Attitude toward Safety Issues as Predictor of Job Stress and its Dimensions among Employees

Fariba Kiani[1], Mohammad Reza Khodabakhsh[2*]

1-Young Researchers and Elite Club, Shahrekord Branch, Islamic Azad University, Shahrekord, Iran.

2-Young Researchers and Elite Club, Mashhad Branch, Islamic Azad University, Mashhad, Iran.

**Corresponding Author:*
Mohammad Reza Khodabakhsh; Young Researchers and Elite Club, Shahrekord Branch, Islamic Azad University, Shahrekord, Iran.
Tel:+989365861050
Email: Khodabakhsh@ut.ac.ir

Abstract

Introduction: Evidence from a range of different data sources has shown that job stress is a significant problem in organizations and industries. Researchers have mentioned that attitude toward safety issues may predict psychological distresses in workplaces. The present study examined the relationship between attitude toward safety issues related to job stress and its dimensions among workers in Isfahan Steel Company.

Methods and Materials: This was a cross-sectional study. Sample consisting of 189 employees in Isfahan Steel Company in 2012 was selected according to the stratified random sampling method and responded questionnaires about demography characteristics, job stress and its dimensions (perceived job self-efficacy and perceived job helplessness) and safety attitudes. The data were analyzed using Multivariate and correlation techniques.

Results: The results showed that 1) there were significant relationships between attitude toward safety issues with job stress and perceived job helplessness ($p<0.05$),2) there was no significant relationship between attitude toward safety issues and perceived job self-efficacy ($p>0.05$),3) multivariate analysis showed that attitude toward safety issues variable significantly predicted respectively about 18% and 10% of the variance of variables of job stress and perceived job helplessness ($p<0.5$).

Conclusions: Promoting safety attitudes can be an obstacle against the experience of job stress among employees.

Keywords: Attitude toward safety issues, job stress, perceived job self-efficacy, perceived job helplessness.

►*Please cite this paper as:*
Aliabadi. M. Empirical Study of Noise Characteristics of Typical Centrifugal Fan Based on Special Quantities Using Sound Intensity Based Method. Jundishapur J Health Sci 2014;6(2):307-317

Received: 2013/11/5 **Revised: 2013/12/11** **Accepted: 2013/12/14**

Introduction

People working in the steel industry are identified with higher frequencies of occupational health issues, including musculoskeletal problems, than the total workforce. As it is a high-risk industry, there is a need to investigate factors affecting the occurrence of such accidents in order to be able to protect workers (1).First, providing a definition for occupational accident seems necessary. Occupational accident can be defined as an unwanted and unplanned event that is associated with the work and caused by unsafe acts and conditions or both, and might lead to immediate or delayed unpleasant effect as well as illness or death among a large number of workers (1, 2). Occupational accidents are considered one of the most important factors contributing to disability and absenteeism among workers. Since 1970, increasing efforts to prevent occupational accidents is carried out across the world, yet rate of occupational accidents is still high. Each year, almost 250 million occupational accidents causing injuries in 160 million workers are reported (3). Traditional methods to secure employees' safety concentrate on the physical and biomechanical prospects of work by improving machines, equipment, and task completion manners (4). However, it is believed that dimensions of psychosocial work environment such as stress as experienced by workers are related to depressive symptoms and poor health (5). There are various studies (6,7) that show occupational stress is considered a strong predictor in controlling the occupational accidents. Occupational stress contributes various problems such as occupational disease, musculoskeletal disorders and other health issues in a work environment (8,9).Many researchers observed a significant relationship between the incident and employees stress levels (10,11). Stress is a response to stimuli and occurs if the resources of individuals are threatened or lost, or if resource investment does not produce desired outcomes (12). Especially, the incidence of stress and its outcomes depends on how the resources fit in the individual demands (6). Individuals, when encounter with work requests and pressures not modified to their knowledge and ability, experience work stress (7). Work stress is regarded as an important topic in the field of work health (13) because of its negative impact on workers' health and safety (14). It results from Long-term exposure to workplace psychosocial risks, characteristics of the work environment, work design, and organizational management that potentially cause psychological and social damages (15).

