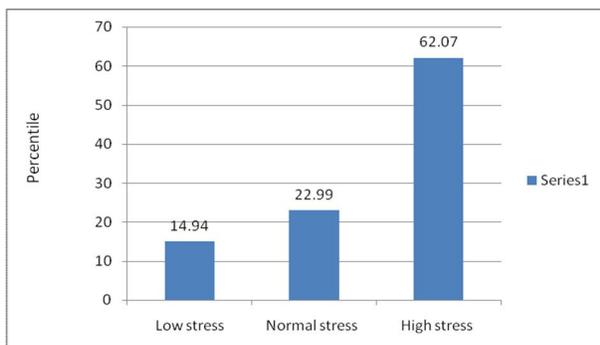


Fig 4: Distribution of subjects stress levels in different stress levels

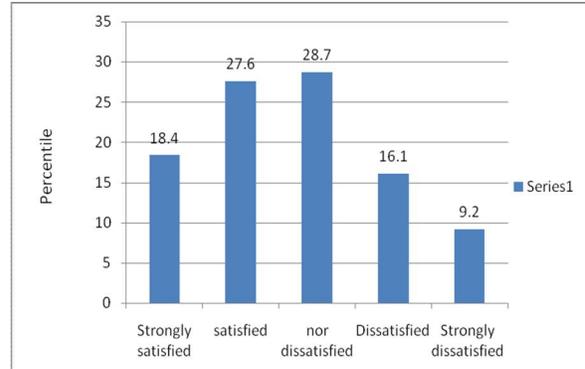


Fig 5: Distribution of subjects in different job satisfaction levels

Our study determined physical conditions as the main cause of job stress, on the other hand, Herzberg believes that workplace physical conditions is one of the factors which affects job dissatisfaction. Hence it can be concluded that the relationship which was found between job satisfaction and physical conditions dimension of job stress is a real relationship which is supported by Herzberg's theory. Therefore modification of physical conditions of the studied control rooms is expected to decrease the level of job stress and increase the level of job satisfaction.

One of the factors which should be taken in to account for decreasing the level of job stress is the interpersonal relations. Some workers don't have enough skill in interpersonal relations and may be harassed by other workers. In this regard conducting interpersonal relations courses can be helpful. In addition, there may be need for reprimands in the case of harassment of workers by their colleagues.

In addition, job characteristics should be considered for increasing the job satisfaction and decreasing the job stress. A study has shown that jobs which have feedback, are specialized and have high level of independency lead to higher levels of job satisfaction (20).

Therefore, in the control rooms job satisfaction can be increased by giving feedback and more independency to the workers. another factors which may be employed for increasing the level of job satisfaction and decreasing the job stress are using job rotation, decreasing work hours, participating the workers in decision making processes, giving up to date safety and health services, and preparing a secure workplace.

Since the result of this study showed a strong relationship between job satisfaction and all dimensions of job stress, it can be concluded that by focusing on different job stress dimensions of the workplace and improving the interpersonal relations, physical conditions of the workplace, job interest in

control room workers, the level of job stress will be decreases and in turn, job satisfaction will be increased.

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