Work stress in occupational setting may also result in a physical or psychological reaction such as absenteeism, turnover, and job burnout (16), cardiovascular and coronary artery disease (17), gastrointestinal complaints, health problems, fatigue, injuries at work (18), sleep disturbance (19), disorder in social activities and quality of time spent with family (20), headaches, nausea, muscle pains (21), job dissatisfaction (22), affective disorder (23), increased number of somatic symptoms such as neck and shoulder pain (24), type 2 diabetes in middle-aged women (25), susceptibility to disease (26), an increased risk of depression (27) and psychosomatic symptoms (28).Almost all the approaches to decreasing job stress concentrate on poor job/position design, poor job support, and high workload (29). However, it is believed that psychosocial dimensions of work environment such as safety attitudes of workers are likely to contribute to workers' experiences of occupational stress (30). Attitudes toward accidents and measuring and assessing such attitudes to evaluate the effectiveness of safety programs can be useful (31). The safety attitudes are the beliefs and emotions around the safety issues and reflect a sense of responsibility and commitment toward safety issues (32, 33). Employees' attitudes can act as a mediator between

safety climate and accident occurrence and may indirectly influence the individuals' safety behaviors and performance (34). Safety attitude is related to other variables that associate with the occurrence of accidents such as safety compliance practices (35), risk behavior (36), sensation seeking (37), breaking safety rules (38) and fatalism (39). Nonetheless, the association between attitude toward safety issues and job stress has not adequately been studied in Iran and in the world. Also, few researches have simultaneously focused on job stress and its dimensions which are perceived job self-efficacy and perceived job helplessness. Therefore, we examined degrees of attitude toward safety issues associated with job stress and its dimensions through distributing a self-administered questionnaire to the workers in various departments of Isfahan Steel Company.

Methods and Materials

Participants

The current research applied a cross-sectional design. This research was administrated from January to February 2012 in Isfahan Steel Company. Isfahan Steel Company (Zob Ahan-e Isfahan) opened in late 1960s and is located near the cities of Fooladshahr and Zarrinshahr in Isfahan Province. Isfahan Steel Company (ESCO) is the first and largest manufacturer of constructional steel products in Iran (N=8300) (40). In this research, considering the extent and distribution of the employees in the different parts of Isfahan Steel Company (Tohid Building, Navard part, blast furnace, steel making, coke, fire, railway, gas, oxygen plant, technical guidance etc.), the sample (n=200) was selected according to the stratified random sampling method. In stratified random sampling, the strata are formed based on members' shared attributes or characteristics. A random sample from each stratum is taken in a number proportional to the stratum's size when compared to the population. These subsets of the strata are then pooled to form a random sample, then simple random sampling or systematic sampling is applied within each stratum. This often improves the representativeness of the sample by reducing sampling error. It can produce a weighted mean with less variability than the arithmetic mean of a simple random sample of the population. The sample size was calculated using SPSS 15, following the procedure recommended by Molavi [41]. Given an α level 0.05 and a power of 90%, the sample size required was estimated to be 200 subjects. Informed consent was obtained from each participant and the research was approved by the appropriately constituted ethics committees at Isfahan University. A total 189 (92%) workers returned the questionnaire.

Measurements

After translating questionnaires of safety climate and occupational stress and its dimensions, the original English along with Persian versions were presented to three cases of faculty members of psychology departmentand4individuals at safety and mental health professionals. Thus, about 22versionsofeachscalewere represented to sample of workers and they were asked to opine on their questions and their reliability. After studying preliminary opinion, the final scales were developed and were individually presented to workers. The following questionnaire was used**:**

Demographic factors, the five demographic factors, included age, gender, marital status, education, and years of working experience. Marital status was classified as married, single, divorced and widowed.

Attitude toward safety issues, the instrument used to collect data on the attitude toward safety issues was a self-reported questionnaire of Muntinu (42). This questionnaire is the commonly used method for collecting attitudinal data, and was therefore, selected for this research. This questionnaire was translated into and validated in Persian and its items were amended by safety and health specialists to

suit the steel industry. The safety attitude inventory is a 66-item and self-report scale that measures attitude factors related to accidents. The thirteen components of attitudes toward safety issues are listed in Table 2. A sample item is "I do not use equipment that I feel is unsafe," that is related to safety consciousness factor and is presented in a multiple-choice format. The statements are arranged to reflect agreements' intensity from strongly disagree (0) to strongly agree (4). Muntinu (42) concluded that this inventory has high internal reliability (for all factors, Cronbach's Alpha takes values between 0.70 and 0.80) and has a good validity. In this research, evidence of reliability of this inventory, as administered to the Iranian relevant populations, was calculated by Alpha Coefficient 0.78 and by Split-half 0.80 (for all the factors, Cronbach's Alpha takes values between 0.56 and 0.87). The validity coefficients of questions and components of safety attitude with other questionnaires of safety attitude are between 0.24 and 0.79, and all the validity coefficients are significant at $p<0.0001$.

The perceived job stress (PSS) was measured by Perceived Job Stress Scale (PSS) of Cohen, et al. (43), translated into, and validated in Persian. PSS is the most widely used psychological instrument for measuring the perceived stress. It measures the degree to which situations in one's life are rated as stressful. The items asked respondents how often they found their lives unpredictable, uncontrollable, and overloaded (44). All the items we used were modified to ensure that they were appropriate for the industrial context and included a number of direct questions about the current levels of experienced job stress. A sample item is ''in the last month in work environment, how often have you got angry because of the things out of your control.'' The PSS was designed for using in community samples with at least a junior high school education. The items were grasped easily, and the response alternatives were understood simply. Further, the queries are of a public nature and thus are relatively free of content specific to any subpopulation group. The questions in the PSS ask about the feelings and thoughts during the previous month. In each case, the respondents are asked on how often they felt in a certain way. Scoring was based on a Likert-scale format from never (0) to very often (4).This scale has a reliability of .84,.85,.86 in the three cases, high internal reliability (0.79=Cronbach's Alpha) and an acceptable validity (45). Also Demir and Orucu (46) in their study, mentioned the Cronbach's Alpha 0 .84 and its correlation with the questionnaire "Public Health" 0.61. Exploratory and confirmatory factor analysis of the PSS showed that the scale consisted of two dimensions: perceived job helplessness factor and perceived job self-efficacy (46). Prior studies provide evidence for high internal reliability and validity of the scale (45, 46). Internal consistencies (Cronbach's α) in this study, in Iran, for the occupational stress, perceived job self-efficacy and perceived job helplessness was respectively 0.82, 0.70, and 0.88, which were excellent for such scales.

The participants of this research completed the questionnaires of safety attitude and job stress in a one-hour meeting with the researchers or co-researchers. A covering letter explained the purpose of the study, and that participation in the study was confidentially guaranteed. The respondents were asked to return completed questionnaires inside the sealed envelopes either to the person who had distributed them or directly to the research team.

The Statistical Package for the Social Sciences (SPSS) version 15 was used to analyze the data. Also, descriptive statistics was used to summarize and organize the data, and were analyzed by correlation coefficients and multivariate analysis.

Table 1: Components of attitude toward safety issues

Component	Explanation
Work conscientiousness	Refers to one's sense of competence and responsibility.
Fatalism	Refers to views of importance and controllability of safety.
Safety consciousness	Refers to one's awareness of safety issues.
Leadership	Refers to satisfaction with the leadership (influence, inspirational motivation, intellectual simulation, individual consideration).
Role overload	Refers to perceptions about whether there is high workload in one's job (i.e. too many hours worked per person).
Work pressure	Refers to work pace and availability of resources (i.e. time and workplace) available for the job.
Job safety perception	Refers to a global perception over how safe one's job is.
Supervisor safety perception	Refers to perceptions about one's supervisor behavior related to safety.
Coworker safety perception	Refers to perceptions about one's coworkers behavior related to safety.
Management safety perception	Refers to perceptions about one's company management attitudes and behaviors related to safety.
Safety program and policiesperception	Refers to perceptions about the safety program and polices in place.
Interpersonal conflicts at work	Refers to the level respondents get along with others at work.
Job involvement	Refers to beliefs regarding the importance the work plays in one's life.

Adapted for Muntinu (39), P. 22-23

Results

Part I: Demographic characteristics of participants

Almost the majority of participants were male because in this study, the main occupational groups were at production line. Age groups ranged from 18 to 53; the mean age of the participants was 34 year (SD=5.58 year old) and average work experience was 12 years (SD=3.2yrs) (see Table 2).

Part II: Descriptive statistics

Mean, standard deviation and internal correlations of variables under the study are presented in Table 3.

As it can be seen, the relationships between attitudes toward safety issues with job stress and job helplessness are significant ($p<0.05$). There was no significant relationship between attitudes toward safety issues and job self-efficacy ($p>0.05$).

Part III: Multivariate Analysis

To assess predictive power job stress and its dimensions by attitude toward safety issues canonical correlation method was used that is performed with Multivariate analysis. The results are presented inTable4.

As it can be seen, attitude toward safety issues variable significantly predicted respectively about 18% and 10% of the variance of variables of job stress and perceived job helplessness ($p<0.5$). Also, attitude toward safety issues predicted about 5% of the variance of job self-efficacy which is not statistically significant ($p>0.05$).

As observed in table 4, attitude toward safety issues predicted almost 18% of variance of job stress and its dimensions ($p<0.01$). Univariate analysis of variance on the criterion variables considering predictor variable of attitude toward safety issues are presented in Table 5.

Table 2: Demographic characteristics of the sample members (N=189)

		Frequency	Frequency percentage (%)
Age	18 to 29 years	68	36%
	30 to 41 years	68	36%
	42 to 53 years	53	28%
Sex	Male	170	90%
	Woman	19	10%
Marital status	Married	113	60%
	Single	76	40%
Education	M.Sc. (M.A.) degree or higher	22	12%
	B.Sc. (B.A.) degree	45	24%
	High school graduates	113	60%
	Primary school graduates and Lower	9	4%
Work experience	5 years and lower	68	36%
	6 to 15 years	45	24%
	16 to 25 years	45	24%
	26 years and higher	31	16%
Shift status	Shift	120	64%
	Not shift	69	36%

Table 3: Mean, standard deviation variable and internal correlations under the study

				Correlations			
Variable	N	$\overline{X}$	SD	1	2	3	4
Occupational stress	189	27.12	4 .95	1			
Perceived job self-efficacy	189	14.16	3.27	0.49**	1		
Perceived job helplessness	189	12.95	4 .37	0.59**	-0.19	1	
Attitude toward safety issues	189	208. 21	17. 45	-0.43**	-0.23	-0.31*	1

*p<0/05, **p<0/01

Table4: Multivariate analysis (MANVOA) of the predictor variable of attitude toward safety issues based on the criterion variables of job stress, perceived job self-efficacy, and perceived job helplessness

	Effect	Value	F	df	Error df	Sig	Partial eta squared	No cent. Parameter	Observed power
Stress	Pillai's Trace	0.18	5.27	2	186	.009	0.18	10.55	0.81
	Wilk's Lambda	0.81	5.27	2	186	.009	0.18	10.55	0.81
	Hotelling's Trace	0.22	5.27	2	186	.009	0.18	10.55	0.81
	Roy's Largest Root	0.22	5.27	2	186	.009	0.18	10.55	0.81

Table5: Univariate analysis of variance on scores of job stress, perceived job efficacy and perceived job helplessness according to predictive variable of attitude toward safety issues

Dependent variable	Sum of squares	df	Mean square	F	Sig.	Partial eta squared	Observed power
Job stress	219.44	1	219.44	10.73	.002	0.18	0.89
Perceived job self-efficacy	28.43	1	28.43	2.75	.104	0.05	0.36
Perceived job helplessness	89.89	1	89.89	5.09	.02	0.10	0.68

Discussion

The current results indicated that attitude toward safety issues significantly predicted job stress and perceived job helplessness. In addition, no statistical association was observed between attitude toward safety issues and perceived job self-efficacy.

Few researches are done on the relationship between attitude toward safety issues and job stress. In one of the few studies carried out on this subject, Dickety and et al. (30) showed the role of safety attitudes and climate in controlling the job stress weight. In addition, according to Kirkcaldy et al. (47), the safety climate in an organization, is effective in reducing the destructive effects of stress in incidence of accidents.

A part of the theory of demand-control (DC) is interaction between the job demands put on the employee and the management to coordinate such demands (48, 49). Employees involved in low control, high demands and low support positions, are in a higher danger of bodily and psychological harm from job stress (29). As noted, in the current research, the questionnaire of attitude toward safety issues consisted of thirteen components: work conscientiousness, fatalism, leadership, safety consciousness, role overload, work pressure, job safety perception, supervisor safety perception, coworker safety perception, management safety perception, safety program and policies perception, interpersonal conflicts at work and job involvement (42). Therefore, the components of safety attitude can be related to providing resources for managing job demands. Strong safety attitudes can provide support to peers and managers (support) by changing workers' perceptions toward coworkers, supervisors and management safety actions, safety program and policies, interpersonal conflicts at work and job involvement. Employees might feel more confident to overcome some barriers in the workplace (control) by changing work conscientiousness, fatalism and safety consciousness; and the employees' perception toward work demands would decrease (demand) by changing the perceptions of role overload, work pressure and job safety. Fako (50) concluded that a successful accommodation and confrontation with the job demands removes the tangible effects of job stress on individuals.

Furthermore, a worker's perception of job stressors may partially be a joint function of attitudes (51). Individuals who have positive attitudes toward the safety issues are more likely to believe the predictability of accidents and take protective actions to avoid them, so they are less likely to believe that these stressful situations cannot be controlled. Mclain (52) found that employees' confrontation with risky environments that threatens their safety and health affects their job stress levels; which mean that a perception of increased harm leads to dissatisfaction and discomfort that in turn increases the job stress among the employees. The perceived risk significantly predicts stress-related symptoms.

As for job stress, attitude toward safety issues significantly predicted perceived job helplessness. This clarifies that individuals with low perceived helplessness have better attitudes toward safety issues. Accordingly, one of the causes of perceived helplessness among employees can be attributed to employees' weak attitudes toward safety issues, which can decrease the perceived helplessness with promoting their safety attitudes .This result can be justified with two constructs of fatalism and locus of control:

Fatalism is an obstacle to the adoption of safe working behavior (53). Fatalism describes the belief that injuries are unavoidable and happen due to haphazard or

fate (54). It is negatively related with reporting job risk (55) and is positively related with self-care disorder (56). Believe to fatalism have negatively influenced the acceptance of safe work practices (57). The results of a study done by Patwary, O'Hare and Sarker (58) showed that fatalistic beliefs among personnel of an organization that attribute these events to "fate" reflects their perceived lack of control over accidents and reveals a lack of organizational awareness that can occur within a culture of fatalism. Through increasing the awareness of employees and changing their attitudes toward safety issues, this culture can change in organizations, and employees' control on safety issues can be improved.

Employee with internal locus of control tends to believe that they can prevent accidents and injuries. In contrast, employee with external locus of control tends to believe that accidents and injuries are due to forces outside their control, such as fate, or fatalism (59). External locus of control has positive correlation with helplessness (60).Individuals with internal locus of control have better attitudes toward safety issues, thus the perception of helplessness in them more likely returns to lack of awareness. In contrast, individuals with external locus of control have weaker attitudes toward safety issues (61), to decrease helplessness in them, their attitudes toward safety issues should be promoted early.

Similarly, attitude toward safety issues did not significantly predict perceived job self-efficacy. It should be noted that it is not adequate for people to realize the events are under their control and can take actions to prevent these accidents; they should also be practically familiar with useful actions for protecting themselves. For example, conducting training exercises to familiarize them with the appropriate reactions in critical conditions can be effective in this field. Weidner et al. (62) suggested that training should highlight the technical aspects of health and safety, and should include demonstration and hands-on procedures; and that integrated organizational support for implementation of health and safety practices is essential.

Implications for well-being

The findings of this research emphasize the importance of safety attitudes in predicting job stress and coping with them. Safety intervention needs to focus on improving safety attitudes in organizations, as well as on the preventive coping methods against job stress, and these concepts influencing the reduction of stress directly or indirectly. Zacharatos et al. (63) showed that employees who conceive that their organization uses high commitment work actions, such as training and teamwork, reported better levels of safety attitudes and fewer incidents in workplace. Recent researches suggest that management behaviors are a vital area for safety interventions in improving safety attitudes and climate in organizations (63, 64).

The practical implications are best perceived in terms of amelioration of job stress. Improving safety attitudes as a reliable safety index, along with the aspects described in the introduction may decrease the health detrimental effects of job demands via an improved uptake of emotional resources by workers.

Finally, the safety attitude construct has practical of advantage as an effective amelioration target for organizations to meet their task of care and occupational health and safety, legal and mental obligations. As managers are largely responsible for promoting safety attitudes, we expect that prompting safety attitudes yield positive effects on psychosocial work conditions and workers' well-being.

It is recommended that the future research examine the effects of safety interventions to

improve safety attitudes. In addition, with designing these interventions and with more attention paid to them, we can affect one of the most important influential variables in incidence of occupational accidents.

Conclusions

The findings of this research emphasize the importance of attitude toward the safety issues in predicting job stress and coping with them. Safety intervention needs to focus on the increase of safety issues awareness, as well as on the prevention methods coping with them, and these concepts influence the reduction of job stress directly or indirectly. It is recommended that the future research examine the effects of safety interventions on decreasing job stress. Further, with designing these interventions and with more attention to them, we can affect one of the most important influential variables in incidence of occupational accidents. The present study needs to be replicated in different populations and needs more empirical support. Until then, the findings of the study should be interpreted with caution. Additionally, the cross-sectional design of the study and the participants (i.e. a group of employee) exert some limitations on the generalization of the findings. Finally, the problems and limitations on the use of self-repotting instruments should not be overlooked.

Acknowledgements

The authors would like to acknowledge the generosity of the employees who agreed to participate in this research.

References

1-kiani F, Samavatyan H, Pourabdian S, Jafari E. Predictive Power of Incidents Reporting Rate and its Dimensions by Job Stress among Workers' Isfahan Steel Company. Iran J Public Health 2011;40(3):105-7.

2-Brvr LR. [Safety and Health for Engineers (safety in industry)]. Trans by Halvany GH. Tehran: Asare Sobhan Publisher; 2006. p. 45-2.[In Persian]

3-Jovanović J, Aranđelović M, Jovanović M.Multidisciplinar aspects of occupational accidents and injuries. Working Living Environmental Protection 2004;2(4):325 –11.

4-Benjamin OA. Fundamental principles of occupational health and safety. Geneva: International Labor organization; 2001. P. 1-159.

5-Abbe OO, Harvey CM, Ikuma LH, Aghazadeh F. Modeling the relationship between occupational stressors, psychosocial/physical symptoms and injuries in the Construction Industry. Int J Ind Ergonom 2011;41(2):106-11.

6-Norris F, Matthews BA, Riad JK. Character logical, situational and behavioral risk factors for motor vehicle accidents: a prospective evaluation. Accident Anal Prev 2000;32:505-10.

7-Dobson A, Brown W, Ball J, Powers J, McFadden M. Women drivers' behavior, socio-demographic characteristics and accidents. Accident Anal Prev1999;31:525-10.

8-Dragano N, He Y, Moebus S, Jockel KH, Erbel R, Siegrist J. Two models of job stress and depressive symptoms. Results from a population-based study. Soc Psychiatry Psychiatr Epidemiol2008;43(1):72-6.

9-Greiner BA, Krause N, Ragland D, Fisher JM. Occupational stressors and hypertension: a multi-method study using observer-based job analysis and self-reports in urban transit operators. SocSci Med 2004;59(5):1081–94.

10-Stanfeld SA. Commentary: The problem with stress: minds, hearts and disease. Int J Epidemiol2002;31(6):1113– 16.

11-Ilies R, Dimotakis N, De Pater IE. Psychological and physiological reactions to high workloads: Implications for well-being. Personnel Psychol 2010;63:407-29.

12-Hobfoll SE. The influence of culture, community, and the nested-self in the stress process: Advancing Conservation of Resources theory. J Appl Psychol2011;50:337-84.

13-WHO. Protecting Workers' Health Series: Work Organization & Stress. Nottingham: Institute of Work, Health & Organizations; 2005.

14-Conway PM, Campanini P, Sartoria S, Dotti R, Costa G. Main and interactive effects of shift work, age and work stress on health in an Italian sample of healthcare workers. Appl Ergon 2008;39(5):630–9.

15-Cox T, Griffiths AJ, Barlow CA, Randall RJ, Thompson LE, Rial-Gonzalez E. Organizational interventions for work stress: A Risk Management Approach. Sudbury: HSE Books; 2000.

16-Shanafelt TD. Enhancing meaning in work: a prescription for preventing physician burnout and

promoting patient-centered care. JAMA 2009;302(12):1338–40.
17-Shima S, Satoh E. Somatoform disorders in the workplace in Japan. Int Rev Psychiatry 2006;18(1):35-40.
18-Muecke S. Effects of rotating night shifts: literature review. J Adv Nursing 2005;50:433-6.
19-Harrma M. Workhours in relation to work stress, recovery and health. Scand J Work Environ Health *2006*;32(6):502–12.
20-Demerouti E, Geurts SAE, Bakker AB, Euwema M.The impact of shiftwork on work–home conflict, job attitudes and health. Ergonomics 2004;47(9):987–15.
21-Li J, Yang W, Cho S. General differences in job strain, effort-reward imbalance, and health functioning among Chinese physicians. Soc Sci Med2006;62(5):1066-77.
22-Cavanaugh MA, Boswell WR, Roehling MV, Boudreau JW. An empirical examination of self-Reported work stress among U.S. managers. J Appl Psychol 2000;85:65–9.
23-Bromet EJ, Dew MA, Parkinson DK, Schulberg HC. Predictive effects of occupational and marital stress on the mental health of a male workforce. J Organ Behav 1988;9:1-12.
24-Lundberg U, DohnsIE, Melin B, Sandsjo L, Palmerud G, Kadefors R, et al. Psychophysiological stress responses, muscle tension, and neck and shoulder pain among supermarket cashiers. J Occup Health Psychol 1999;4(3):245–55.
25-Agardh EE, Ahlbom A, Andersson T, Efendic S, Grill V, Hallqvist J, et al. Work stress and low sense of coherence is associated with Type 2 diabetes in middle-aged Swedish women. Diabetes Care 2003;26:719– 24.
26-De Lange A, Taris TW, Kompier MAJ, HoutmanIDH, Bongers PM. The very best of the millennium: Longitudinal research and the demand-control-support model. J Occup Health Psychol 2003;8(4):282-23.
27-Tsutsumi A, Kayaba K, Theorell T, Siegrist J. Association between job stress and depression among Japanese employees threatened by job loss in a comparison between two complementary job-stress models. Scand J Work Environ Health 2001;27(2);146-53.
28-Gershon RR, Lin S, Li X. Work stress in aging police officers. J Occup Environ Med 2005;44:160-7.
29-Dollard MF, Winefield HR, Winefield AH, Jonge JD. Psychosocial job strain and productivity in human service workers: A test of the demand-control-support model. J Occup Organ Psychol 2000;73:501-9.
30-Dickety N, Weyman A, Marlow P. Measuring workplace transport Safety performance. Buxton: Health and Safety Laboratory; 2003.
31-Harvey J, Bolam H, Gregory D, ErdosG. The effectiveness of training to change safety culture and attitudes within a highly regulated environment. Pers Rev 2001;30(6):615-21.
32-Rundmo T, Hale AR. Managers' attitudes toward safety and accident prevention. Safety Sci 2003;41:557–17.
33-Neal A, Griffin MA. Safety Climate and safety at work. In: Barling J, Frone MR, eds.The Psychology of Workplace Safety. Washington: American Psychological Association; 2004. P. 15-34.
34-Tomás JM, Cheyne A, Oliver A. The relationship between safety attitudes and occupational accidents: the role of safety climate. Eur Psychol2011;16(3):209-10.
35-McGovern PM, Vesley D, Kochevar L, Gershon R, Rhame FS, Anderson E. Factors affecting universal precautions compliance. J Bus Psychol 2000;15:149-12.
36-Rundmo T. Associations between risk perception and safety. Safety Sci 1996;24:197-12.
37-Ulleberg P, Rundmo T. Personality, attitudes and risk perception as predictors of risky driving behavior among young drivers. Safety Sci 2003;41:427-16.
38-Fogarty GJ, Shaw A. Safety climate and the theory of planned behavior: Towards the prediction of unsafe behavior. Accident Anal Prev 2010;42;1455–4.
39-Henning J, Stufft C, Payne S, Bergman M, Mannan M, Keren N. The influence of individual differences on organizational safety attitudes. Safety Sci 2009;47:337–8.
40-Isfahan steel Company. Profile of Isfahan Steel Company**.** 2012. Available From: URL: http://www.Isfahansteel.com/steel_form.php?pge1=about&type=1&pge=profile. Accessed July 12, 2012.
41-Molavi H.[SPSS 10-13-14 applied guidance in behavioral sciences]. 2nd ed. Isfahan: Poyesh Andishe Publication; 2007. [In Persian]
42-Munteanu MR. Safety attitudes in the Ontario construction [dissertation]. Canada: University of Toronto; 2005. Available From: URL: www.proquest.com. Accessed March 12, 2008.
43-Cohen S, Karmark T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav1983;24(4):385-11.
44-Cohen S. Perceived stress scale. 2006. Available From: URL: http://www.mindgarden.com/does/PerceivedStresssca le.pdf. Accessed 2 April, 2008.
45-Teresa Eve A. Associations of mindfulness, perceived stress, and health behaviors in college freshmen [dissertation]. Arizona: Arizona State

University; 2008. Available From: URL: www.proquest.com. Accessed July 24, 2010.
46-Demir A, Orucu MC. Psychometric evaluation of perceived stress scale for Turkish university students. Stress Health 2008;25(1):103-9.
47-Kirkcaldy B, van den Eeden P, Trimpop R, Martin T. Modeling psychological and work-situation processes that lead to traffic and on-site accidents. Disaster Prev Manage 1999;8(5):342-8.
48-Karasek R, Theorell T. Healthy work: Stress, productivity and the reconstruction of working life. New York: Basic Books; 1990.
49-Vegchel NV, Jonge JD, Landsbergis PA. Occupational stress in interaction: The interplay between job demands and job resources. J Organ Behav 2005;26:535-25.
50-Fako TT. Occupational stress among university employees in Botswana. Eur J Soc Sci 2010;15:313-26.
51-Chen P, Spector PE, Jex SM. Effects of manipulated job stressors and job attitude on perceived job conditions: A Simulation. In: Sauter SL, Murphy LR, eds. organizational risk factors for job stress. Washington DC: American Psychological Association; 1995. p.341-15.
52-McLain DL. Responses to health and safety risk in the work environment. Acad Manag J 1995;38(6):1726-17.
53-Lingard H. The effect of first aid training on Australian construction workers' occupational health and safety knowledge and motivation to avoid work-related injury or illness. Construction Management Economics 2002;20:263–10.
54-Henning J, Stufft C, Payne S, Bergman M, Mannan M, Keren N. The influence of individual differences on organizational safety attitudes. Safety Sci 2009;47:337-8.
55-Prati G, Pietrantoni L. Predictors of safety behavior among emergency responders on the highways. J Risk Res 2012;15:405–10
56-Egede LE, Ellis C. Development and psychometric properties of the 12-item Diabetes Fatalism Scale. J General Int Med 2010;25:61–6.
57-Levin JL. Factors Influencing Safety among a Group of Commercial Fishermen along the Texas Gulf Coast, J Agromedicine 2010;15:363–11.
58-Patwary MA, O'Hare WT, Sarker MH. Assessment of occupational and environmental safety associated with medical waste disposal in developing countries: a qualitative approach. Safety Sci 2011;49:1200–7.
59-Cigularova KP, Chen PY, Stallones L. Error communication in young farm workers: Its relationship to safety climate and safety locus of control. Work Stress 2009;23:297-15.
60-Rubinstein G. Locus of control and helplessness: gender differences among bereaved parents. Death Studies 2004;28:211-23.
61-Jones JW, Wuebker LJ. Safety locus of control and employees' accidents.J Bus Psych 1992;7:449-8.
62-Weidner L, Gotsch AR, Delnevo C, Newman JB, McDonald B. Worker health and safety training: Assessing impact among responders, Am J Ind Med 1998;13(3):241-5.
63-Zacharatos A, Barling J, Iverson RD. High-performance work systems and occupational safety. J Appl Psychol 2005;90(1):77–16.
64-Zohar D, Luria G. A multilevel model of safety climate: cross-level relationships between organization and group-level climates. J Appl Psychol 2005;90(4):616–12.